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*Regional
Consultative Process
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REPORT OF THE RETREAT ON THE CARIBBEAN
HEALTH RESEARCH AGENDA

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Summary

The Caribbean Health Research Council (CHRC) arranged a retreat for stakeholders in Caribbean health to outline a research agenda for the region as part of the consultative process for the International Conference on Health Research for Development. The meeting was held on 13-15 July 2000 and was attended by representatives of governmental, academic and professional organizations active in the field of health research in the Caribbean. Various persons had been invited to present discussion papers on six of the eight Caribbean Cooperation in Health (Phase II) priority areas, and working groups were designated to identify health research issues within the priority areas.

The debate was structured around the discussion papers on the following key themes: issues in health research: a Caribbean perspective; food and nutrition; chronic non-communicable diseases; mental health; maternal and child health; communicable diseases; and environmental health.

The paper on issues in health research from a Caribbean perspective outlined the characteristics of health research in the region. Research funding comes from a variety of sources with less than 10% coming from governments. A majority of research is done at universities and health research institutions, but there is little collaboration. Constraints include inadequate funding and facilities; problems with data collection and analysis; and lack of supporting staff. In reviewing research in the last 50 years attention was drawn to inadequate linkages between the producers of research information, intermediary organizations, such as ministries and funding agencies, and end users. The neglect of local communities was also cited.

The paper on food and nutrition addressed the major problems of obesity; anaemia and malnutrition; and household food security. The availability, accessibility, consumption and nutritional status of food were cited as key factors. Anaemia continues to be a problem in pregnancy, in children under the age of four, and in school age children.

The presentation on chronic, non-communicable diseases dealt with the epidemiological transition in terms of models applicable to changes in lifestyle and urban–rural differences, including the management of risk factors such as obesity and cholesterol.

In the presentation on mental health the wide range of mental health disorders was underlined. Most so-called mental health services in the Caribbean are still focused on psychiatry, not mental health. Much research is needed on the prevention of mental disorders and substance abuse and there is a need to train people to deal with stress at various stages of the life cycle.

The paper on maternal and child health pointed out problems of data collection and analysis. For example, 91% of stillbirths were not registered in a recent national study. Perinatal mortality is still high.

The paper on communicable diseases referred to the globalization of infectious diseases and the emergence of antibiotic-resistant organisms. Specific areas for research include HIV/AIDS, tuberculosis, food- and water-borne illness, and tropical and vector-borne diseases (VBD), including dengue, yellow fever, and malaria.

The presentation on environmental health considered various aspects of the problem, ranging from the economic and social impact of poor environmental health practices, water supply, solid waste management, waste water management and excreta disposal, pollution control, management of chemicals, occupational health and safety, food safety and coastal water quality. Baseline studies on air pollution (indoor and outdoor) and relationship to health and quality of life were significant.

After presentation of the discussion papers, four groups examined the topics presented and all identified several common issues under two headings of general research issues and cross-cutting issues. General issues included the need for health information systems; a “research culture”; capacity strengthening; staff training, collaboration between ministries, universities and other groups; dissemination of research results, fund-raising mechanisms; and reduction of “brain drain”. Under cross-cutting issues mention was made of social and economic determinants of health: risk factors, equity and gender issues; lifestyle changes; translation of research findings into policy and action.

In the ensuing debate a number of research issues in priority health areas were determined and are listed in detail in the report. In concluding, participants elaborated a series of recommendations on key themes for inclusion in the region’s input to the International Conference on Health Research for Development, which included the following: human capacity development; the “brain drain”; country first (the subsidiarity principle); sustainable funding for development; better networking; links between health and development; health research for greater equity and the alleviation of poverty.

1. The retreat

The Caribbean Health Research Council (CHRC), through its Director of Research, Dr David Picou, arranged a retreat for representatives of selected stakeholders in Caribbean health to outline a research agenda for the region. Eighteen persons met in Saint Lucia for two and a half days, from 13 to 15 July 2000, to discuss the issues, using the framework of the Caribbean Cooperation in Health, Phase II (CCH II). Participants were representatives of: the Ministries of Health of Curaçao, Saint Lucia and Trinidad & Tobago; the University of the West Indies (UWI) in Barbados, Jamaica and Trinidad & Tobago; the Caribbean Food and Nutrition Institute (CFNI); the Caribbean Epidemiology Centre (CAREC); the Caribbean Environmental Health Institute (CEHI); the Caribbean Community (CARICOM) Secretariat and the PAHO/WHO Office of Caribbean Programme Coordination (CPC).

Various persons had been invited to present discussion papers on 6 of the 8 CCH II priority areas, and working groups were designated to identify health research issues within the priority areas. A list of participants, rapporteurs, the agenda, the objectives of the Retreat and the composition of the working groups are contained in Annex I.

