Acute respiratory infections and diarrhoea have been the two leading causes of mortality in children worldwide. The public health burden caused by acute respiratory infections (ARI), especially pneumonias, and acute diarrhoeal diseases still remains a major challenge. Both ARI and diarrhoeal diseases also cause high morbidity across all age groups.

To address these important public health issues and suggest concrete recommendations for their prevention and control, the Regional Director in the South-East Asia Regional Office of WHO, Dr. Samlee Plianbangchang established in 2008 a Regional Technical Advisory Group on acute diarrhoeal diseases and respiratory infections (RTAG-ICDR) comprising of regional and international experts on the subject. The first meeting of the Regional Technical Advisory Group on Integrated Control of Acute Diarrhoea and Respiratory Infection (RTAG-ICDR) was convened during 23-24 April 2009 at the National Institute of Cholera and Enteric Diseases (NICED) in Kolkata, India.

This report elaborates on the deliberations made by the RTAG members on the subject and their recommendations. The critical recommendation is a regional strategic framework for intensified, community-based programme comprising key preventive interventions, case management and social mobilization.
Intensified Community Directed Prevention and Control of Acute Diarrhoeal Diseases and Respiratory Infections

Report on First Meeting of the Regional Technical Advisory Group
Kolkata, India, 23-24 April 2009
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Acronyms

AIDS Acquired Immunodeficiency Syndrome
ARI Acute Respiratory Infection
BCC Behavioural Change Communications
*B. fragilis* Bacillus fragilis
CB Community based
CDD Control of Diarrhoeal Diseases
CDR Control of Diarrhoeal Diseases and Respiratory Infections
CDS Department of Communicable Diseases
CSR Communicable Disease Surveillance and Response
DALY Disability adjusted life years
DPRK Democratic People’s Republic of Korea
E. coli Escherichia coli
HIV Human Immunodeficiency Virus
ICDR Integrated Prevention and Control of Acute Diarrhoea and Respiratory Infections
IDSP Integrated Disease Surveillance Programme/Project
IEC Information, Education and Communication
IMCI Integrated Management of Childhood Illnesses
MDG Millennium Development Goal
NICED National Institute of Cholera and Enteric Diseases
ORT Oral Rehydration Therapy
ORS  Oral Rehydration Salts
RHF  Rehydrating Home-based Fluid
RTAG Regional Technical Advisory Group
SEARO Regional Office for South-East Asia
spp Species
U-5 Under five (years old child/children)
UNICEF United Nations Children’s Fund
USD United States dollar
V. cholerae Vibrio cholerae
WHO World Health Organization
Executive summary

The first meeting of the Regional Technical Advisory Group on Integrated Control of Acute Diarrhoea and Respiratory Infection (RTAG-ICDR) was convened on 23-24 April 2009 at the National Institute of Cholera and Enteric Diseases (NICED), Kolkata, India. The purpose of the meeting was to (1) to review the epidemiological situation of ARI and diarrhoeal diseases in the South-East Asia region and recommend appropriate strategies, goals and targets for reduction of morbidity and mortality in various age groups; (2) to recommend appropriate intervention packages and practical tools for monitoring and evaluating acute respiratory infections and diarrhoeal diseases programmes in Member countries; (3) to review and identify areas of research on respiratory infections and diarrhoeal disease prevention and control, especially operational research; and (4) to recommend strategies for advocacy for the enhanced involvement of national governments, academic and research institutions, clinicians and other stakeholders for enhancing political commitment, and efforts at resource mobilization.

After reviewing available data the RTAG-ICDR concluded that the public health burden from these diseases was unacceptably high in the Region. Effective interventions for prevention as well as case management have been available but not adequately implemented. It was felt that various competing programmes were partly responsible for non-implementation. These programmes imparted low visibility to the problem despite the heavy burden and the political commitment slackened over the years. IMCI, as a strategy to improve children’s health, has been effective in enhancing the quality of care but rather slow to scale up because of its complexity, facility-based nature, and labour and resource intensiveness. With the “business-as-usual” approach, the MDG for child mortality is not going to be achieved in the stipulated time period. There is a need to implement an intensified, targeted and community-directed prevention and control programme for acute diarrhoea and respiratory infections (community-directed ICDR) in the Member States.
The members of the group proposed the following strategic elements for the programme:

On technical aspects of the strategic framework on acute diarrhoea and respiratory infections: Five main strategic elements were proposed – (1) Preventive interventions comprised of improved breastfeeding practices; appropriate complementary feeding and other improved nutritional practices; zinc supplements; immunization; and handwashing. (2) Home and facility-based case management of acute watery diarrhoea, severe diarrhoea and acute bloody diarrhoea, diagnosis and treatment of pneumonia and other ARIs; (3) Community mobilization and empowerment for improved care-seeking and child rearing practices; health education and health promotion practices; social accountability; and advocacy; (4) Surveillance, monitoring and evaluation for disease burden estimation; monitoring incidence; outbreaks; trends; risk factors; community practices; and follow-up actions including periodic external evaluations of the programme and programme modifications; and (5) Operational research focusing on implementation; scaling up; identification of barriers and facilitators; and knowledge translation into policy formulations.

On implementation of strategic framework at the country level: Members suggested that the new programme should be implemented to complement programmes such as IMCI and national integrated surveillance programmes and started in areas where IMCI has not been able to reach, and focus on the community. In order to achieve MDG 4 the aim should be to create a suitable environment before the end of the biennium and build capacity by the end of the first half of the next biennium. Support for surveillance should start immediately. Technical support should be provided in the areas of community mobilization, behaviour change communication (BCC) and operational research. Health system strengthening at the community level should form an integral part of the programme. Activities under the community-directed ICDR should include advocacy, training and preparation of training materials, development of process and outcome indicators and targets, scaling up, multi-sectoral coordination and mobilization of resources.

The advisory group commented that research should focus on improving implementation of existing knowledge on the prevention and control of acute diarrhoea and respiratory infections. Research was needed to generate evidence and tools that would help in promoting early care-seeking and improved child rearing practices. Behavioural modification strategies and tools should be developed through such research programmes.
The group made recommendation to WHO to develop a regional strategy of intensified prevention and control of acute diarrhoea and respiratory infections with the focus at the community level; to advocate with partners and support Member States to implement the strategy; to facilitate the agenda at the highest policy level to achieve the MDG 4 target; to undertake a situation analysis of burden of diseases to develop Region - and country - specific workplans; to motivate Member States and partners to invest resources for the intensified strategy; to help Member States to scale up the strategy; to support Member States to develop operational plans at district level for decentralized implementation; to encourage them to generate evidence through action research and to gather evidence of the potential impact of climate change on the epidemiology of diarrhoeal diseases and respiratory infections.
1. Background

The scientific discovery of the basis of oral rehydration therapy (ORT) in the 1960s and its successful application on a massive scale in treating cholera outbreaks among refugees in West Bengal by Dr Dilip Mahalanabis during the 1971 India-Pakistan war, and Dr Dhiman Barua’s work in WHO-headquarters led to the establishment of the Special Programme on Control of Diarrhoeal Diseases, in 1978 through a resolution of the Thirty-first World Health Assembly.

