Research in communicable diseases can lead to better understanding of the epidemiology of the diseases as well as the social, economic, cultural, environmental, ecological and political factors that influence their propagation. Research is essential for the development of new tools and interventions, and need to be geared towards the development of evidence-based policies and interventions. The need for research as a part of strategic information and evidence base for developing effective and efficient disease interventions is also well recognized. Besides old challenges, research should address new challenges such as climate change and its impact on health. Given the multifaceted dimension of communicable diseases, it is imperative to identify priority research areas so that effective solutions can be developed to mitigate the impact of communicable diseases in South-East Asia Region.

Research priorities in communicable diseases

Report of a regional meeting
SEARO, New Delhi, 4-6 March 2009
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Contents

1. Introduction and objectives ............................................................. 1
2. Opening address ............................................................................. 2
3. The challenge of communicable diseases in the South-East Asia Region: an overview .......................................................... 4
4. New paradigms on research priorities of tropical diseases of poor and vulnerable populations ............................................ 7
5. Research priorities from the perspective of national programmes..... 9
   5.1 Tuberculosis .................................................................... 9
   5.2 HIV/AIDS ..................................................................... 10
   5.3 Malaria........................................................................... 11
   5.4 Vector-borne diseases (VBDs), in particular, dengue and chikungunya ........................................................... 12
   5.5 Neglected tropical diseases (NTDs) ................................. 13
   5.6 Research priorities in emerging infectious diseases (EIDs) ... 14
   5.7 Acute respiratory infections (ARI)/control of diarrhoeal diseases (CDD)......................................................... 15
6. Impact of climate change on diarrhoea and vector-borne diseases .............................................................................. 17
7. From research to policy formulation and implementation........... 19
8. Setting the research agenda: research priorities for the control of communicable diseases ................................................. 20
9. Translating research into public health actions: guiding principles ............................................................................ 31
10. Conclusions and recommendations ............................................... 34
11. Closing session .............................................................................. 36
Annexes

1. Programme.......................................................................................... 37
2. List of participants................................................................................. 40
3. Acronyms and abbreviations ................................................................. 44
The South-East Asia Region of the World Health Organization is at high risk from new and infectious diseases and has become a hotspot for many zoonoses, drug-resistant pathogens and vector-borne diseases. The Region bears one-third of the global burden of tuberculosis. It has the second highest HIV burden in the world. The Region has been the epicentre of avian influenza. Drug-resistant malaria is emerging as a global threat. Dengue is spreading to newer geographical areas while chikungunya has again emerged after 30 years of quiescence.

A regional workshop on research priorities in communicable diseases was held from 4 to 6 March 2009 in the World Health Organization Regional Office for South-East Asia (WHO SEARO), New Delhi.

The meeting had the following objectives:

1. To share information on ongoing research on communicable diseases in Member States;

2. to develop consensus on research priorities for communicable diseases control, elimination and/or eradication in the Region; and

3. to identify mechanisms for promoting, implementing and using research as an integral part of public health action.

The meeting was attended by representatives from 10 Member States, technical experts from national and international organizations, as well as from WHO Headquarters and SEARO (see Annex 2 for list of participants). The meeting was chaired by Dr Md. Abul Faiz and co-chaired by Professor Pratap Singhasivanon. Dr Lungten Zangmo Wangchuk was nominated as the Rapporteur. The drafting group consisted of the Chairpersons, Rapporteur and the concerned Regional Advisers in WHO/SEARO.
Opening address

Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia, opened the meeting. He stated that scientific and technological progress through research and development has led to a dramatic improvement worldwide in the control of communicable diseases, these diseases continue to take their toll. In the South-East Asia (SEA) Region, people suffer from a disproportionate burden of communicable diseases compared to the rest of the world. Of the 14 million deaths that occur annually in the Region, 40% are due to communicable diseases, compared with the global average of 28%. With its large and dense population, the SEA Region is at high risk for new and emerging infectious diseases.

This Region has become the epicentre of avian influenza (AI), which is intractable to current public health interventions. The impact of rapid urbanization and climate change on vector-borne diseases is also a matter of public health concern. Drug-resistant malaria is emerging as a potential threat to international health security. Malaria is a medical manifestation with remarkable contributions from environmental and ecological factors. Chikungunya has re-emerged after 30 years of quiescence. Dengue is spreading to newer geographical areas, and effective preventive measures are not yet available. The increasing morbidity from dengue and chikungunya is a serious public health concern. The Region bears one third of the global burden of tuberculosis (TB), which is a disease of poverty. For effective control of TB, more social and economic research, as well as health systems research, is needed. The Region also has the second-highest HIV burden in the world. Effective preventive interventions against HIV infection are yet to be found.

Attention to research in communicable diseases could first be focused on the application of available know-how and technology. However, at the same time, research for the development of new tools should be explored.
Furthermore, research to increase the efficiency and effectiveness of programme development and management in the areas of disease prevention and control is crucially important. To increase the efficiency and effectiveness of disease control, operational, social and economic as well as health systems research are needed.

Although research on priority health problems should be considered the primary responsibility of scientists and academics, national health programme managers cannot afford to isolate themselves from research institutions. The research agenda of academic institutions can be integrated into national health policies and programmes; in particular, health systems research, operational research and evaluative research. For this to occur, energetic advocacy is needed at the policy and decision-making level.

In communicable disease control, we can no longer afford to look at a disease only from the point of view of its “infective agent” without a thorough consideration of its host and environment. It was hoped that by the end of this meeting, the participants would have developed a set of recommendations on concrete actions for the way forward.
The challenge of communicable diseases in the South-East Asia Region: an overview

Jai P Narain*

The South-East Asia (SEA) Region has a quarter of the world’s population, but suffers from a disproportionately high burden of communicable diseases. Major health improvements have been seen in the last 50 years but progress has been uneven. There are several new challenges to the control of communicable diseases including population growth, rapid urbanization, global warming and environmental degradation, adaptation of microbes and weakness in public health infrastructure. There are also new opportunities including partnership, networks and new technology.

Over the past 30 years, more than 30 pathogens have emerged or re-emerged taking a heavy toll of life in the SEA Region. Examples include Nipah virus, severe acute respiratory syndrome (SARS) and HIV. Emergence of drug resistance to TB and malaria is another concern. In 2003 SARS impacted air travel, trade and commerce, resulting in an economic loss of about US$ 60 billion. However, concerted efforts globally coordinated by WHO brought the disease under control within a few months.

Avian influenza (AI) has spread to four continents and human AI cases with very high case fatality rates (50%) have been reported from 15 countries. The priorities for AI control are to prevent human infection and reduce the case fatality rate.