1.1 Issues and initiatives

Dr St Catherine, Chief Medical Officer, Saint Lucia, noted that Saint Lucia spent US\$54 million on health from a \$600 million budget. He indicated that the Ministry of Health had recently been advised by the Ministry of Finance of the need to spend such sums as were allocated to it effectively. Thus, decisions to spend funds would have to be justified at every step, and he considered that this workshop would help in the decision making process. In addition, the Chief Medical Officers (CMOs) in the Caribbean had agreed that what was done through the Caribbean Health Research Council (CHRC) should be consistent with the work that they have to do. The beneficiaries of the programmes would be the general population, and what was done should improve health services. The CMO noted that there was an uneasy feeling in some quarters regarding the clarity and relevance of research — how would research findings be taken from CHRC meetings and applied to the national situation?

He further noted that specific issues were being identified as priorities. Heads of Government were looking into HIV/AIDS, which was now relevant to everyone. The Government of Saint Lucia would not fail to support CHRC, if the issues addressed by the Council were relevant.

Dr David Picou, Director of Research, Caribbean Health Research Council, provided some background to the meeting and noted that two important strategies had been adopted at the global level to address health: *Health for All By The Year 2000* and *A Strategy for Action in Health and Human Development* (1991) by the Task Force on Health Research for Development.

In the Caribbean, several regional initiatives had been implemented during the past three decades:

1975:

The Maternal and Child Health Strategy, revised in 1983 and 1992

1978:

Regional Strategy and Plan of Action for Environmental Health

1980:

Regional Strategy and Plan of Action for Primary Health Care (PHC), in response to the Declaration of Alma-Ata, though most countries had already been using PHC as a major vehicle for delivering health for several years

1981:

Regional Food and Nutrition Strategy

1986:

Caribbean Cooperation in Health (CCH), in response to deteriorating conditions in health following global economic crises. CCH was a milestone in health in the Caribbean - few regions in the world have anything like it and few have the regional structures that exist in the Caribbean. Dr Picou noted that the Caribbean could be justly proud of its regional institutions.

He further noted that at the global level an evaluation was being made of the impact of recommendations made ten years ago on reducing global inequities in health through health research. Regional consultations have been held with the aim of assessing the status of health research and its impact on development in the previous decade. The current meeting had similar objectives. The Reports of the Regional Consultations would form the basis for a discussion paper which, together with the regional reports, would inform the deliberations at the International Conference on Health Research for Development, to be held in Bangkok in October 2000. The objectives of the Conference were:

- To review progress in health research over the past decade and to draw lessons for the future
- To agree on a common strategy for health research for the coming years
- To agree on a framework for improved international cooperation in health research.

Thus, developing countries would have a major input in determining the health research agenda for the next few years.

Major donors and development agencies meeting in Oslo in May 2000 had expressed concern about capacity building and research for development. They had recommended that more consideration be given to development issues in their regular research funding and that national institutions in the

South should have a greater opportunity to participate in setting research priorities and defining the international research agenda. The donors were therefore sensitized to the need to support research in the developing world. It was therefore necessary to have a well thought-out plan for research for the region to present to the Bangkok meeting.

The retreat was structured around discussion papers in the various CCH II priority health areas, but there were no papers on human resource development and health systems development. Working groups would examine these areas and report back to plenary.

In speaking of the Caribbean in this report, it should be understood that countries referred to were usually the English-speaking Caribbean. In international fora there was a tendency to assume that the Caribbean included the Dutch-, Spanish- and French-speaking Caribbean countries.

Dr Bev Barnett, Chronic Diseases and Health Promotion Advisor, PAHO/WHO Office of Caribbean Program Coordination, made a presentation on CCH, highlighting milestones in the development of phases I and II, the priority and sub-priority areas of CCH II; and proposed mechanisms for the implementation of the initiative.

These included:

- A strategic regional plan developed for each priority area
- Inclusion in national health plans
- Inclusion in PAHO's technical cooperation programme (biennial programme budget)
- Development and submission of projects - TCC etc. - to mobilize resources.

Points raised in discussion after this presentation included the following:

- Did the process of priority setting for CCH II involve community participation?
- National, not regional, priorities should be paramount
- CCH II is not a comprehensive plan for health in the region — it is a specific initiative addressing specific aspects of specific issues
- The priority-setting process used in CCH II was far from perfect and needs to be better defined and more transparent, but CCH II represents a work in progress and is something to work with
- Knowledge transformation is as important as networking, especially where countries have limited resources
- CCH II needs supporting agendas addressing research, communications and resource mobilization.

1.2 Discussion papers

Discussion papers were presented on: Issues in health research: a Caribbean perspective; Food and nutrition; Chronic non-communicable diseases; Mental health; Maternal and child health; Communicable diseases; and Environmental health. Highlights of the presentations are set out in the following sections.