Recognizing that the diseases of the respiratory system, as a group, were one of the principal causes of morbidity and mortality, work to establish a control programme was initiated in 1978 within WHO’s Sixth General Programme of Work. The WHO Technical Advisory Group in 1983 recommended initiating such a programme and a global medium-term programme on ARI control was formulated with services and research as its main components. WHO developed simple protocols in consultation with experts for use by primary health care workers in treating children with ARI/pneumonia. Technical guidelines were also prepared for use by programme managers and hospital care providers.

Established as described, the programmes progressively gained popularity and success in most Member countries with an appreciable and consistent decline in the under-5 mortality rates and, because of the programmatic similarities, were integrated in the early 1990s to become the Control of Diarrhoeal Diseases and Respiratory Infections (CDR) programme. Up to 1995 WHO’s Control of Diarrhoeal Diseases and ARI programmes were both fully operational under the common name of CDR and were collaborating with a large number of countries for both programme implementation and research.

However, some public health workers felt that the vertical nature of the programme limited the effectiveness of the CDR programme in overcoming major child health problems in developing countries. There was another consideration that children often present with multiple symptoms and have underlying malnutrition as well. The need for an
An integrated approach to managing sick children was strongly felt and the Integrated Management of Childhood Illnesses (IMCI) was conceived and initiated by WHO as a strategy with three components:

- Improvement of case management skills of health staff
- Improvement in the health system required for effective management of childhood illnesses
- Improvement in family and community practices

With the advent of the IMCI strategy and its launch in most developing countries, the CDR programme gradually receded from the public health scenario. After more than a decade, the public health burden caused by acute respiratory infections (ARI), especially pneumonias, and acute diarrhoeal diseases, remains a major challenge. These diseases continue to account for a large proportion of morbidity and mortality caused by communicable diseases. Available data indicate that morbidity rates from these conditions have been increasing and the decreasing trend in child mortality attributed to these diseases also appears to have stopped at unacceptably high levels in many Member countries. Acute respiratory infections and diarrhoea have been the two leading causes of mortality in children. In five countries of the Region -- Bangladesh, DPR Korea, India, Myanmar and Nepal -- non-tubercular respiratory infections account for 10% or more of the total deaths across all age groups, surpassing all other causes of death. India leads all other countries in the world with a high burden of these diseases as indicated by the estimated 943,000 deaths of children under 5 years of age from diarrhoea and pneumonia every year. ARI and diarrhoeal diseases together are responsible for almost 45% of the 3.1 million annual deaths in children under five years, as estimated in 2004, in this Region.

Both ARI and diarrhoeal diseases also cause high morbidity across all age groups. Although population surveys provide reasonably sound data on child mortality there is very little to rely upon in regard to the real burden in the over-5 population. Worldwide, among the elderly, the annual incidence of community-acquired pneumonia is estimated at 25-44/1000 population with mortality rates as high as 30%. No concrete estimates are available for the Region but the figures are likely to be high.

Countries continue to suffer outbreaks of acute viral respiratory infections including measles, and also of acute diarrhoeal illnesses such as
cholera, shigellosis and salmonellosis leading to considerable morbidity and mortality in children and adults alike. And, there are newly emerging infections contributing further to diarrhoeal and respiratory morbidity and mortality. With intense population pressure and frequent internal migrations, driven by conflicts and increasing frequency of natural calamities as effects of climate change, the situation is likely to get worse. Therefore, in order to comprehensively address these important public health issues and suggest concrete recommendations on how best to strategize their prevention and control Dr. Samlee Plianbangchang, Regional Director, South-East Asia Region, established a Regional Technical Advisory Group on acute diarrhoeal diseases and respiratory infections (RTAG-ICDR) comprising regional and international experts (Annex 1).

2. Objectives

The RTAG meeting included background presentations followed by group discussions (Annex 2). The meeting was organized with the following main objectives:

1. To review the existing epidemiological situation of acute respiratory infections and diarrhoeal diseases in the Region and recommend appropriate strategies, goals and targets for reduction of morbidity and mortality in various age groups;

2. To recommend appropriate intervention packages and practical tools for monitoring and evaluation of acute respiratory infections and diarrhoeal disease programmes in Member countries;

3. To review and identify areas for research on respiratory infections and diarrhoeal disease prevention and control, especially operational research;

4. To recommend strategies for advocacy for the enhanced involvement of national governments, academic and research institutions, clinicians and other stakeholders for enhancing political commitment, and efforts at resource mobilization.
3. Summary of proceedings

Opening session

Dr Jai P. Narain, Director of Communicable Diseases WHO/SEARO, welcomed RTAG members, other participants and observers and delivered the message from the Regional Director, South-East Asia Region, Dr. Samlee Plianbangchang.

In his message (Annex 3), the Regional Director said that the meeting was important and timely in view of the disproportionate burden of acute diarrhoeal diseases and respiratory infections borne by the Region. Despite the burden, these diseases received little visibility in recent years and the Oral Rehydration Salts (ORS) solution, the biggest medical discovery of the 20th century, was mentioned in the WHO web-site recently after a long gap. Morbidity remained high in all age groups with frequent outbreaks of cholera, shigellosis, and salmonellosis, and threats from avian influenza, SARS, etc.

The poor with inadequate access to proper nutrition, essential health services, safe water and sanitation facilities, and above all, with deficient knowledge and awareness, suffer and succumb to these diseases. The heavy burden of diseases that are preventable and curable by implementing simple, safe and affordable interventions with proven effectiveness is unacceptable and needs an effective intervention delivery system and much enhanced political commitment for their prevention and control. Interventions are not reaching the needy groups and the equity gap is growing. At the current pace of intervention the Millennium Development Goal on child mortality, MDG-4\(^1\) is not likely to be achieved. As the Region bears the major burden it is for the Region to find the solution, the Regional Director added.