Nipah virus, which emerged in Malaysia in 1998–1999, resulted in the culling of one million pigs. The disease has spread to the SEA Region and

* Director, Department of Communicable Diseases, WHO/SEARO.
outbreaks have been reported in Bangladesh and India. It has changed from being a zoonotic disease to one that spreads from human to human and is now also believed to be a foodborne disease.

Dengue haemorrhagic fever (DHF) has expanded geographically and outbreaks are frequent. Globally, there are approximately two million cases annually, 90% of which are in children. The distribution of disease is greatly impacted by climate change and DHF was recently reported for the first time in Nepal and Bhutan. The disease is increasingly being reported from high altitude and wider geographical areas.

The Region is also seeing a geographic expansion of other vector-borne diseases. The current global outbreak of chikungunya was first reported in Africa in 2005 and spread to the SEA Region in 2006. India reported more than 1 million cases in 2006–2007. Chikungunya outbreaks have now been reported in the Indonesia, Malaysia, Maldives, Singapore, Sri Lanka and Thailand. There is concern that the disease may spread to Europe.

Countries in Asia need to strengthen their capacities in epidemic preparedness to be ready for new, emerging diseases. In 2005, the World Health Assembly endorsed the International Health Regulations (IHR 2005). The IHR provides opportunities to strengthen national capacity in surveillance. International health security can only be ensured by compliance with the IHR.

The first report of HIV in the Region was from Thailand in 1983 and the Region currently has the second-highest burden of people living with HIV after Africa. At present, the incidence of the disease appears to be increasing in some population groups, such as injecting drug users (IDUs). Indonesia has the fastest growing HIV epidemic. India, Myanmar and Thailand contribute about 90% of the burden of HIV in the SEA Region.

Despite success stories in HIV control, huge unmet needs for care and treatment remain, e.g. nine out of 10 HIV-positive persons do not know that they are infected, three quarters of those who need treatment do not have access to it, and nine out of 10 pregnant women do not receive services for the prevention of mother-to-child transmission (PMTCT).

The SEA Region accounts for 36% of the global burden of TB, but major strides are being made towards reducing this burden through the “Stop TB” programme. Case detection and treatment success rates have been increased steadily and several countries have achieved the global targets. Combating TB-HIV and managing multidrug-resistant (MDR) TB remain the priorities.
Malaria is of concern because 67 per cent of the world’s “at-risk” population resides in the SEA Region. Emergence of resistance to artemisinin-based combination therapy has been reported along the Thai–Cambodian border. There are still many challenges relating to malaria control including lack of reliable data on the true burden of disease, the role of environmental and behavioural factors in disease transmission, the promotion of integrated vector management as a concept and the prevention of drug resistance.

Elimination of leprosy has been achieved in 9 of the 11 SEA countries: only Nepal and Timor-Leste have yet to reach this goal. Sustaining political commitment and ensuring adequate resources to sustain elimination at national level is still a challenge. Integration of leprosy services into the general health system through capacity building and skill development should be strongly advocated and supported to ensure and sustain quality services, including diagnosis and treatment.

Much progress has been made in the elimination of filariasis in the region; 88% of all those who receive mass drug administration (MDA) are in the SEA Region. Still, improvements are needed in ensuring access to drugs (diethylcarbamazine [DEC] and albendazole) and in mapping to determine those areas where MDA should be continued and those in which it can be stopped.

Visceral leishmaniasis (kala-azar), a disease of the poorest of the poor, is endemic in some areas of Bangladesh, India and Nepal. Bhutan also recently reported indigenous cases. Due in part to its unique epidemiology, elimination appears to be feasible only in this Region. Other key factors include the availability of newer technology and diagnostics, significant experience in control of other diseases and the high level of political commitment.

In conclusion, research is needed to address regional challenges in the control of communicable diseases. Research should take into consideration the integration of disease control, the development of new interventions and technology, the quality of services, the sociocultural aspects and the utilization of services, among other issues.
The history, new vision and strategy of TDR was presented. Priority setting for research in TDR is guided by and focuses on: (i) driving coherence between need and external forces; (ii) research as a part of health systems strengthening; and (iii) policy-driven research. The new TDR vision is “to foster an effective global research effort on infectious diseases of poverty in which disease-endemic countries play a pivotal role”. The three steps in implementation of the TDR business plan are (1) stewardship, (2) empowerment, and (3) innovation for interventions and access.

In collaboration with partners such as pharmaceutical companies, TDR develops new drugs that enhance efforts to meet elimination/eradication targets for a number of neglected tropical diseases (NTDs).

In supporting regional and country research needs in communicable diseases, TDR sets research priorities across these diseases, focusing on: (i) enhancing and accelerating innovation; and (ii) integrated approaches taking into account the socioeconomic context and gender equity.

In recent years, in collaboration with the various stakeholders, TDR has been addressing emerging global issues such as climate change and the financial crisis to integrate research outcomes with national action plans.

* Coordinator, Research on Neglected Priorities, UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR).
The aim is to strengthen health systems through empowerment and capacity building at the national, institutional and individual levels.

The training courses on research and management of disease control programmes conducted by TDR were very helpful and they should be revitalized for capacity building at the national, institutional and individual levels. A global network for information sharing on the TDR-related works will be essential. Regular updating of the clinical trial registry on drug trials will also enhance information sharing at various levels.
5.1 Tuberculosis*

Research across a continuum is necessary to speed up progress in global TB control. Key areas of research on the continuum include the following: (1) applied research focusing on the development of new tools to better detect, prevent and cure TB, including new diagnostics, drugs and vaccines; (2) operational and programme-centred research to optimize the use of current strategies and tools and to facilitate the introduction of new ones by linking their use with epidemiological, operational, behavioural, social, health systems, health economics and policy research; and (3) basic research for discovery.

The main focus of the Stop TB Strategy is to make the best use of currently available tools for diagnosis, treatment and prevention of TB (i.e. programme-based operational research) as well as the improved tools likely to become available in the future. The goal of eliminating TB by 2050 critically depends on the development of new diagnostics, drugs and vaccines. WHO’s South-East Asia Regional Office (SEARO) is working in close collaboration with the Stop TB Partnership to achieve all of these goals. The most immediate need is operational research to achieve the following:

(1) Improved case detection, reduction in diagnostic delays, improved access to better diagnostics.

* P R Narayanan, Former Director of Tuberculosis Research Centre, Chennai.
(2) Effective treatment resulting in cure for all TB patients (including MDR and HIV/TB), thus reducing individual morbidity, mortality and interrupting transmission.

(3) Estimating the burden and impact of interventions on TB, MDR TB and TB-HIV.

(4) Support to the development of newer diagnostics, drugs and vaccines.