2. Issues in health research: A Caribbean perspective

Dr David Picou, Director of Research, CHRC, Trinidad

2.1 Characteristics of health research in the region¹

- A significant proportion of research is individually driven and financed
- A majority of research is done at universities and health research institutions but there is too little collaboration between the UWI and the public health authorities, except in Trinidad & Tobago
- Less than half of completed research is published in peer reviewed journals
- The proportion of research commissioned or conducted by governments is small
- Constraints perceived by researchers include inadequate funding, time, equipment and facilities; problems with data collection and analysis; and lack of supporting staff
- Research funding comes from a variety of sources, mainly the researcher's own resources; grants from universities; CHRC; pharmaceutical companies; regional private and public sectors; and international agencies. Less than 10% comes from governments.

2.2 A review of research in the Caribbean in the last 50 years^{1,2}

Main features include:

- Lack of a "research culture" in the region
- Researchers had inadequate time, facilities, funding and support
- Too few researchers received financial support from governments
- Research was primarily descriptive, epidemiological and clinical, with certain notable exceptions. However, much of it was based on the major health problems of the region

¹ Research and the Health Priority Areas for the Caribbean. Picou D, WIMed J:49(Suppl 2) 1-2, 2000

² Health researchers in Trinidad and Tobago: their characteristics, interests and problems. Simeon DT, Lloyd E and Picou D. WIMed J48: (Suppl 2) 70-71, 1999

- Failure to communicate to planners, policy makers and the public in general, how and why research findings could contribute to improving the region's health by informing health policy, programmes and practice. Related issues were:
 - Inadequate linkages between the end users of research information, the producers of such information and intermediary organizations such as ministries of finance and planning and funding agencies
 - Neglect of community stakeholders such as the private sector, NGOs, trade and credit unions, religious groups and the media as partners to facilitate utilization of research information
 - Too few full-time researchers and posts for them in universities, research institutions and ministries of health
 - Ineffective research administration and management.

3. Food and nutrition

Dr Fitzroy Henry, Director, Caribbean Food & Nutrition Research Institute (CFNI), Jamaica

The presentation noted that CCH was a regional initiative to support national efforts and that health promotion was a major component of CCH. CFNI followed a pattern of basic research, applied research, demonstration projects, expert recommendations, health education/awareness campaigns, community participation programs (NGOs, schools, health services, etc.), national guidelines/programs, industry involvement, and national policy/legislation. These activities were not necessarily conducted in sequence.

The major food and nutrition problems were obesity and co-morbidities; anaemia and energy- protein malnutrition; and household food security. Information needs included prevalence/incidence rates and trends, groups at risk and effectiveness of control measures. The emphasis was on disease prevention and health promotion. Applied research involved not only investigating the efficacy of the prevention technology, but also the effectiveness of its application to the general population.

Important factors included food availability (local production, importation); food accessibility (SES, income, price, marketing, distribution); food consumption (age, gender, food preparation, behaviour, nutrition, education, activity level); and nutritional status (genetics, health status). Given the age and sex distribution, fertility rates and activity levels, the estimated per capita energy and protein requirements for the Caribbean are 2250 kilocalories and 43 g of protein, respectively. Most Caribbean countries have a sufficiency or over-abundance of energy and nutrients to meet their population's needs. However this excess food availability must be interpreted with caution in light of the region's dependence on imported food and the continuing presence of pockets of malnutrition in certain countries. Hence, it is important to look at household levels as well as at national levels of food security.

3.1 Obesity research agenda

- Focus on efficacy of prevention measures and on effectiveness of applying interventions to the general population and high-risk groups
- Identify factors which encourage individuals to choose and maintain healthy behaviours relating to obesity
- Identify social policies that support healthy surroundings that will encourage physical activities and nutritional well being
- Identify health risks and benefits particularly related to lifestyle aspects of obesity control

Target groups for research regarding obesity included the media, general population, high-risk groups, public policy makers, schools, work sites, community organizations and the health care system, and behavioural research was important.

3.2 Research agenda for anaemia

- Determine constraints to the quantity and frequency of supplies through the distribution system
- Assess reasons for non-compliance of clients
- Determine side-effects leading to intolerance
- Ascertain information requirements for nutrition education to complement supplementary programs in clinics, schools and communities
- Conduct studies on iron content of local foods
- Conduct studies on consumption of foods which affect iron status
- Retrospective studies on consequences of anaemia on maternal and child health
- Develop systems to monitor iron concentration in fortified foods.

Anaemia continues to be a problem in pregnancy, in children under the age of four, and in school-age children.