Dr Narain, echoing the message from the Regional Director, urged the members to deliberate extensively and make recommendations regarding appropriate strategies, goals and targets for the reduction of morbidity and mortality from acute diarrhoea and respiratory infections. He also sought advice on prioritizing research areas, especially operational research to

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\(^1\) Goal: REDUCE CHILD MORTALITY  
Target: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate
improve programme performance, track the progress and identify newer
public health response. He noted the socio-cultural, environmental and
behavioural dimensions associated with the problem and also the need to
consider its ethical aspects. He further emphasized that preventing and
controlling acute diarrhoea and respiratory infections is not just an
important action in the current scenario of public health in the Region, it is
also the right thing to do. On this note the meeting was declared open.

**Introductory session**

The introductory session commenced with an outline of the objectives of
the meeting by Dr Khanchit Limpakarnjanarat, Regional Adviser,
Communicable Disease Surveillance and Response Unit WHO/SEARO.
RTAG members, other participants and observers as well as the WHO
Secretariat were introduced and the agenda and programme schedule of
the meeting adopted. Prof. Narendra K. Arora and Dr Sujit K Bhattacharya
were nominated as rapporteurs.

**Business session**

A presentation on “Acute Diarrhoea and Respiratory Infections: Global and
Regional Burden and Risk Factors” was made by Dr Khanchit
Limpakarnjanarat, Regional Adviser, CSR, SEARO.

Acute diarrhoeal diseases and respiratory infections are the most
common causes of child mortality, both globally and in the South-East Asia
Region. Globally, they are the leading infectious killers accounting for more
than two-thirds of total deaths from all infectious causes. In the Region, they
accounted for 2.1 million deaths across all age groups in 2004, more than
the number caused by ischaemic heart disease. If the number of deaths
caused by diarrhoea and pneumonia as a result of measles and whooping
cough is added to this burden, the weight of the burden increases further.
In the under-5 year (U-5) old population, the Africa and South-East Asia
regions account for 70% of annual deaths globally. Thirty-five percent of
diarrhoeal and 25% of pneumonia deaths in U-5 children worldwide occur
in the South- East Asia Region. At the country level, India with more than
half a million deaths, and Bangladesh, Indonesia and Myanmar from the
Region are among the 15 countries with the highest burden of annual
under-5 diarrhoeal deaths.
Acute diarrhoeal diseases and respiratory infections are also the causes of high morbidity in all age groups. Of the global incidence of 4.6 billion episodes of diarrhoea in 2004, almost 1.3 billion episodes were estimated to have occurred in the South-East Asia Region. Similarly, of the 429 million episodes of acute lower respiratory infections worldwide in 2004, nearly 135 million episodes were estimated to have occurred in the Region. These two diseases - acute diarrhoea and respiratory infections - are also the leading causes of DALYs or disability-adjusted life years lost both in the Region (23 and 28.3 million) and globally (72.8 and 94.5 million respectively).

India, Bangladesh, Indonesia and Myanmar from the Region are also among the 15 countries with the highest number of new cases of childhood pneumonia every year. India topped the list with an estimated 43 million new cases of pneumonia in under-5 children in 2004.

Undernutrition is a major contributing factor in more than half of the total under-5 deaths. In addition, other common risk factors for both conditions are non-exclusive breast feeding especially in the first 4-6 months, zinc deficiency, and poor domestic hygiene practices. Other common risk factors are crowding; lack of access to health care, especially for those who live in remote areas, and in urban slums; lack of measles immunization in the first 12 months; and mother’s inexperience as a caregiver and her level of education.

When we look at specific risk factors for pneumonia, they may include low birth weight, low coverage of pertussis and flu vaccine, indoor air pollution, underlying diseases such as asthma, HIV etc; old age, smoking, and genetic predisposition. With regard to diarrhoea, the risk factors may include very young age, unsafe water for consumption, poor sanitation and helminth infestation.

In all, health inequity may be the most common determinant of risk factors. And, socio-economic status may largely determine health equity in the Region. In the context of diarrhoea and respiratory infections, poverty is the main underlying factor for undernutrition through food scarcity. Living conditions, hygiene practices, and general awareness regarding care-seeking, sanitation practices and nutrition are also related to low socio-economic conditions of the individual or the family. Poverty can also lead to further economic disaster and financial insecurity during health emergencies in the family.
Geographic remoteness is another important factor; use of a health facility has an inverse relationship with the distance to the facility. Distance from the facility has been shown to be an important independent determinant of child mortality.

Ethnographic including cultural perceptions are other important factors. Certain ethnic groups are marginalized and ignored by the systems in place and still others may be reluctant or even resistant to accepting health interventions. Some communities feel that they would be discriminated against and not well cared for in the facilities and therefore opt not to use them.

The strength of the health service, especially the quality of health care, determines the utilization of services by the community. Poor quality in remote areas is another factor in poor utilization of services. Inverse equity hypothesis refers to worsening of health inequity when many novel effective interventions such as new vaccines get combined with existing interventions in more accessible areas.

Among the specific risk factors, age is an important one. The highest incidence of pneumonia is seen in children under the age of two years. The highest risk of severe illness and death is also among the youngest children and among the elderly. Incidence of diarrhoea has not shown any decline over the past 50 years and the age-specific incidence has also remained unchanged since the 1950s with the highest incidence among the 6 to 24 month-old children.

Non-breastfed infants aged 0-5 months have a seven-fold increased risk of death from diarrhoea and a five-fold risk from pneumonia. There is no growth benefit from complementary feeding before six months of age. Food supplements in children less than 4-6 months of age can be associated with 2-2.5 times higher morbidity and mortality from diarrhoea or pneumonia. Exclusive breastfeeding for six months, followed by continued breastfeeding to 12 months, could prevent 1 301 000 deaths or 13% of all child deaths.

The Zinc Investigators’ Collaborative Group, 1999 found that among zinc-deficient children there was an increase in risk of incidence of diarrhoea by about 1.3 times and of incidence of pneumonia by 1.5 times. The estimate of global prevalence of zinc deficiency was about 31% (range
4% to 73%) and this may result in 176,000 diarrhoea deaths and about 400,000 pneumonia deaths.

Handwashing with soap and water after defecation, after wiping the child’s bottom clean following defecation and before handling food and drinks including eating or feeding can reduce diarrhoea and pneumonia risks by 40% to 50%. However, the practice of handwashing among mothers after defecation is not common; only 36% in one observational study in India.