**5.2 HIV/AIDS***

The HIV epidemic is in different stages in different countries of the Region. Hence, research will depend on the requirements of each country. Research systems should be integrated into programme management. Research should aim at making programmes sustainable and the scaling up of effective HIV/AIDS care. Systematic research should also keep pace with evolving structural interventions and the epidemiological transition of HIV/AIDS. Since modes of HIV transmission are changing, research should examine the changing social determinants. Key objectives and types of research in the short, medium and long term were presented.

Research priorities in *epidemiological* research include improvements in mapping and size estimation, estimations of HIV incidence and prevalence, estimations of HIV-associated mortality and of antiretroviral treatment (ART) needs.

Priorities for research on *HIV prevention* include behavioural modification among populations engaging in major modes of transmission, the prevention of transmission of HIV/sexually transmitted infection (STI), and preventing transmission of HIV among men who have sex with men (MSM) and IDUs. In addition, research on vaccine development remains important.

Priorities for research on *HIV care* include operational research to improve HIV care and treatment in clinical settings and in the community by (1) improving voluntary counselling and testing (VCT); (2) providing effective care and treatment for people living with HIV (PLHIV); (3) monitoring and evaluation of ART outcomes; (4) improving management of TB/HIV coinfection; and (5) evaluating and preventing drug resistance of HIV.

* Wiput Phoolcharoen, Senior Researcher, Thailand.
Priorities for research on health systems and community mobilization include the implementation of strategies to decentralize HIV prevention and care, examination of ways to empower the health and health-related workforce, development of health information systems (HIS) related to strategy planning at the local level, and enhancing community involvement (which should address community-based organizations [CBOs] rather than nongovernmental organizations [NGOs]).

5.3 Malaria*

Malaria remains a major public health problem in the Region. A major issue is the lack of accurate knowledge of the actual disease burden. A number of studies conducted in India on estimation of the burden indicated that the total deaths due to malaria were about 50,000 as compared with only 1000 reported. Malaria in pregnancy is another key issue deserving of attention as there is almost no data from this Region.

There are several new tools for the diagnosis, treatment and prevention of malaria.

Key issues are the dynamics of the disease and several determinant factors. There are a number of mosquito vectors in the Region. Disappearance and reappearance of vectors has been observed. Sibling species of vectors are important and have implications for controlling the disease.

Research required for malaria control includes basic and operational research in a number of areas, especially in relation to programmatic issues and surveillance.

Programme planning and coordination: programme management

Areas deserving of attention include capacity building efforts and assessing training needs, analysis of programme structure and resource allocation at different levels, partnership building and networking (public-private mix), a multisectoral approach in prevention and treatment of malaria, programme responses towards changes in natural and man-made ecology and malaria

* Ye Htut, Director, Department of Medical Research, Myanmar and Dr A.P. Dash, Regional Adviser, Vector-Borne Disease Control, WHO/SEARO.
transmission dynamics, programme responses towards climate change and natural disasters, burden of malaria and disability adjusted life years (DALYs), cost-effectiveness of interventions and programme evaluation.

**Strengthening surveillance system**

Areas to focus on include the relative merits of active, passive and sentinel surveillance; improvements in health information and communication; capacity building in diagnostic laboratories, use of Geographical information system (GIS) and Remote sensing (RS) applications; and monitoring of insecticide resistance.

**Special focus**

There are additional areas which require a special focus. These include use of G6PD screening test (and prevalence of G6PD deficiency), pharmacovigilance and drug quality for patient safety, new antimalarial compounds, health system inadequacies and constraints in effective delivery mechanisms for diagnostics and antimalarials, quality assurance of new RDTs and conventional microscopy, model of integration of diagnostic microscopy and RDT in different settings, chemotherapy for prevention and treatment of P. vivax malaria, multidrug resistant falciparum malaria (clinical and field trials), integrated vector management and malaria in pregnancy (early diagnosis and treatment and prevention with Insecticide treated nets/Long lasting insecticide treated nets (ITN/LLIN)), socio-behavioural studies, ITN/LLIN among high and moderate risk areas, malaria co-infections with HIV, TB and helminthic infections and vaccine development.

**5.4 Vector-borne diseases (VBDs), in particular, dengue and chikungunya***


Dengue fever (DF) has been reported from all SEA Region Member States except DPR Korea. Dengue epidemics occur every 3–4 years. The vector of

* Sarala K Subbarao, INSA Sr Scientist, Indian Council of Medical Research, India.
both chikungunya and dengue fever is *Aedes aegypti*, which breeds mostly in containers in urban areas. *Aedes albopictus* breeds in tree holes and is found mostly in rural areas.

Research priorities in VBDs may include vector bionomics and ecology, vector control for adult mosquitoes and immature form, vector control interventions, existing technique for diagnosis of dengue infection, diagnosis of chikungunya infection, use of diagnostic kits, surveillance systems, economic burden of dengue and chikungunya, transmission dynamics of dengue and chikungunya, risk factors, mapping and early warning systems, case management, treatment and prevention, and the implications of climate change for VBDs.

### 5.5 Neglected tropical diseases (NTDs)*

People affected by NTDs generally belong to the poorest and most vulnerable segments of society. Some diseases affect individuals throughout their lives, causing a high degree of morbidity and physical disability and, in certain cases, gross disfigurement. Patients may face social stigmatization and abuse, which add to the already heavy health burden.

A primary health care (PHC)-based generic research protocol is needed for a cluster of NTDs in the context of the wider health system, community resource mobilization and intersectoral collaboration. This would ensure a reduction of the gap in health equity as elaborated in the final report of the Commission on Social Determinants of Health Conceptual Framework.

The following areas for research are recommended: a PHC-based generic research protocol for a cluster of NTDs, integrated control of NTDs focusing on capacity building at the regional, national and institutional levels (which would ensure sustainability of the approach), and a common strategy for countries with shared borders and similar NTDs or a cluster of NTDs. An example of the latter would be the recent high-level meeting of Bangladesh, India and Nepal on kala-azar. Drug security is ensured through this approach for countries with shared borders. Research is also needed to assess the burden of trachoma in the Region as a preventable cause of blindness. Lastly, area mapping of a cluster of NTDs prevalent in the same area, monitoring and evaluation with an integrated approach will be cost-effective and ensure sustainability.

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* Md. Abul Faiz, Professor of Medicine and Former Director General of Health, Bangladesh.
5.6 Research priorities in emerging infectious diseases (EIDs)*

Emerging infectious diseases (EIDs) can be defined as those which have not been previously recognized. The diseases of most concern are those that may have international significance; for example, those with epidemic/pandemic potential, those that may impact on trade and those which may pose a risk for travellers due to a high case-fatality rate.