3.3 Issues for research in food security

- Assessing levels of household food security - geographic location, population groups, causes
- Determining patterns of household insecurity
- Uncovering coping strategies of households to reduce vulnerability
- Identifying economically viable food diversification strategies
- Determining magnitude and risk factors for malnutrition in vulnerable groups.

4. Chronic, non-communicable diseases (NCDs)

Professor Terrence Forrester, Director, Tropical Medicine Research Institute, UWI, Jamaica

The epidemiological transition was described in terms of models applicable to changes in lifestyle; urban-rural differences and factors, such as the demographic transition and improved infant mortality. Comparative studies of hypertension prevalence in the USA, Nigeria and the Caribbean among Blacks were described, and the increasing burden of diabetes highlighted. Factors contributing to the increasing prevalence were increased food security, decreased physical activity and increased GDP, the latter resulting in increased availability of food and fat. It was noted that in Jamaica there was a large pool of persons to contribute to the increasing prevalence: there was a 2% and 15% prevalence among men and women, respectively, of impaired glucose tolerance (IGT). Associations between increased fat intake and breast and colorectal cancer and ischaemic heart disease were highlighted.

In discussion it was noted that socio-economic status (SES) could also contribute to the increasing prevalence of NCDs and that inequities affected health outcome - the poor in society were experiencing a disproportionate burden of NCDs.

There is a need to re-focus the research agenda to reflect the shift in the mortality and morbidity patterns in the Caribbean. Fundamental to this are surveillance systems to assess the burden of disease and risk factors. Research is also needed to develop, implement and evaluate “best practices” for the CN-CDs. The question of whether policies are being supported by a concrete shift in the agenda of the region remains to be answered.

5. Mental health

Dr George Mahy, Senior Lecturer in Psychiatry, UWI, Barbados

Most of the so-called mental health services in the Caribbean are still psychiatric, not mental health, services. Some countries which do not have a psychiatric hospital feel the need to have a long-stay facility, but it should be recognized that psychiatric services are only a part of the programme. There is a wide range of mental health disorders and there is value in the legal, educational, and social services aspects of mental health management, areas covered by several ministries.

The size of institutions is also an issue - in Jamaica, with a population of 2.5 million, there are 1000 inpatients, whereas in Barbados, with a population of 260 000, there are 640 inpatients. Belize's population is the same as Barbados' and there is a psychiatric inpatient population of 50. There is a need to define criteria for admission and discharge and ways to integrate mental health services into general health services. Psychiatric units should be provided at general hospitals rather than mental hospitals.

Much research is needed in the preventive aspects of mental disorders and substance abuse and to determine the need for halfway houses, etc. Human resource development is important – many of the current workers are “brave and unskilled”, and there is a need to train people to deal with the stresses that occur at various stages of the life cycle.

There should be early preventive measures against drug abuse, including legal drugs. Suicide, which is increasing in some countries, is an important research issue.

Consideration should be given to persons returning to the Caribbean from developed countries, who might have mental illness or develop it after they return. It was noted that the General Health Questionnaire has been validated for Caribbean populations and could be used to assess the situation – such studies have been done in Trinidad & Tobago and Curaçao.

The issue of violence and its determinants is a research priority. Depression in adolescents is yet another important research issue.

6. Maternal and child health

Dr Zulaika Ali, Head, Neonatal Unit, Senior Lecturer (Child Health), UWI, Trinidad

6.1 Background

The health of mothers and children has been recognized as a priority in the Caribbean for over 60 years. The first regional Maternal and Child Health Strategy for the Caribbean Community resulted from deliberations of a Technical Group Meeting held in Antigua in 1975. This document was revised in 1983 at a similar meeting in Barbados. This revision was strongly influenced by the international drive towards primary health care. The strategy emphasized risk approach and the selection of priorities, coordination of targeted activities through adequate health information systems and continuous monitoring and evaluation of health service delivery.¹ These initiatives together with improvements in social and economic conditions, availability of potable water, sanitation and wide immunization coverage have led to decreased mortality and morbidity in the child population.²

6.2 Research priorities

- There is a problem with data collection, retrieval and analysis - 91% of stillbirths were not registered in a study in Jamaica done some years ago. How to improve quality and standardization?
- Reproductive health and gender issues
- How to encourage early antenatal registration
- Improve management and early detection of sexually transmitted infections (STIs); HIV in pregnancy: incidence, prevalence; knowledge, attitudes and practice (KAP) on screening for STIs and HIV
- Epidemiological studies on high risk problems in pregnancy, maternal mortality, abortion as a cause of maternal morbidity and mortality, complications of pregnancy and post-delivery, unchanging stillbirth rate over the past 30 years
- Maternal nutrition and intrauterine programming; anaemia in pregnancy - what is its biological significance? Why do women remain “anaemic” in spite of treatment?
- Diabetes and hypertension
- Epidemiological studies on violence against women; cancers of the reproductive tract and breast; mental illness, substance abuse
- Infant and child health - epidemiological studies on acute respiratory infection and asthma; HIV/AIDS; intentional injury and accidents; breast feeding and nutrition

- Health of school age children and adolescents - prevalence, risk factors and unmet needs of the disabled; child abuse - epidemiology, legal and social issues; determinants of high risk behaviour, teenage pregnancy, violence, suicide and depressions, injuries and accidents, school problems and conflict
- Research structure and management - research must be sustainable, regional in scope and support.