There is a bulk of evidence linking ARI in children with indoor air pollution from the solid biomass fuel which resulted in a high death rate from ARI in children under five years and the evidence from a recent meta-analysis of 24 studies showed that the risk of pneumonia in young children from burning solid fuels at home increased by a factor of 1.8.

Parental smoking increased the risk of acute respiratory infection in young children by a factor of 1.5 to 2. In a meta-analysis, pooled odds ratio of lower respiratory infection increased to 1.57 if one parent smoked and to 1.7 if the mother smoked.

The organisms that were significantly associated with diarrhoea were rotavirus, *C. jejuni*, Enterotoxic E. coli, Enteropathogenic E. coli, *Aeromonas* spp., *Shigella* spp., *V. cholerae* O1, *V. cholerae* O139, enterotoxigenic *B. fragilis* (ETBF), *Clostridium difficile*, and *Clostridium parvum*. Rotavirus infection is responsible for about 30% of severe acute watery diarrhoea needing hospitalization in the South-East Asia Region.

Viruses that commonly cause pneumonia are respiratory syncytial virus, adenovirus, rhinovirus and parainfluenza and influenza viruses. Worldwide estimates from vaccine probe studies indicate that there are about 17 million episodes of pneumococcal pneumonia and 5.6 million episodes of hemophilus type b pneumonia worldwide each year.

Dr Khanchit summed up his presentation by emphasizing that the burden of morbidity and mortality among under-5 children from acute diarrhoea and respiratory infection remained high and that the burden in the adult population may be similar but data was limited. There is an array of risk factors with several of them being amenable to safe and affordable interventions.
During the discussions Dr Sujarti Jatanasen said that programmes in the 1980s brought good results by reducing mortality and as the trend now seems to be reversing there is a need for the revitalization of control programmes. Professor N K Arora thought that the severity of the problem may be increasing too besides the rise in morbidity from worsening in-door air pollution, and water and sanitation situation.

Dr S K Bhattacharya stated that malnutrition continued to be a major contributor to the high burden of these diseases and that increasing drug resistance might be another. Dr Narain said that the quality of control programmes also determines the emergence of drug resistance in a community. Drug resistance was further elaborated by Dr M. A. Salam, Prof Arora and Dr Sangeeta Saxena all of whom agreed that a good surveillance and reporting system would be effective in reducing irrational use of drugs and emergence of resistance.

Dr Vijay Kumar, a member of RTAG made a presentation on ‘ARI and diarrhoeal disease control over the years and lessons learnt’. He elaborated on the origin and development of the control programmes since the scientific discovery of the basis of oral rehydration therapy (ORT) in the 1960s. Initial efforts at motivation and training of health workers at the peripheral levels of health systems paid off and the programme rapidly achieved a good coverage that was maintained throughout the 1980s and much of the 1990s. ORT subsequently also became part of UNICEF’s child survival strategy.

The programme needed much work on operational planning and, in its operation, included training on programme management and supervision besides developing simple algorithms and training of health workers on case management based on these algorithms.

Subsequent scientific developments to simplify the diagnosis of pneumonia and the revelation that community health workers could be trained to correctly diagnose and categorize the severity of pneumonia; engaging them could improve case management; and that the community-based treatment of pneumonia reduced child mortality led to the development of the acute respiratory infection (ARI) control programme by WHO in the early 1980s. Because of the close similarities in the operational components of the two programmes they were eventually merged together as the WHO CDR programme under child health.
Deriving lessons from his past experience Dr Kumar emphasized the importance of strong and sustained advocacy, community mobilization and IEC efforts by using every available medium. Strong, sustained leadership that is unified and political commitment at every level of the national developmental structure are other key facilitators. Monitoring should be an important part of any new effort and he thought that the cluster-survey was an excellent tool for it. He also emphasized the need to pursue with the successful control programmes and cautioned against complacency arising out of success.

Agreeing with this caution, Dr N. K. Shah recollected the experience with malaria eradication which was the first programme in the Region that was successful and later abandoned. Resurgence occurred with a vengeance. Any donor-driven programme can have a similar fate and we have to ensure that the countries have their own programmes with full ownership. Professor N K Arora during discussions stressed the importance of building capacity at lower levels of health systems to be able to utilize the available resources besides having a system of good governance with transparency and social accountability. Dr Sangeeta Saxena, agreed that in spite of an increase in funding in recent years the capacity to utilize resources is increasing slowly and that involving the private sector by identifying appropriate channels was important to improve the situation. Dr Narain summed up the session by saying that any new effort needs to identify cost-effective and affordable critical interventions, develop strategies for effective implementation at district and sub-district levels, make sure the community uses them by bringing about behavioural change through improved inter-personal and other modes of communication and scale up the coverage.

Dr Madhu Ghimire, WHO-SEARO, made a presentation on ‘A new conceptual framework for the prevention and control of acute diarrhoea and respiratory infections in the South-East Asia Region of WHO’. Reiterating the high burden of these diseases both globally and in the Region, he said that most of the prevailing risk factors are modifiable by applying the available simple, safe, cost-effective and affordable interventions. Mortality remains high in most countries and the search for a new approach has become necessary to achieve the Millennium Development Goal on child mortality (MDG 4) by 2015. The burden remains high not because interventions are not available but because they are not being implemented, especially in the needy areas. They are not expensive interventions. Just to give it a context, it costs on average only
USD 20 to treat a child with pneumonia and prevent death. Case management of acute diarrhoea requires even lesser investment. Since the second half of the 1990s, UNICEF data suggest that the use of ORT has declined by almost 50% and data from 44 countries suggest that only about 40% of children with ARI receive treatment from a trained provider. Coverage by available interventions has been particularly low after the turn of the century. These considerations and the ethical one that the poorest of the poor, marginalized communities suffer most and succumb to these conditions have strongly prompted the need for an effective programme to substantially reduce the mortality and burden from these diseases.

For the most part, the reasons for non-implementation lay in the low visibility and priority attributed to these diseases in the global public health scenario, misperceptions among the health policy makers that the battle against these diseases have been won, and the knowledge gap on how to scale up available interventions in low and middle-income country settings. And, interventions that have been implemented have not been directed towards the neediest.

As a solution, Dr Ghimire put forth for discussion a three-pronged model of an integrated control programme comprising (i) preventive interventions and health promotion, (ii) case management at the community and facility levels and (iii) social mobilization.