There is a clear need for SEA Region countries to develop national research strategies due to the number of EIDs that pose a threat to public health. Particular areas of concern exist because some diseases are of animal origin and thus represent unfamiliar territory for public health workers, some are caused by increased human interaction with wildlife, and because the pattern of some diseases may change due to the increasing impact of global warming, for example leading to the spread of vectors. Priorities for research must be based on the threats that emerging diseases present, along with country priorities, country strengths, potential opportunities and identified needs.

Typical research on EIDs can be categorized as those conducted in clinical and community settings, laboratory studies, socio-behavioural studies, economic studies and interface studies such as animal, environment, etc. Priority should be given to wildlife research and surveillance, such as subtypes of influenza circulating in animals but not in humans, trends of circulating viruses, species infected, and animal models.

For newly detected diseases, priority may be given to sero-prevalence, viral and socio-behavioural studies. An example of success is the discovery of the SARS virus and its mode of transmission in a short time due to excellent international collaboration.

WHO has a key role in facilitating research in emergency situations. One area where WHO could usefully work is to facilitate networking of researchers and laboratories, as demonstrated in the SARS response. WHO SEARO has also established a Regional Task Force on avian influenza (AI) research, which can be convened in an emergency situation. SEARO can network with headquarters on the global research agenda as well as existing local research networks such as the SEA Clinical Research Network. Gaps that remain include the lack of standard research protocols which could be easily adapted when needed.

* Nyoman Kandun, Ex-Director General for Health, Indonesia.
5.7 Acute respiratory infections (ARI)/control of diarrhoeal diseases (CDD)*

The high disease burden and especially the high mortality in children from acute diarrhoea and respiratory infections has been a challenge. Effective and relatively inexpensive interventions for prevention and control have been available for the past few decades. However, the knowledge gap is still considerable and can be broadly classified as gaps in epidemiology, etiology and pathophysiology; gaps in services such as delivery of care, referral, understanding of community perceptions and impact on utilization of health-care services; and effectiveness, affordability and sustainability of specific interventions.

Unrecognized and emerging strains of known bacteria, viruses, protozoa and other parasites may be responsible agents for diarrhoeal diseases in the SEA Region. Limited data is available on the ARI disease burden from pneumococcus, *Haemophilus influenzae* type b and influenza. An evidence base for the optimal use of antibiotics is lacking. Vaccine development and the utility of vaccines to prevent ARI and diarrhoea have not been adequately studied in the Region. Several risk factors have been recognised but their exact roles in the regional context need to be studied to allow informed decisions about the type and mode of intervention.

Many of the diagnostic tools considered reliable in other regions have not proved useful in the SEA Region, for example stool lactoferrin and faecal occult blood test. Research is also needed to refine the WHO criteria for diagnosis of pneumonia to improve its specificity. There is a need to develop simple diagnostic tools that can be reliably employed in field conditions. Currently available simpler tests such as pro-calcitonin assay or the rapid detection of pneumococcal antigen in urine need to be field tested in the regional context. Similarly newer treatment tools such as the use zinc in pneumonia cases need to be field tested for their efficacy. Antimicrobial resistance and patterns of drug use are other areas for research. Care seeking behaviour, community perceptions and factors affecting health service utilization need to be studied in different settings. The effectiveness and sustainability of current interventions are other areas for research.

During the ensuing discussion it emerged that the main problem in prevention and control seemed to lie in scaling up of the available

* Mahesh K. Maskey, Executive Chairman of Nepal Health Research Council.
interventions despite the widening knowledge base over the past several decades. Drug resistance has emerged as a major challenge with cholera, shigella, pneumococcal and other respiratory pathogens. A reduction in the focus on these problems in recent years has meant that gains made in the past are also reversing. WHO currently does not have a specific programme related to these diseases and research is therefore needed to inform policy development for their prevention and control.
Impact of climate change on diarrhoea and vector-borne diseases
G.B. Nair* and A.P. Dash**

Climate change can be attributed directly or indirectly to human activity that alters the composition of the global atmosphere and is in addition to natural climate variability observed over comparable time periods. It poses a significant challenge to ongoing efforts to protect human health.

Climate change influences human health because it affects the distribution and incidence of communicable and noncommunicable diseases. VBDs such as malaria, dengue, chikungunya, Japanese encephalitis and leishmaniasis are particularly affected by climate change. A rise in global temperature may cause the spread of malaria to new regions where it was previously not prevalent, in part because climate change (temperature and relative humidity) has an important effect on the breeding of mosquito vectors. Extreme climate events such as droughts, floods and cyclones have a direct impact on the prevalence of diarrhoeal diseases. New strains of *Vibrio cholerae* have evolved recently, which cause more severe episodes of cholera and have alarming case-fatality rates. There has been a 79% increase in global cholera since 2005 and 99% of global cholera occurs in Africa.

The meeting discussed the following: (1) progress in the development of vaccines for diarrhoea should be shared within the Region; (2) two rapid tests for the diagnosis of cholera have been validated and marketed and advocacy for their use is recommended; (3) as climate change is a cross-cutting issue, a holistic research agenda should be developed and host/sociocultural factors (including population migration) should be studied; (4) research is

* Director, National Institute of Cholera and Enteric Diseases, Kolkata.
** Regional Adviser, VBC/SEARO.
advocated on ecological/biological changes related to the etiology and spread of communicable diseases; (5) a good surveillance network is needed to track new emerging diseases; (6) more evidence-based data are needed for disease control (a common protocol to systematically address climate change and its impact on health is being developed); (7) climate change and its impact on health should be a part of any national development plan.
Research findings should lead to a more evidence-based health policy. At present, relatively few research findings are shared in international journals and meetings and used in the design of public health interventions. The most common barriers to research utilization have been identified as sub-optimal interaction between researchers and policy-makers, poor quality research, lack of timeliness or relevance, and lack of resources. It is important at the start of a research project to define what answers are being sought to the questions at hand, who the intended users of this information will be, and how they can be reached. Research findings must give clear evidence for policy-makers to appraise and assess. Furthermore, a productive dialogue between researchers and policy-makers, programme managers, public health and clinical staff/professionals is essential for remaining in tune with policy thinking. Consideration should be given on the external influences a decision-makers, e.g., from lobbyists, advocacy/pressure groups and professional associations, especially when this influence may impede evidence-based decision-making.

Research institutes should promote a research culture and have a mechanism to prioritize health problems, promote utilization of research findings and explicitly build links with policy-makers. Both published and unpublished research findings should be disseminated to enhance accountability and transparency. Lastly, research organizations should show strong commitment to the transformation of research findings into policy and implementation, backed by availability of adequate resources.