7. Communicable diseases

Dr Parimi Prabhakar and Dr Samuel Rawlins, Caribbean Epidemiology Centre (CAREC), Trinidad

- Goal: To enhance and contribute new knowledge in disease prevention and control of communicable diseases by stimulating, promoting and coordinating public health research in the Caribbean
- Context: Globalization of infectious diseases
 - Emergence of infections: cholera, yellow fever, food-borne illness, tuberculosis and antibiotic-resistant organisms
 - Outbreaks of emerging and re-emerging infections
 - Inadequate public health infrastructure and human resource capacity
- Basic elements of the CAREC research agenda are:
 - Multi-country or multi-institutional projects/programs where indicated
 - Multi-disciplinary approach – epidemiology, laboratory and socio-behavioural components
 - Integration of programs
 - Application of interventions
 - Effective communication of research findings to stakeholders
 - Assessment of impact of research findings on health policy and planning

Dengue and malaria are emphasized and various research needs in descriptive and analytical epidemiology and intervention studies outlined.

Specific areas for research are described below.

7.1 HIV/AIDS/STI and tuberculosis

Descriptive epidemiology

- Descriptive epidemiology of opportunistic infections in persons living with HIV and AIDS (PLWA)
- Molecular epidemiology of HIV (genotypes) in selected populations
- Morbidity, mortality and impact of HIV /AIDS
- Trends in HIV seroprevalence in selected population at risk in the Caribbean (STD clinic attendees, men who have sex with men (MSM), ANC, commercial sex workers (CSWs))
- Epidemiology of genital ulcer syndrome in people with STD

- Epidemiology of drug resistance in STI pathogens
- Economic impact of HIV/AIDS.

Analytical epidemiology

- HIV/AIDS and tuberculosis coinfection in the Caribbean
- Risk factors for MOTT (Mycobacterium other than TB) infections in AIDS patients
- Multidrug-resistant TB and MOTT in HIV/AIDS patients
- Role of STI in HIV transmission
- Risk factors for HIV in STD clinic attendees
- Behavioral risk factors for HIV and STI.

Intervention studies

- Evaluation of new laboratory diagnostic tools (de-tuned HIV Assay, rapid saliva assay viral load, PCR/LCR, and probe technology) for HIV/ STI and TB
- Evaluation of DOTS as a public health strategy for TB management
- Quality of care of HIV/AIDS/TB patients
- Evaluation of use of ART for prevention of MTCT of HIV
- Process evaluation of integrated MTCT component in the national Maternal and Child Health programme
- Evaluation of behavioral intervention in MSM, CSW and young people
- Impact of HIV/AIDS training programs and advocacy on media professionals in the Caribbean
- Analysis of policy options for use of antiretroviral therapy
- Evaluation of new therapeutic antiretroviral regimens for AIDS.

7.2 Food- and water-borne illness and food safety

Descriptive epidemiology

- Epidemiology of *Salmonella enteritidis* and *S.typhimurum* (DT 104)
- Epidemiology of emerging water-borne pathogens (*Cryptosporidium*, *Cyclospora* and other protozoan parasites)
- Environmental distribution of *Legionella* in natural and manmade water supplies (hotels and institutions)

- Morbidity, mortality, economic impacts of food- and water-borne illnesses.

Analytical epidemiology

- Microbiological risk assessment of selected food for emergency pathogens (*Campylo-bacter*, *E.coli* 0157.H7, *Listeria* and *Clostridium*)
- Risk factors for emergence of human brucellosis in Trinidad.

Intervention studies

- Evaluation of HACCP strategy in prevention and control of food-borne infections
- Impact of health education intervention on the occurrence of SE in the Caribbean
- Impact of health and environmental needs assessment in the hospitality industry
- Input in policy decisions for safe water supplies by the water and sewerage authority.

7.3 Tropical and vector-borne diseases (VBD): dengue, yellow fever, malaria and others

Dengue

Descriptive epidemiology

- Molecular epidemiology of dengue in the Caribbean.
- Seroprevalence of dengue infection (primary and secondary infection).
- Descriptive epidemiology of febrile haemorrhagic diseases in selected countries in the Caribbean (DHF/DSS, yellow fever, leptospirosis, malaria, meningococcal septicemia, and hepatitis B infection)
- Ecology, distribution and genetic variation of vectors, e.g. GIS studies
- Descriptive epidemiology of resistance in vectors
- Surveillance of emerging vectors in the Caribbean.