As preventive intervention, improvement in nutrition and immunization coverage and promotion of handwashing with soap and water were put forth as the main strategic elements with improvement in the water supply and sanitation situation and in the quality of water and air inside homes as further long-term efforts. Improvement in nutrition has to focus on exclusive breastfeeding for the first six months of life, continued breastfeeding to at least 12 months of age, appropriate complementary feeding, and micronutrient supplements, in particular zinc and vitamin A. Immunization based intervention needs to focus on achieving 95% coverage for measles, pertussis and diphtheria and introduction of rotavirus and Hib and pneumococcal conjugate vaccines based on local/national surveillance and research on burden, cost-effectiveness and affordability. Ensuring intersectoral collaboration is essential for expansion of water supply and sewerage network. Even for affluent countries building and maintaining safe water and sanitation systems, in terms of financial investment, was never and is not cheap and easy—but is essential as a long-term solution of the high burden of diarrhoeal diseases. Promotion of
behaviour change in the community is necessary for the safe storage and handling of water and food. Making water safe for drinking by simple solar or chemical treatment at point-of-use and feeding or eating only clean and freshly prepared or well cooked food needs to be promoted through strong Behavioural Change Communications (BCC) and IEC efforts. Reduction of indoor air pollution by identifying and promoting better practices for cooking food and warming homes through local/national research should also be listed as a possible preventive intervention for the Region.

In the case management strategy for acute watery diarrhoea, oral rehydration therapy (ORT) especially with low osmolarity, new formulation of oral rehydration salts (ORS) or by using rehydrating home-based fluids (RHF) needs to be strongly promoted at the community and household levels. ORT has already saved 40 million lives in the past 40 years and is successful in preventing and reversing dehydration in >90% of acute diarrhoea patients. Low osmolarity formulations are even better as their use is associated with significant reduction in the need for unscheduled intravenous rehydration, total stool output and vomiting. Addition of zinc as 10 to 20 mg twice daily for 10 to 14 days reduces the duration of diarrhoea by 15% and also significantly reduces the incidence of both acute diarrhoea and pneumonia over the following period of 2 to 3 months. Continued feeding or breastfeeding forms part of the case management and prevents the development of malnutrition. Antibiotics such as co-trimoxazole or cipro or norfloxacin are indicated for acute bloody diarrhoea. Promoting prompt diagnosis of ARI, especially pneumonia by training health workers to use the WHO algorithm that takes into account the rate of breathing and the presence or absence of in-drawing of the lower chest wall, categorizing its severity and referring to a facility or treating cases of pneumonia with antibiotics and other supportive care and preventing misuse of antibiotics in non-pneumonic cases form the core of ARI case management strategy. The new programme needs to adopt community case management as a national policy supported by the policy makers and strengthen it to reach areas not reached by the existing programme. Barriers to effective case management need to be identified by local research and the new programme needs to develop and implement tools to mitigate them.

Community mobilization is essential to promote behaviour change with regard to care seeking and improving hygiene, nutritional and child care practices. Community mobilization is also needed to increase local demand for improved supply of safe water, improved sanitation infrastructure, improved housing and air quality and, above all, to increase
their participation in the programme itself. Advocacy is needed to enhance visibility and prioritization at all levels, to increase awareness for ensuring political commitment and resource mobilization, and to promote community participation.

During the discussions RTAG members emphasized that many effective interventions are available but it is important to develop practicable interventions and implement them with special focus at the community level. Efforts should be made to reduce the morbidity rates too. Different interventions should support rather than compete with each other; and the same is true with programmes. Too ambitious and elaborate programmes are difficult to implement. Smaller, simple, and sustainable packages work better. The importance of advocacy, intersectoral coordination, public-private partnership and added focus on preventive interventions, was underlined during the discussions. Surveillance, monitoring and evaluation, and supportive supervision are key elements and should be inherent in the programme.

**Group work**

Following the presentation of the conceptual framework, a wide range of discussions was considered necessary to arrive at a consensus on: (1) The technical contents of the framework and (2) Identifying the next steps to be taken for the implementation of the strategic framework at the country level. The entire group was divided into two smaller groups, (technical and programme management) based mainly on the individual’s expertise or interest on the technical or the programmatic aspect to discuss the issues.

**Group A: Technical aspects of the strategic framework (Annex 4)**

The technical group first discussed the rationale for a new programme and cited the high disease burden in terms of morbidity and mortality, and the arrest of the decline of mortality seen in previous decades as a matter of serious concern. Loss of visibility of these leading killers of young children by being overshadowed by child health or non-child health related competing programmes in the health sector had led to these problems being overlooked or even neglected by policy makers. There has been a low level of political commitment for the control of these diseases. This meant that even the most cost-effective interventions remained
unimplemented to scale. The group considered IMCI an excellent concept but not easy to take up and implement widely at the community level. As a facility-oriented concept, it has not been poor-friendly. A new programme has to be oriented towards the poor, based on the principles of equity and address the burning ethical consideration that lack of implementation of effective low-cost interventions is killing the most vulnerable groups of poor and marginalized people. The group therefore proposed the development of an intensified community-directed programme for the control of acute diarrhoea and respiratory infections.

The group then deliberated on the core strategic elements for the programme and decided that it needs to have a strong preventive component besides case management at the community and facility levels, community mobilization and empowerment, surveillance, monitoring and evaluation, and lastly, an active arm for operational action research to guide the programme.

Preventive interventions: The group identified improved breastfeeding practices as proposed, nutritional interventions such as appropriate complementary feeding, immunization, handwashing and zinc supplements as the core preventive strategies for diarrhoeal diseases as well as acute respiratory infections.

Case management: For case management of acute diarrhoea, oral rehydration therapy by using new formulation low-osmolarity oral rehydrating salts (ORS) and zinc and adding antibiotics only if the stool has visible blood were identified as the core strategies. For the case management of acute respiratory infections, training of community and facility-level healthcare workers on diagnosing pneumonia, categorizing its severity, recognizing the danger signs and treating cases of pneumonia in the community with oral antibiotics and referring cases of pneumonia with complications or danger signs for admission to a facility were identified as the core strategies at the community level. For facility-level of care, oral or parenteral antibiotics, training of healthcare workers in assessment for hypoxia by pulse oximetry, wheezing by auscultation and supportive treatment with oxygen and nebulized bronchodilator as indicated were identified as the core strategies.

Community mobilization and empowerment: Improvement in care seeking and child rearing practices, health education and promotion, social
accountability and advocacy were identified as the core components of the community mobilization strategy of the programme.

**Surveillance, monitoring and evaluation:** Monitoring of disease occurrence, trends, outbreak and follow-up actions in the communities were considered as important as the monitoring of community practices and of risk factors. Periodic evaluations of the programme outcomes should also be a component of this strategy.