* Public Health Initiative, WHO/SEARO.
Setting the research agenda: research priorities for the control of communicable diseases

Research priorities for HIV

Epidemiology

The burden of HIV varies between countries and has different dimensions. Low prevalence countries may have issues that are different from high-burden countries. Disease burden depends on risk, vulnerability, availability of care and treatment and measures taken to mitigate the impact.

Prevention and disease control

Prevention among at-risk populations depends on the availability of knowledge, information and interventions. It requires the identification of who is affected, the size of the affected population and the location of these vulnerable populations (for example, MSM, IDUs, mobile and displaced populations, prisoners, etc). In some countries this information is incomplete. In the short term, mapping and estimations of prevalence should be conducted. Many interventions for the prevention of HIV are known, but coverage of risk groups is still poor and does not reach the most vulnerable populations. In the short term, priorities include a review of models for scaling up effective interventions to reach those who need them most, and a review of how to increase condom use among MSM and other high risk groups.
**Access, health seeking behaviour and equity**

Medium-term interventions include finding effective ways to ensure that most-at-risk populations (MARP) have access to available services, and to establish how to reach partners of MSM and IDUs to deliver services. Other research priorities include addressing substitution for amphetamine users and understanding social networks of IDUs and MSM by conducting a network analysis. In the medium term, models for community care must be developed, tested, evaluated and scaled up.

**Case detection and diagnosis**

In the short term, HIV surveillance needs to be conducted among TB patients and early access to treatment ensured. In the medium term, diagnostic algorithms should be developed to diagnose TB in HIV patients.

**Treatment and clinical issues**

Low coverage is a significant issue: less than 10% of people know their HIV status and less than 10% of those who need PMTCT receive these services. Access to ART is also poor. Long-term research is needed on the best time to start treatment. In the short to medium term, research should be conducted on finding the best regimen for antiretroviral (ARV) prophylaxis and how to improve treatment outcomes.

Issues in this area also include how to get people living with HIV (PLHIV) into HIV care early and increase the uptake of VCT/provider-initiated testing and counselling (PITC). We also need to understand which are the best models of service delivery that maximize VCT uptake among MARP; the best ways to decentralize HIV care and treatment, and how to provide early diagnosis of HIV in infants.

Adherence is lower in MARP and co-infected persons; an important question is how to best identify the major barriers to adherence and how to actually measure adherence. These are both short-term initiatives.

The rate and causes of loss to follow up must be determined in the short term. Diagnostic algorithms also need to be developed to improve treatment outcomes in HIV / TB co-infected patients. Models to link services for HIV/STI/TB/drug rehabilitation into care and treatment services should be developed in the long term.
Medium-term priorities in research should also focus on how to increase PMTCT in settings where antenatal care (ANC) coverage is low, how to get partners of MARP or women with high-risk behaviour to access ANC and how to identify criteria/approaches for HIV testing among pregnant women in low-prevalence settings. In the long term, research should be conducted on finding ARV regimens for PMTCT, and breastfeeding support for infected women. Surveillance systems among specific population groups, e.g. IDUs, should also be developed. Existing models for impact mitigation should also be evaluated and care for orphans in the community operationalized.

**Research priorities for TB**

Priorities are not the same for all countries and even within countries depending on the setting. Strategies need to be adopted according to the specific needs. Challenges include gaps in case detection, difficulties in case holding, emergence of MDR-TB and extensively drug-resistant (XDR)-TB, health system responses to patient-centred care, human resource capacity building, optimizing public–private mix (PPM) and collaboration with other sectors, community involvement and development of new tools.

**Epidemiology**

According to estimates based on expert consensus, one third of the global burden of TB is borne by the SEA Region. However, case notification systems are insufficient and need study. The magnitude of TB in children is unknown. A methodology to re-estimate the TB burden may be required through a comprehensive in-depth study. Prevalence surveys, estimations of mortality due to TB through various means such as capture/recapture, verbal autopsy, and measures to improve vital registration systems should all be undertaken. In addition, the molecular epidemiology of TB should be studied and surveillance conducted for new strains.

**Access, health-seeking behaviour and equity**

Provision of community DOTS (including for MDR-TB) and the role of the community in case detection should be explored. Gender disparities in accessing care and the causes, extent and effects of gender disparity should also be studied.
Case detection and diagnosis

The number of individuals infected with TB is not accurately known. The magnitude of TB in special groups such as ethnic minorities, prisoners and those in institutional settings is not known.

Smear microscopy needs to be optimized and diagnostic algorithms developed for non-smear positive TB (such as extrapulmonary TB, TB/HIV coinfection and paediatric TB). The role of chest X-rays in diagnosing TB should be assessed and the involvement of the private sector and community ensured.

Treatment and clinical issues

Analysis of the numbers of defaulters and the reasons for default should be undertaken. The quality of directly observed treatment, short-course (DOTS) should be assessed and the level of adherence to treatment and reasons for non-adherence identified. The role of fixed-dose combinations in reducing non-adherence should also be examined.

The use of various regimens (combinations, dosages and durations) and new drugs should be studied. Methods to ensure the rational use of drugs and overcome adherence issues should be identified. Models of care (community, hospital) should be studied to identify what works best.

Research on MDR-TB should focus on where resistance is generated, rational use of second-line drugs, and case management including documentation of drug toxicity and side effects.

Health systems and research capacity building

The impact of management failure such as a delay in procurement of TB drugs should be examined. Coordination with other programmes such as HIV, Maternal and Child Health (MCH) and Acute Respiratory Infections, referral systems as well as linkages with private health providers and laboratories should be improved.

Innovative approaches to utilize locally available human resources should be examined and methods to enhance motivation identified.
Culture and drug-sensitivity testing have been identified as operational bottlenecks. Networking between laboratories needs to be strengthened and decentralization encouraged. The use of newer technologies and their impact on diagnostic decisions and prognosis should be examined. Infection control measures for laboratory personnel should be put in place and human resource capacity strengthened.

Arrangements should be established to ensure that new technologies are fast-tracked into programmes. Methods for rapid evaluation also need to be developed. Surveillance systems should be strengthened to allow early identification of unusual events.

Other areas for consideration include the impact of international support for TB control in country-specific contexts, documenting the evidence and research on ways to improve governance and management.

**Research priorities for malaria/VBDs**

Four diseases were considered: malaria, DHF, chikungunya and Japanese encephalitis (JE).

**Epidemiology**

Standard protocols for malaria mortality and morbidity are being developed by SEARO in collaboration with the National Institute of Malaria Research (NIMR) and Centre for Global Health Research (CGHR) for India, and this can be adapted for use in other epidemiological settings/countries. A standard protocol on the morbidity and mortality due to DF and chikungunya are yet to be developed.