Analytical epidemiology

- Risk factors for dengue shock syndrome and dengue haemorrhagic syndrome in hyperendemic countries in the Caribbean – case-control and cohort studies

- Define the markers for severe form of dengue infection in endemic and non-endemic countries in the Caribbean
- Evaluation of incentives or penalties that could bring about community change in vector production behavior.

Intervention studies

- Assessing the new strategies for vector management – community-based integrated management systems
- Evaluation of new strategies for interrupting transmission, e.g. by synchronized intra-domiciliary insecticide and repellent use
- Evaluation of clinical algorithms for empiric management of DHF and DSS in endemic and non-endemic countries
- Evaluation of economic impact of dengue and DHF/DSS.

Malaria

Descriptive epidemiology

- Descriptive epidemiology of drug-resistant malaria in mainland territories (*P. falciparum* and *P. vivax*)
- Mortality and morbidity of malaria in endemic and non-endemic countries
- Vector ecology and behavior in the Caribbean
- Impact of refugees and introduced labour on the abundance of malaria cases.

Analytical epidemiology

- Risk factors for reintroduction and transmission of malaria in non-endemic countries e.g. refugees and vectors from endemic countries.

Intervention studies

- Evaluation of chemotherapeutic regimens in the management of malaria
- Insecticide treatment strategies for *Anopheles* vectors
- Evaluation of bio-control and impregnated bednets for *Anopheles*.

7.4 Vaccine-preventable diseases

Descriptive epidemiology

- Epidemiology of invasive bacterial infection in children in the Caribbean (*S. pneumoniae*, *H. influenzae* and *N. meningitidis*)
- Descriptive epidemiology of atypical pneumonia and influenza virus-associated secondary bacterial pneumonia
- Epidemiology of hepatitis B and C infection in selected countries.

Intervention studies

- Evaluation of introduction of Hib, *S. pneumoniae* and *N. meningitidis* vaccines
- Evaluation of impact of rubella elimination campaigns
- Candidate HIV vaccine studies.

7.5 Emerging and re-emerging infections

- Epidemiology and cost of antibiotic resistance
- Risk factors for emerging infections in the Caribbean: environmental, social, and ecological determinants.

7.6 Health sector reform and public health programmes in the Caribbean

- Impact of health sector reform on morbidity and mortality of communicable diseases in the Caribbean
- Attitudes and beliefs of parliamentarians and senior persons in countries on the value of health in development.

8. Environmental health

Mr Vincent Sweeney, Director, Caribbean Environmental Health Institute (CEHI), St. Lucia

This paper attempts to describe briefly the main environmental health issues that affect the Caribbean today, and to outline the general areas where it is believed that research will contribute to environmental health improvement in the Caribbean. The areas addressed are:

- Economic and social impact of poor environmental health practices
- Safe water supply
- Solid waste management
- Liquid waste management and excreta disposal
- Pollution and chemical management
- Occupational health and safety
- Coastal water management.

Economic and social impact of poor environmental health practices

It is widely accepted that poor environmental health has a negative impact on the productivity, the economy and the social structure of a country. There seems to be a need to articulate this in real economic terms. Policy-makers and the general public need to know the real cost of poor environmental health practices. There need to be Caribbean-wide assessments of the economic and social impact of:

- Inadequate water supply
- Poor solid waste management
- Poor waste water and excreta disposal practices
- Poor occupational health and safety practices.

Water supply

Demand for safe drinking-water is increasing while surface and ground-water are being threatened. Therefore three important areas for research are:

- Water conservation and source protection
- Regulation of private sources of water
- Improvement of water treatment technology.

Solid waste management

The combination of increased solid waste generation and outdated and/or deteriorating solid waste management systems and facilities has led to

increased negative environmental health impacts. Many Caribbean countries are now in the process of developing integrated solid waste management systems. Institutional strengthening, equipment and infrastructure improvement, and increased public education activities are now taking place in many Caribbean countries in the area of solid waste management. The main problems in solid waste management in the Caribbean stem from a lack of reliable data on waste generation, a lack of appropriately trained personnel to manage solid waste and the small size of the islands causing difficulties in implementing cost-effective hazardous and special waste management systems, and cost-effective recycling programs.

The following outlines some important areas requiring further research:

- Detailed waste characterization studies. This information is critical in developing effective solid waste management policies and strategies, including waste diversion and reduction plans
- Developing and testing cost-effective hazardous and special waste disposal strategies
- Investigating recycling opportunities for the Caribbean
- Extensive assessment of training needs for solid waste management in the Caribbean.