**Operational research:** Another important strategic element of the programme is operational research to guide the entire programme. The focus should be on implementation and action research, identification of progress barriers and facilitating factors, policy research and on the effective means of knowledge dissemination and translation into practice.

**Group B: Implementation of the strategic framework at the country level (Annex 5)**

The programme management group in its discussion considered the programme as being complementary to the two important existing programmes: Integrated Management of Childhood Illnesses (IMCI) for the achievement of MDG-4 and the Integrated Disease Surveillance Programme (IDSP) to provide technical support for surveillance, monitoring of the trend and practices and evaluation. Surveillance planning and activities for acute diarrhoea and respiratory infections in many Member countries are weak and fragmented. Feedback and programme strengthening at the local setting based on data analysis happens rarely. In order to improve this situation, strengthening the integrated approach to surveillance of all important communicable diseases including acute diarrhoeal diseases and respiratory infections by using similar setups, processes and personnel is expected to offer synergies and improvement in efficiency. Enhanced focus on important public health problems like acute diarrhoea and respiratory infections should be made possible within this framework of Integrated Disease Surveillance Programme/Project.

**Programme implementation:** The group deliberated on the need for the programme to launch its activities from the areas and communities farther away from IMCI facilities and gradually expand to areas closer to facilities with a view to strengthen services in the peripheral communities and also to improve referral.
Objectives and timelines: As a management guide to implement the core technical strategies of the programme, the group outlined key objectives and timelines such as creating a suitable and enabling environment by the end of 2010, capacity building efforts from 2010 to 2011, and starting to provide technical support for surveillance from 2009. The group also considered the need to provide technical support for community mobilization, behaviour change communication and for operational research. Strengthening of health systems is considered essential at least at the levels of community and first-level of facility care. The group also considered it important to demonstrate the relevance of the new effort to achieving MDG-4 and continue to maintain the link.

Activities under the programme: The group discussed various possible activities under the programme and determined that the following activities were important to achieve the primary goal of reducing the burden of acute diarrhoeal diseases and respiratory infections through an integrated approach to prevention and control:

1. Advocacy to ensure sustained political commitment by generating and utilizing data on disease burden; identify stakeholders and potential partners in the field, not forgetting the private sector;
2. Integrating surveillance with existing HMIS programme; existing laboratory based HMIS system could incorporate child health related indicators; analyze and use data for local action;
3. Identifying relevant indicators and include indicators to reflect ‘social determinants’ of diarrhoeal diseases and respiratory infections in communities;
4. Developing training materials and supporting training activities in countries including that for programme management, monitoring and operational research;
5. Developing outcome indicators and targets;
6. Scaling-up;
7. Multisectoral coordination;
8. Mobilization of resources;
9. Monitoring with focus on equity and coverage; and
10. Periodic evaluations by internal and external agencies.
In his presentation on ‘Priority areas for research in diarrhoeal diseases and respiratory infections’ Dr Madhu Ghimire highlighted the rationale for the need for research and to prioritize research in this area. Neglected diseases with high burden, changing epidemiology of the diseases, sub-optimum quality of the available data generated on the basis of verbal autopsy and recall by people with low level of education in developing countries were cited as the prime rationale for research to generate reliable data to guide implementation and scale-up available interventions of proven effectiveness.

Identifying barriers to and facilitating factors for implementation and care seeking through implementation and action research was presented as the priority area. Among the many barriers, (resource, policy, programmatic and utilization related) it is necessary to identify location-, country- and situation-specific barriers and to act upon them. In the present context of ARI and diarrhoeal disease related research, mitigating knowledge gaps in epidemiology and health systems strengthening is much more important than seeking improvement of existing interventions or development of newer interventions. Identification of country- or community-specific existing and emerging risk factors/ aetiology through sentinel/ community-based surveillance and identification of ‘causes’ of these diseases as perceived by communities would be able to guide selection of prime interventions likely to be effective in the area. Disease incidence, severity, DALYs and mortality estimation among the rural or urban, and remote, disadvantaged, and marginalized communities and various age and ethnic groups and the seasonality of disease incidence would also guide implementation and scaling up.

During the presentation, areas for research to improve existing interventions and some areas for developing new interventions were also identified. The discussions that followed this presentation emphasized that teasing out essential action-oriented research on implementation, burden estimation and identification of country/ area-specific risk factors, implementation barriers and facilitators from the presented list was important for further prioritization.

In his presentation on ‘Climate change and the potential impact on diarrhoeal diseases’ Dr G. B. Nair, Director of National Institute of Cholera and Enteric Diseases, a WHO Collaborating Centre for Diarrhoeal Diseases, explained the change in the global climate including the greenhouse effect and global warming. He also elaborated on the effects of global climate
change on human health by pointing out possible changes in host susceptibility to communicable diseases; change in vector dynamics leading to vector spread in newer geographical areas, changed seasonality and longer vector survival; change in disease agent with faster maturation rates of bacteria, fungi, etc; change in disease reservoirs and in transmission pathways. Outbreaks tend to follow storms and floods.

Dr Nair described the impact of climate change on diarrhoeal diseases by highlighting the association of diarrhoeal diseases with heavy rains and floods leading to water contamination or drought causing poor sanitation. Studies from developing countries show strong seasonal variations of diarrhoeal diseases and unequivocal links between hydrological extremes such as water shortages and flooding with outbreaks of diarrhoeal diseases. Some studies have shown that high temperature levels increase the growth of organisms.

Cholera is seen as a paradigm of effects of climate change on diarrhoeal diseases. There has been an exponential rise in the number of cases and the number of countries affected by cholera since the start of the 7th pandemic from Asia in 1961. Global surface temperature, based on surface air temperature measurements at meteorological stations and on sea surface temperature measurements from ships and satellites, shows a temperature increase of 1.4°F (0.78°C) since the beginning of the 20th century, with about 1.1°F (0.61°C) of the increase occurring in the past 30 years. Cholera epidemics are influenced significantly by climate and several environmental drivers have been identified to explain the seasonal cycle of cholera.

Remotely sensed satellite data to monitor the timing and spread of cholera and the temperature and height of the sea surface, the latter as an indicator of incursion of plankton laden water inland, have shown a good correlation, providing strong evidence that cholera epidemics are climate-linked. V. cholerae is autochthonous to the aquatic environment and is a commensal of zooplankton.