Factors triggering the changes in epidemiology/trends of DF and reappearance of chikungunya after a long gap include lifestyle changes, socioeconomic factors, climatic factors, environmental changes, land-use features, and vector bionomics, among others. The role of *Aedes albopictus* and *Aedes aegypti* in the transmission dynamics of DF and chikungunya during epidemic and non-epidemic periods needs to be evaluated. Monitoring of climate change for the incidence and extension of the geographical distribution of malaria and other VBDs should be undertaken.
**Prevention and disease control**

For DF and chikungunya, some of the gaps that need to be examined include the use of an insecticide-treated curtain for DF, validation of vector control tools for DF/chikungunya (efficacy and cost-effectiveness) and their acceptance by the community. A longer-term goal is the development of vaccines for DF, chikungunya and malaria.

**Access, health seeking behaviour and equity**

The social, cultural and behavioural practices leading to disease transmission should be identified (with particular attention to tribal, ethnic and other special groups), especially in relation to the implementation of IVM. Better understanding is also needed on the role and application of communication for behavioural impact (COMBI) in DHF and chikungunya control, as well as safe disposal of used LLINs.

**Case detection and diagnosis**

Priorities for research include the use of rapid and sensitive diagnostic tests for vivax malaria, DF and chikungunya. A rapid test for identifying persons with G6PD deficiency is another need. An area for exploration is the application of geographical information systems (GIS)/remote sensing (RS) to detect malaria and other VBDs.

**Treatment and clinical issues**

Variations in the clinical manifestations of chikungunya need to be evaluated (such as the morbidity period). The utility of rectal artesunate in specific population groups and settings should be ascertained. Reasons for the severe clinical manifestations of vivax malaria must be identified. Studies could be conducted on new drugs/combinations for falciparum malaria.

**Health systems and research capacity building**

Other issues include epidemic preparedness to respond to natural disasters, drug quality issues, and adherence of the public and private sector to national drug policies. A regional laboratory for the genetic characterization of DF and chikungunya viruses should be set up; WHO could identify potential institutes in the Region. A regional network for monitoring and management of insecticide resistance could be established.
Research priorities for EIDs

In terms of potential public health impact, for many EIDs outbreak potential is as important as disease burden. Research may be more difficult to conduct in the context of an outbreak. Drivers of the emergence of diseases may be beyond the remit of human health and, as there are many such diseases, priority may need to be allocated on which ones to study.

Epidemiology

For dengue, although the diagnosis in an individual may be difficult, the overall burden is relatively well known. Reasons for the persisting burden of disease are fairly well characterized. Better mapping of circulating dengue serotypes and serological evidence of previous infection with other serotypes might help to inform risk assessment. Sero-surveys and studies are needed to better understand the burden of human avian influenza. Similarly, knowledge on the syndrome of severe acute respiratory infection (SARI) is insufficient. Better understanding is also needed on the risk factors for human infection with AI.

The aetiology and burden of acute encephalitis is largely unknown. The syndrome includes emerging diseases such as Nipah virus. Diagnostic capacity is limited in many countries. There is a need for combined epidemiological/clinical/laboratory studies to better understand the aetiology and burden of known and unknown encephalitis viruses (both in normal situations and during outbreaks). This can be done now by countries with good capacity, while other countries can consider collecting data and banking specimens.

EIDs are often unstable, and thus need continuous monitoring for changes in the pattern of disease. Some EIDs are uncommon and rare diseases and are intrinsically difficult to study, especially if the cases are spatially/temporally distributed; thus collaboration is essential. Research should also be conducted on factors that drive emergence (such as animal–human interface, climate change, migration and deforestation). Better understanding is also needed on the emergence of antimicrobial resistance.

Prevention and disease control

For dengue, it is not certain if the interventions are cost effective (or if comparisons of the cost-effectiveness of different approaches have been undertaken). Although knowledge of vector control is good, there are some gaps.
Access, health seeking behaviour and equity

There is a need to understand why interventions for dengue appear not to reach the most vulnerable populations and the implementation of community-based interventions.

Case detection and diagnosis

For dengue, early detection of clinical disease is important to ensure optimal treatment and so there is a need to develop simpler and less expensive rapid diagnostic tests. For human avian influenza, surveillance/case detection is critical, but there is a need to evaluate existing surveillance systems to try and establish what works best. As early detection is critical, a cheap, effective rapid test for detection is needed.

Treatment and clinical issues

While optimal clinical management of dengue is well described, there is a problem in converting knowledge into practice. A better description of the course of clinical disease and “critical decision points” may be of benefit. Trials of combination therapy should be conducted for AI.

Health systems and research capacity building

In the long term, capacity for research on dengue and an effective vaccine are needed. It would also be of value to map current knowledge and current/planned research initiatives for all EIDs, and consider the issue of advance planning (research preparedness) for conducting research during outbreaks.

Research priorities for neglected tropical diseases (NTDs)

Epidemiology

The SEA Region bears a huge burden of leishmaniasis and lymphatic filariasis (LF). Both lymphatic filariasis and leprosy produce disabilities. Key areas for research include estimation of the burden of NTDs in endemic countries, including “new” NTDs such as trachoma.
**Prevention and disease control**

Elimination strategies include vector and environmental control, preventive/curative chemotherapy for soil transmitted helminthiasis (STHs), new treatment for EIDs, evidence-based interventions in LF and combination treatment for leishmaniasis. Monitoring tools should be developed and tested to determine the efficacy of any elimination programme, for example development indicators to determine when to stop MDA in lymphatic filariasis. Studies should also be undertaken to assess different strategies for delivery of drugs and diagnostics and measure taken to ensure accessibility of diagnostics/drugs and supportive treatment, including treatment of STH in all children (i.e. those attending and not attending school). Area mapping should also be conducted for a cluster of NTDs.

Medium-term research priorities include monitoring drug resistance in kala-azar and STH, assessing the effect of insecticides/insecticide-treated mosquito nets (ITMN) and monitoring resistance, studying the effectiveness of a shorter duration of treatment for leprosy, periodically review progress of programmes and reassessing disease burden and examining the effect of improved water and sanitation on the elimination of lymphatic filariasis/STH. A long-term research priority is to assess the sustainability of programmes for the elimination of each NTD.

**Access, health-seeking behaviour and equity**

Community involvement in control of leishmaniasis and lymphatic filariasis is relatively poor, as is accessibility of services and logistics, including drugs. Control of NTDs is linked with poverty elimination: they also cause a considerable amount of social stigma. These issues need to be better understood.

**Treatment and clinical issues**

Important subjects for research include a comparison of DOTS versus non-DOTS regimens in leishmaniasis, describing the outcome of combination treatment for kala-azar, and assessing the safety of drugs for STH and kala-azar in pregnancy.
Health systems and research capacity building

Key areas include monitoring and quality assurance of drugs and diagnostics, conducting collaborative research with border-sharing countries on common NTDs, and assessing the need for and response to capacity building for an integrated approach to NTDs.