Waste water management and excreta disposal

Over the past decade, there has been limited improvement in waste water treatment and disposal practice in the Caribbean. The two main areas of concern are the choice and operation of treatment technologies and the state of national sewer systems. With regard to the former, we need to examine the use of appropriate technology, e.g. studies on fixed film (trickling filters and RBQ) and natural (land-fanning, oxidation ponds, plants) processes for small systems for a better understanding of their applicability in the Caribbean. Many of the sewerage systems throughout the Caribbean are old and in a state of disrepair. An assessment of sewerage systems throughout the Caribbean will give an idea of the nature of the rehabilitation work to be carried out.

Pollution control

Pollution control in the Caribbean has not received priority attention over the years. Many industrial practices have less stringent waste disposal standards than similar industries in “developed” countries. Very few islands have emission standards or specific pollution prevention legislation. The institutional capacities for monitoring and surveillance are very limited and sometimes non-existent. Hence work to be done in the area of pollution control comes under two main categories:

- Developing strategies for establishing monitoring and surveillance systems that are sustainable
- Establishing appropriate pollution prevention legislation and environmental standards.

Management of chemicals

Control of the importation of pesticides and other chemicals into the Caribbean has not been a high priority area in terms of environmental protection. Many chemicals banned outside the Caribbean are imported for use in agriculture and other industries. Very little is known of their long-term effects on the environment or on human health. They are rarely monitored and there is a shortage of expertise in this area in the Caribbean.

Hence the following areas are suggested for further work:

- Compiling an inventory of chemicals imported into the Caribbean
- Developing and testing a regional information sharing system on the chemicals imported and the associated risks
- Reviewing and strengthening national legislation for importation of chemicals
- Establishing sustainable monitoring and surveillance systems of adverse human and environmental effects of imported drugs
- Conducting detailed studies of pesticide levels and rate of pesticide degradation in the natural environment and the impact on the environment and human health.

Occupational health and safety

Occupational health and safety issues occupy a low priority in the Caribbean and there is still significant work to be done in this field including:

- Establishing monitoring and surveillance systems for work-related illness/accidents
- Reviewing and updating of legislation and standards governing working conditions.

Food safety

Beginning in July 1999, extensive fish kills occurred in the South and South-eastern Caribbean resulting in the loss of significant numbers of reef fish. A meeting of Caribbean regional experts and organisations evaluated the situation and concluded that while the cause or causes of the fish kills were not conclusively identified, the available evidence pointed to a biological agent. The inability to respond quickly to the fish kills, both in terms of the identification of the causative agent and also to the possible resulting public health risk, brought to the fore the absence of the technical capability and an integrated multinational health management system in the region to deal with situations of this nature.

The need for scientific research is clear. CEHI has submitted a project proposal with the following specific objectives:

- To improve the surveillance system for marine biotoxins and harmful microorganisms (human health and resource status)
- To integrate local knowledge and practices into an approach bringing together health and environment stakeholders
- To facilitate technology transfer in regard to marine biotoxin and microorganism screening at the local level.

Coastal water quality

The main research areas are:

- Investigation of appropriate indicators for monitoring coastal water quality in the Caribbean
- Evaluation of various rapid test methods for water quality monitoring.

9. Group work

After the presentations of the discussion papers, four groups examined the topics presented and all identified several issues in common as outlined below.

9.1 General research issues

- Development of health information systems to assess problem or disease burden, to monitor trends and evaluate interventions thus providing information for policy and decision-making
- Development of a “research culture”
- Capacity strengthening
- Training of staff in conception of research questions, design, execution and reporting, and development of proposals
- Collaboration between ministries, universities and other groups
- Dissemination of research results is a key issue to which more attention should be paid. More publications in peer reviewed journals should be encouraged
- Mechanisms to obtain funding from Governments and through development of research proposals
- Reduction/elimination of “brain drain”. “Brain drain” might be an effect of the creation of new global and regional structures, which often recruited persons with expertise from national institutions and agencies, a process which was not conducive to national capacity-building. The focus should be on building national capacity and the regional institutions should assist with this. It was noted that though tensions existed between the two levels, these tensions should be managed and the levels should work synergistically. There is need to build synergy between regional and national institutions so that the latter do not suffer unduly in building the former
- The structure within which research is conducted should be considered for all priority areas: establishment of new institutions, strengthening of existing ones such as the CDRC, CHRC, Health Economics Unit, SALISES, etc.
- ENHR committees could also play a coordinating role in research activities
- Posts need to be established in the public sector for researchers and existing posts should be strengthened
- To facilitate the determination of research issues, each country should have a national health plan. From the plan would come policies, programs,

protocols, human resource needs, information systems, etc. and the plan would facilitate the identification of gaps in knowledge to inform research for decision-making

- Strengthened links between the public sector and the UWI and regional research institutions must be developed. This will help to build capacity and facilitate the translation of research findings into action. There should be joint planning and execution of projects and real partnerships in developing, implementing and evaluating proposals.