A statistically significant relationship was observed between the nine-year cholera cases time series and both chlorophyll-a concentration and rainfall anomalies. The inter-annual variability of cholera and occurrence of a strong El Nino in 1998 associated with the largest number of cholera cases for both Kolkata and Matalab in that year offered challenging examples of cholera and climate interaction.
Dr Nair concluded by saying that the current strategy for controlling infectious disease epidemics by relying primarily on surveillance and response needs some change. The recommendation now is a shift towards prediction and prevention, such as developing early warning systems. Overall vulnerability to infectious disease could be reduced through water treatment systems, vaccination programmes and enhanced efforts to control disease carriers.

4. Conclusion and recommendations

The first meeting of the Regional Technical Advisory Group on the integrated prevention and control of acute diarrhoea and respiratory infections organized by WHO/SEARO with the involvement of one of its collaborating centres, the National Institute of Cholera and Enteric Diseases provided a good opportunity for detailed discussions across a wide range of issues related to this important problem. In particular, the group deliberated extensively on the current situation and the proposed strategic framework for the prevention and control and concluded that (i) acute diarrhoeal diseases and respiratory infections remained a major challenge for the Region accounting for large-scale mortality and morbidity; (ii) simple and effective interventions are available for prevention and control; and (iii) their effective implementation among the needy communities has been lacking. Based on these conclusions, the RTAG made the following recommendations to WHO:

**Recommendations**

(1) Develop a regional strategy for intensified prevention and control of acute diarrhoeal diseases and respiratory infections with the focus on community-based activities.

(2) Advocate with partners and support Member States to implement the proposed regional strategy after adaptation in their respective areas.

(3) Facilitate to bring the programme of intensified prevention and control of acute diarrhoeal diseases and respiratory infections on the agenda of highest policy making bodies. This is required to meet the overall aim of achieving the MDG-4 target.
(4) Undertake a situational analysis of the burden of diarrhoeal diseases and acute respiratory infections. This evidence can be used to develop Region- and country-specific workplans, strengthen advocacy and increase commitment of national governments and other key stakeholders. Clear and simple essential tools to intensify the programme including those required for implementation, monitoring and supervision should be developed.

(5) Motivate the Member States and partners to invest and mobilize additional resources for the intensified strategy.

(6) Help Member States to identify key partners from health and non-health sectors including private providers at the community level for scaling up the intensified strategy.

(7) Support Member States to develop district (equivalent administrative unit) level operational plan for decentralized implementation. The operational plan must include elements of supportive supervision, accountability, decision making and use of monitoring data for action at local level.

(8) Encourage Member States to generate evidence relevant to the programme through implementation and action research in order to create for the families and communities an enabling environment that promotes early care seeking and improved family practices. Socially and culturally sensitive behavioural modification strategies should be developed through such research programmes and help in the evolution of behavioural communication strategy for effective implementation.

(9) Gather evidence on the potential impact of climate change on the epidemiology of diarrhoeal disease and ARI in the Region, assess the preparedness of Member States to respond and assist them in improving their capacity.

5. Closing session

Dr Jai P Narain, Director, Department of Communicable Diseases thanked all members of RTAG and other participants for their contribution in making the meeting successful. He offered special thanks to the members for making clear and useful recommendations. He also thanked the Director and staff of the NICED for the excellent preparations for the
meeting. He assured the group that the Regional Director would be well briefed on the outcome of this meeting and that a draft report would be soon finalized and distributed for their comments. Dr Narain concluded by saying that this was the first step in a long journey on the road to the successful prevention and control of acute diarrhoea and respiratory infections in the Region.
Annex 1

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Annex 2

Programme

Day 1 – Thursday, 23 April 2009

09:00-09:30  Opening
Welcome by Dr Jai P Narain, Director Communicable Diseases, SEARO/WHO
Introduction of Participants
Objectives of the Meeting (Dr Khanchit Limpakarnjanarat, RA-CS)
Administrative announcements

09:30-12:30  Global and regional overview of acute diarrhoea and respiratory infections (Dr Khanchit Limpakarnjanarat)
Discussion
ARI and diarrhoeal disease control over the years and lessons learnt (Dr Vijay Kumar)
Discussion

13:30-15:00  A new conceptual framework for the prevention and control of acute diarrhoea and respiratory infections in the South-East Asia Region: (Dr Madhu Ghimire)
Discussion

15:30-17:00  Group Work
Group A: Technical aspects of the strategic framework on acute diarrhoea and respiratory infections
Group B: Implementation of Strategic Framework at the country level

Day 2 – Friday, 24 April 2009

09:00-10:30  Feedback from the Working Groups
Group A: Technical aspects of the strategic framework on acute diarrhoea and respiratory infections
Group B: Programme management aspects of the strategic framework including advocacy, planning and monitoring and evaluation
<table>
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<tr>
<td>11:00-12:30</td>
<td>Priority areas for research in diarrhoeal diseases and respiratory infections (Dr Madhu Ghimire)</td>
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<td>Discussion</td>
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<td>13:30-14:30</td>
<td>Climate change and the potential impact on diarrhoeal diseases (Dr G. B. Nair)</td>
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<td>14:30-16:00</td>
<td>Drafting of recommendations</td>
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<td>16:30-17:30</td>
<td>Discussion and finalization of the RTAG recommendations</td>
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<td>17:30 hrs</td>
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Annex 3

Message from Dr Samlee Plianbangchang
Regional Director, WHO South-East Asia Region
(Delivered by Dr Jai P. Narain, Director, Department of Communicable Diseases)

Distinguished members of the RTAG, ladies and gentlemen,

This first meeting of the Regional Technical Advisory Group for the Integrated Control of Acute Diarrhoea and Respiratory Infections is taking place in Kolkata, India. Some centres in the South-East Asia (SEA) Region of WHO including the National Institute of Cholera and Enteric Diseases in Kolkata besides ICDDR,B in Dhaka have been gathering wider experience over the years in both researching and managing these diseases, which are still very important for the Region. Outstanding and vital issues related to these health problems in the Region require your combined expertise to provide us the necessary capacity and tools to launch an effective programme for their control.

Acute respiratory infections (ARI) and diarrhoea have been the two leading causes of mortality in children. In five countries of the Region – Bangladesh, DPR Korea, India, Myanmar and Nepal – non-tubercul respiratory infections account for 10% or more of the total deaths across all age groups, surpassing all other causes of death. India leads all other countries in the world with a high burden of these diseases as indicated by the estimated 943,000 deaths of children under 5 years of age from diarrhoea and pneumonia every year. ARI and diarrhoeal diseases together are responsible for almost 45% of the 3.1 million annual deaths in children under five years, as estimated in 2004, in this Region.