Research priorities for ARI/diarrhoea

It is believed there is significant underreporting of diarrhoea, which should probably be included as part of the routine notification in every country. Since reporting is sub-optimal, there is a need to assess the proportion of cases that are being missed. ARI and diarrhoea account for the largest number of deaths due to infectious diseases in children below five years of age; however, the degree of underreporting means that the magnitude of the problem may be greater than recorded.

Epidemiology

There is a need to study the disease burden and the extent of under-reporting.

Prevention and disease control

Despite the availability of extensive knowledge on available interventions, there is an implementation gap. The reasons for this must be studied, and interventions to close the gap should be identified. A better understanding is also required of models of service delivery and on programmatic and policy issues, as well as the impact that underreporting of diarrhoea has on prevention and control programmes. The cost-effectiveness of current and potential future interventions should also be examined. Longer-term research needs include the development of vaccines for shigellosis.

Access, health-seeking behaviour and equity

Research should be conducted on how acute diarrhoeal and respiratory illnesses are perceived at the community level. Research is also needed on why existing interventions do not reach those most in need. Vulnerable groups should be identified, health-care-seeking behaviour better characterized and the reasons for inequity in access to health care explained.
Case detection and diagnosis

Research should be conducted to develop simplified diagnostic tools for ARI.

Treatment and clinical issues

Further research needs to be conducted on clinical management of both ARIs and acute diarrhoea.
Mechanisms to strengthen the linkages between research institutions and national programmes in the Region

SEA Region countries are recommended to: (1) Establish or strengthen national research councils; (2) review/adapt any existing policies on health research; (3) establish regional and national networks for research institutes (for example, addressing publications, reports, training programmes, meetings and workshops); (4) promote joint activities between programmes and research and academic institutes (joint proposals, research, seminars, programme reviews, etc.); and (5) ensure funding and other resources to cover all aspects of research (especially operational research) by means of national (MOH) and other agencies, and WHO.

A number of steps may be required to ensure sustainable and productive collaboration. These include revitalizing existing research advisory committees, development of research guidelines, supporting institutional capacity for research (including exchange of expertise among institutions), advocating for increased funding (such as a proportion of the programme budget for research), and joint implementation of research activities, including programme evaluation and operational research.

WHO has an important role in supporting regional and international networking, incorporating operational research into its programme budget, organizing regional forums (such as seminars to disseminate research results, share research experiences and lessons learned, etc.) and supporting the establishment of a database of national research institutions and expertise.
Mechanisms for developing practical plans to promote and develop operational research in Member States

Research institutes should collaborate with all relevant stakeholders in designing and implementing research. Research should also be included in any national strategic plan for communicable disease control. Advocacy on the importance of operational research for programmes is also important within countries, especially with ministries of health.

A number of follow-up actions will be important to ensure the efficient utilization of results. Firstly, operational research for each country should be reviewed to identify the best practices. Secondly, self-assessment of the impact of operational research on each programme should be encouraged. Lastly, the benefits of operational research should be disseminated through the mass media and public audit system.

WHO has a number of critical roles. For example, it can help to empower and advocate for programmes and research institutions in each Member State to promote operational research. WHO Collaborating Centres, (including laboratories) in each country can also support the respective programme managers. WHO could also provide a forum for discussion on additional ways to take this agenda forward and could assist in disseminating evidence on benefits of operational research to Member States.

Building institutional and individual capacity for research in communicable disease control

Member States should build research leadership capacity out of existing human resources and/or research institutions and promote a research culture in the country through resource sharing and training. It is also important to advocate for the importance of research and its findings among policy-makers and others who use the results of research. Human resources and infrastructure development should be synchronized, communication channels created and dissemination strategies created to feed policy-makers. Research skills should be developed at all levels in Member States through intra- and intercountry links within the Region (facilitated by WHO). Consideration should be given to creating a fast-track channel for translation of research into policy in certain areas by piloting and learning from the successes and obstacles of countries in the Region. Research should be approached as part of a developmental system.
The role of WHO in capacity building can include providing fellowships in research leadership for Member States, supporting the mentoring of researchers in the Region by providing resources and technical support, “packaging” successful findings from operational research within the Region (branding) and disseminating these to the right audiences including policy-makers, facilitating international collaboration among Member States and beyond and facilitating resource mobilization for countries by liaising with development partners.

**Steps to sustain actionable research in prevention and control of communicable diseases**

Research clearly requires financial support. There should be national ownership and national evidence should be generated to facilitate engagement with donors. Political commitment is vital, which requires good advocacy. Capacity building should be ensured so that sound generic protocols can be developed for quality and multicentre research. Monitoring and evaluation of the research programme is important so that progress can be measured against stated goals and objectives.

WHO has an important role to play in advocating for the importance of research in national and international forums. It also has a unique role and mandate in facilitating coordination and networking between countries. It can also play an important role in evaluating and disseminating evidence to help inform policy decisions. It can facilitate capacity building and provide direct technical assistance for research.
Conclusions and recommendations

The meeting agreed on the following recommendations:

Recommendations for Member States

- Mandate the inclusion of an appropriate research agenda into national health policies and programmes.
- Allocate at least 5% of the budget for communicable disease programmes to research.
- Establish a national database of all ongoing research relevant to the programme, including drug trials, development of vaccines and diagnostic tools, and share this information both within the country and with other countries of the Region.
- Establish a mechanism such as a national commission on research to interface between researchers and policy-makers/programme managers to facilitate the translation of research into policy and strategy.
- Set up a network of institutes engaging in research, such as national centres of excellence, academic institutions, and WHO Collaborating Centres to support research relevant to national programmes, and facilitate close collaboration between researchers and programme managers.
- Build/enhance institutional and individual capacity for preparing quality research proposals and conducting research that can be applied for the prevention and control of communicable diseases.
• Utilize available financial resources, e.g. Global Fund for AIDS, Tuberculosis and Malaria, to support research on country-specific contexts.

• Consider organizing similar workshops in Member States, bringing together policy-makers, researchers, programme staff and other stakeholders to identify gaps and priority areas for research in countries.

**Recommendations for WHO**

• Discuss research as a part of the agenda of the Regional Committee and Health Ministers’ meeting.

• Collaborate with Member States in building research capacity at the national, institutional and individual levels, specifically in training researchers on research management, and in engaging and applying research in disease control programmes.

• Collaborate with TDR and other partners on research relevant to programmes in the Region, including emerging global issues such as climate change and the current financial crisis.

• Assist with the design of operational research protocols and coordinate multicentre studies to address programme challenges in an effective manner.

• Facilitate networking of researchers and laboratories, as was very effectively done during the SARS containment in Asia in 2003.