9.2 Cross-cutting issues

- Social and economic determinants of health: risk factors, equity and gender issues
- Lifestyle modifications: how to achieve and sustain changes
- Economic and social impact of selected health issues and interventions, including injuries and violence
- Value of comparative studies
- Translation of research findings into policy/programs/action
- Greater use of qualitative analytical techniques
- Promotion and facilitation of intersectoral action
- Identification of inequalities and inequities in health, using selected health issues (diabetes, violence, heart disease, stroke, cervical cancer, mental illness)
- Core surveillance systems for all priority areas
- Assessment of quality of life/morbidity.

The following research issues in the priority health areas were identified.

Food and nutrition

- Food security: surveillance, risk mapping
- Anaemia: causes, pathogenesis, definition based on biological significance, anaemia in childhood, epidemiological data
- Nutritional status in children
- Obesity: food consumption surveys; determinants of food choices; cultural and ethnic influences on perception of body size and shape.

Mental health

- Surveillance: determination of disease burden of common mental disorders, prevalence
- Health services research: management, diagnosis, treatment, staffing
- Cost-effectiveness of different models of care
- Treatment: clinical trials, quality of care
- Quality of life, family/social support structure
- Substance abuse: risk factors for alcohol abuse among youth, reasons for high failure rate of drug rehabilitation measures
- Needs assessment for updating mental health legislation.

Chronic non-communicable diseases

- Surveillance: prevalence, risk factors, management of diabetes, obesity, cholesterol, hypertension, violence (also tuberculosis, HIV/AIDS)
- Incidence of stroke
- Feasibility of screening for cancers of the cervix, breast and prostate
- Behavioural factors for obesity, hypertension, diabetes, violence, drug abuse (also STIs, HIV/AIDS).

Maternal and child health

- The proposed Research Institute for Family Health and Gender Issues, wherever based, could be a “virtual” institute, using available technology
- Perinatal mortality is still too high – the stillbirth component is unchanged and studies on the stillbirth rate are needed
- Quality of care in the antenatal period
- Health-seeking behaviour
- Late presentation for antenatal screening
- Treatment of pregnant women with STIs
- Equity of delivery of antenatal care
- Introduction of standardized forms - the perinatal information system from CLAP
- Epidemiology of complications of pregnancy and maternal mortality
- Epidemiological studies on ARI and asthma, accidents and injuries, and abuse

- Adolescent health: sexual and reproductive health, mental health, violence and injury.

Family health

- Health of the elderly: health and social needs of the elderly and quality of life
- Violence in the family.

Communicable diseases

- Strengthen surveillance systems in countries
- Address constraints of existing infrastructure
- Share resources and enhance funding via multi-country, multi-institutional collaboration
- STIs, HIV/AIDS and tuberculosis
- Dengue and other vector-borne diseases
- Food- and water-borne diseases
- Epidemiology of the emerging and re-emerging infectious diseases: tuberculosis, *Salmonella enteritidis*, *S. typhimurium*, Legionnaire's disease, dengue and malaria; antibiotic resistance
- HIV/AIDS and STIs: descriptive epidemiology of opportunistic infections; molecular epidemiology of HIV; morbidity, mortality and impact; trends in seroprevalence; and epidemiology of STIs
- Intervention studies: clinical trial of nevirapine in mother-to-child transmission (MTCT), evaluation of behavioural intervention in men having sex with men (MSM), commercial sex workers (CSW), etc.

Environmental health

- Collaboration with and between NGOs to strengthen capacity and access international funds from parent NGOs
- Social and economic impact of inadequate, unsafe water supply; poor solid waste management; poor waste water and excreta management; and poor occupational health and safety practices
- Operational research: improvement of water treatment and management technology (public and private); development of effective solid, hazardous and biomedical waste management
- Baseline studies on air pollution (indoor and outdoor) and relationship to health and quality of life.

10. Themes for Bangkok, 2000

Participants in four groups were requested to discuss and make recommendations on themes for the International Conference on Health Research for Development, Bangkok, October 2000 and a structure for proposed health research activities. The groups identified the following themes:

- Human capacity development
- “Brain drain”
- Country first: subsidiarity principle
- Sustainable funding for development
- Better networking
- Links between health and development, including worker productivity and social impact of illness
- Role of health research in assessment of reduction in inequities and poverty alleviation
- Fundamental research on the dynamics of changing behaviour and development of partnerships between health and the social sciences
- Greater efficiency and effectiveness of shared health care services, including between sectors
- How to facilitate publication of research from developing countries which does not have “scientific rigour”
- External organizations dictate the research agenda in many cases.

Annex

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