Both ARI and diarrhoeal diseases also cause high morbidity across all age groups. Although population surveys provide reasonably sound data on child mortality we have very little to rely upon in regard to the real burden in the over-5 population. Worldwide among the elderly, annual incidence of community-acquired pneumonia is estimated at 25-44/1000 population with mortality rates as high as 30%. No concrete estimates are available for the SEA Region but the figures are likely to be high.
Outbreaks of cholera or shigellosis are still common in many parts of the South-East Asia Region and cause deaths among children and adults alike. The impact on nutrition by recurrent episodes of diarrhoea can be considerable; thus putting the affected population at higher risk from other serious infectious and non-infectious diseases. The poor with inadequate access to proper nutrition, essential health services, safe water and sanitation facilities, and above all, with deficient knowledge and awareness, suffer and succumb to these diseases.

Past experience has shown that a programme of low-cost interventions provides for a relatively high return in these areas and helps us address, in some measure, the inherent inequities in the health sector. Cost-effective interventions need to be identified and included in the programme to bring about a sizeable reduction in disease burden and mortality, thereby contributing to the achievement of the Millennium Development Goals. The programme should also be designed to strengthen health systems, especially at the community level and at the first level health-care facility, thereby helping to improve health-care service delivery where it is most needed. Strategies to improve the motivation and capacity of health-care personnel in the community and in facilities also need to be identified. Multisectoral participation in scaling up interventions with proven effectiveness needs to be sought and institutionalized. The donors and funding organizations too have an important opportunity to contribute to the desired health goals and outcomes as well as overall development.

Affordable and effective tools have been available for sometime now but challenges remain in regard to their implementation. These challenges need to be met. A programme of integrated control of acute diarrhoeal and respiratory infections essentially based on lessons from the past and newer scientific developments and innovative strategies is a high priority for WHO in its continued efforts to bring about a positive health impact in Member countries in the Region. The programme needs also to focus on effective behaviour change to promote care-seeking and adherence to simple methods of personal hygiene such as handwashing by the vulnerable groups.

We seek your deliberations and recommendations regarding appropriate strategies, goals and targets for the reduction of morbidity and mortality from acute diarrhoea and respiratory infections in various vulnerable age groups keeping in view the current epidemiological situation. We also seek your technical expertise in developing appropriate, integrated intervention packages. We need you to help us identify the training needs at various levels and help us develop appropriate
training modules. Surveillance indicators and practical tools for monitoring and evaluation of the programme activities in Member countries need to be developed. Research areas need to be identified and technical support needs to be provided to the Member States in carrying out operational research to improve programme performance.

It is our hope that the meeting will bring out a well-defined roadmap of the programme, with important milestones to guide us in our efforts to significantly reduce morbidity and mortality in the Region from these conditions.

Thank you.
Annex 4

Group work; Presentation by Group A

Technical aspects of the strategic framework

Group Work

Group A:
Technical aspects of the strategic framework

Dr Wande Varavithya
Dr N K Arora
DR M A Salam
Dr G B Nair
Dr Jai P Narain
Dr Madhu Ghimire
Dr Suman Kanungo
Report on First Meeting of the Regional Technical Advisory Group

**Rationale**

- Competing programmes
  - Mortality decline arrested
  - Child health vs non child health
- Burden in terms of mortality and morbidity (DALYs)
- Cost effective interventions not scaled up
- IMCI – excellent concept
  - complex
  - not easy to take up
  - Not easy to scale up at community level
  - Not poor friendly
- Low visibility and hence political commitment
- Poor, Equity, ethical

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**Diagram**

- Prevention
- Community Directed CDR
- Case Mx
  - Community
  - HF
- Surveillance monitoring evaluation
- Operational Action Research
- Community Mobilization & empowerment
## Prevention

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## Case Management

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<td>Oxygen</td>
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<td>Nebulizer</td>
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<td>Pulse Oxymeter</td>
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Community Mobilization & Empowerment

- Care Seeking Practices
- Child rearing practices
- Health education and promotion
- Social Accountability & advocacy

Surveillance and Evaluation

- Monitor
  – Occurrence, trends, outbreaks and follow up actions
  – Community practices
  – Risk factors
- Periodic Evaluation
Operational Research

- Implementation and action research
- Identification of progress barriers/ facilitatory factors
- Policy research
- Knowledge translation & dissemination
Annex 5

Group work: Presentation by Group B

Group Work

Group B: Implementation of the strategic framework at the country level

Dr N K Shah
Dr Sujarti Jatanasen
Dr Vijay Kumar
Dr S K Bhattacharya
Dr Sangeeta Saxena
Dr Khanchit Limpakarnjanarat
Dr Subrata Ghosh
Key word for implementation

• No conflict but complementary
• Take existing program into account
  – IMCI: complement to achieve MDG4
  – IDSP: strengthen technical support to monitor trend of diarrhea and pneumonia
Goals

• The primary goal of the programme is to reduce the burden of ADD & ARI in member countries through an integrated approach to the prevention and control

Objectives

• To create a suitable environment(2009-2010)
• To build capacity(2010-2011)
• To provide technical support(2009-)for surveillance
• To provide technical support for community mobilization, BCC, operational research
• Relevance to MDG 4
• Health System Strengthening
Activities under ICDR

- Advocacy
- Training and training materials
- Process indicators and targets
- Outcome indicators and targets
- Scaling up
- Multi-sectoral coordination
- Mobilization of resources

Strategies

- Preventive interventions
- Case management
Acute respiratory infections and diarrhoea have been the two leading causes of mortality in children worldwide. The public health burden caused by acute respiratory infections (ARI), especially pneumonias, and acute diarrhoeal diseases still remains a major challenge. Both ARI and diarrhoeal diseases also cause high morbidity across all age groups.

To address these important public health issues and suggest concrete recommendations for their prevention and control, the Regional Director in the South-East Asia Regional Office of WHO, Dr. Samlee Plianbangchang established in 2008 a Regional Technical Advisory Group on acute diarrhoeal diseases and respiratory infections (RTAG-ICDR) comprising of regional and international experts on the subject. The first meeting of the Regional Technical Advisory Group on Integrated Control of Acute Diarrhoea and Respiratory Infection (RTAG-ICDR) was convened during 23-24 April 2009 at the National Institute of Cholera and Enteric Diseases (NICED) in Kolkata, India.

This report elaborates on the deliberations made by the RTAG members on the subject and their recommendations. The critical recommendation is a regional strategic framework for intensified, community-based programme comprising key preventive interventions, case management and social mobilization.