• Establish regional mechanisms to set research agendas, and develop standard research protocols which can be used or adapted by countries when needed.

• Establish a specific programme on ARI/CDD research and control. This should be discussed at the Regional Committee Meeting.

• Facilitate sharing/dissemination of research information among countries by various means including through a public health journal of the SEA Region.

• Review the progress made on these recommendations after two years.
At the concluding session, Dr Narain thanked the participants for their active participation and valuable contributions in the meeting. The meeting was successful in highlighting the crucial role of research and development in communicable diseases control, elimination and eradication. The research priorities identified in the meeting will be disseminated widely to national programme staff and researchers in the Member States and to the partners for cooperation and support. WHO is committed to accord research a high priority and continue more vigorously in collaborating with countries to ensure that research gets a priority in all programmes at the country level.
Annex 1

Programme

Wednesday, 4 March 2009

0830–0900 Registration

0900–1000 Opening session

- Inaugural address
  Dr Samlee Plianbangchang
  Regional Director, WHO/SEARO

- Objectives of the meeting
  Dr Jai P. Narain, Director
  Communicable Diseases, WHO/SEARO

- Introduction of participants
- Group photograph

1000–1030 Overview of communicable diseases in the South-East Asia Region
  Dr Jai P Narain

1030–1100 New paradigms on research priorities of neglected diseases of poor and the vulnerable
  Dr Rosanna W. Peeling

1100–1230 Research priorities from the perspective of national programmes

- Tuberculosis
  Dr P.R. Narayanan

- HIV/AIDS
  Dr Wiput Phoolcharoen
1330–1530 Research priorities (contd.)

- Malaria
  Dr Ye Htut/Dr A.P. Dash

- Vector-borne diseases (VBDs) in particular dengue and chikungunya
  Dr Sarla Subba Rao

- Emerging diseases including Avian Influenza
  Dr Nyoman Kandun

1600–1700

- Neglected Tropical Diseases (NTDs)
  Dr M Abdul Faiz

- ARI/CDD
  Dr M.K. Maskey

1700–1800 Reception

Thursday, 5 March 2009

0900–1030 Climate change and communicable disease research
  Dr G B Nair and Dr A.P. Dash

1100–1230

- Introduction to Group Work on setting the research agenda: research priorities for control of communicable diseases

- Group work carried out in six major areas, viz. HIV, TB, malaria, VBDs, emerging diseases, NTDs, ARI/CDD

1330–1500 Group work (continued)

1530–1700 Group Work presentations and discussions
Friday, 6 March 2009

0900–0930 From research to policy formulation and implementation
*Dr Jigmi Singay*

0930–1230 Introduction to Group Work on
1. Mechanism to promote linkages between research institutions and national programmes in the Region
2. Plans and follow-up actions to promote operational research in member countries
3. Building institutional and individual capacity for research into communicable disease control
4. Using evidence from research: translating research outcomes into policies and strategies

1330–1500 Presentation of group work and discussion

1500–1600 Conclusions and recommendations

1630 Closing
Annex 2

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Research priorities in communicable diseases
Annex 3

**Acronyms and abbreviations**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AI</td>
<td>avian influenza</td>
</tr>
<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
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<td>ANC</td>
<td>antenatal care</td>
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<td>ARI</td>
<td>acute respiratory infection</td>
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<tr>
<td>ART</td>
<td>antiretroviral treatment</td>
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<td>ARV</td>
<td>antiretroviral</td>
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<tr>
<td>CBO</td>
<td>community-based organization</td>
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<tr>
<td>CDD</td>
<td>control of diarrhoeal diseases</td>
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<tr>
<td>CGHR</td>
<td>Centre for Global Health Research</td>
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<tr>
<td>COMBI</td>
<td>communication for behavioural impact (strategy)</td>
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<tr>
<td>DALY</td>
<td>disability-adjusted life year</td>
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<tr>
<td>DEC</td>
<td>diethylcarbamazine</td>
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<tr>
<td>DF/DHF</td>
<td>dengue fever/dengue haemorrhagic fever</td>
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<tr>
<td>DOTS</td>
<td>directly observed treatment, short-course</td>
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<tr>
<td>EID</td>
<td>emerging infectious disease</td>
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<tr>
<td>G6PD</td>
<td>glucose-6-phosphate dehydrogenase</td>
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<tr>
<td>GIS</td>
<td>geographical information systems</td>
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<tr>
<td>HIS</td>
<td>health information systems</td>
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<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
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<td>HSS</td>
<td>health systems strengthening</td>
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<tr>
<td>HTM</td>
<td>HIV, tuberculosis, malaria</td>
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<tr>
<td>IDU</td>
<td>injecting drug user</td>
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<tr>
<td>IEC</td>
<td>information, education and communication</td>
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IHR  International Health Regulations
ITMN  insecticide-treated mosquito nets
ITN  insecticide-treated net
IVM  integrated vector management
JE  Japanese encephalitis
LLIN  long-lasting insecticide-treated net
MARP  most-at-risk populations
MCH  Maternal and Child Health
MDA  mass drug administration
MDR  multidrug-resistant
MOH&FW  Ministry of Health and Family Welfare
MSM  men who have sex with men
NGO  nongovernmental organization
NIMR  National Institute of Malaria Research
NTD  neglected tropical disease
PCR  polymerase chain reaction
PHC  primary health care
PITC  provider-initiated testing and counselling
PLHIV  people living with HIV
PMCT  prevention of mother-to-child transmission (of HIV)
PPM  public–private mix
R&D  research and development
RS  remote sensing
SARI  severe acute respiratory infection
SARS  sudden acute respiratory syndrome
SEA  South-East Asia
SEARO  Regional Office for South-East Asia
STH  soil transmitted helminth
STI    sexually transmitted infection
TB     tuberculosis
TDR    UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases
VBD    vectorborne disease
VCT    voluntary counselling and testing
WHO    World Health Organization
WPR    Western Pacific Region (of WHO)
XDR    extensively drug-resistant
Research in communicable diseases can lead to better understanding of the epidemiology of the diseases as well as the social, economic, cultural, environmental, ecological and political factors that influence their propagation. Research is essential for the development of new tools and interventions, and need to be geared towards the development of evidence-based policies and interventions. The need for research as a part of strategic information and evidence base for developing effective and efficient disease interventions is also well recognized. Besides old challenges, research should address new challenges such as climate change and its impact on health. Given the multifaceted dimension of communicable diseases, it is imperative to identify priority research areas so that effective solutions can be developed to mitigate the impact of communicable diseases in South-East Asia Region.

Research priorities in communicable diseases

Report of a regional meeting
SEARO, New Delhi, 4-6 March 2009