PARLIAMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

Tenth Parliament
[2010/2011 session]

FIRST REPORT

of the Joint Select Committee on Ministries, Statutory Authorities and State Enterprises

(Group 1)

on

The Ministry of Health and its management of vector borne diseases

Ordered to be printed with the
Minutes of Proceedings and Notes of Evidence

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THE COMMITTEE

Establishment

In pursuance of the directive encapsulated at section 66 of the Constitution of the Republic of Trinidad and Tobago, the House of Representatives and Senate on September 17, 2010 and October 12, 2010, respectively agreed to a motion, which among other things, established a **Joint Select Committee to inquire into and report to Parliament on Ministries with responsibility for the business set out in the Schedule as Group 1, and on the Statutory Authorities and State Enterprises falling under their purview with regard to:**

- **their administration**
- **the manner of exercise of their powers**
- **their methods of functioning; and**
- **any criteria adopted by them in the exercise of their powers and functions.**

The business, as well as the entities which fall under the purview of the Committee is attached as ***Appendix I.***

Membership

The current membership of the Committee is comprised as follows:

- Mrs. Corinne Baptiste-Mc Knight - Chairman
- Prof. Harold Ramkissoon - Vice-Chairman
- Mrs. Carolyn Seepersad-Bachan, MP
- Mr. Emmanuel George
- Mrs. Rudrawatee Nan-Gosine Ramgoolam
- Dr. Delmon Baker, MP
- Mr. Jairam Seemungal, MP
- Ms. Stacy Roopnarine, MP
- Mr. Danny Maharaj
- Dr. Amery Browne, MP
- Mrs. Patricia McIntosh, MP
- Mr. Faris Al-Rawi

Secretariat Support

Secretariat support for the Committee is provided as follows:

Mrs. Nataki Atiba-Dilchan	-	Secretary
Ms. Khisha Peterkin	-	Assistant Secretary
Ms. Indira Binda	-	Graduate Research Assistant
Ms. Candice Williams	-	Graduate Research Assistant

Powers

Standing Orders 71B of the Senate and 79B of the House of Representatives delineate the core powers of the Committee which include *inter alia*:

- to send for persons, papers and records;
- to adjourn from place to place;
- to appoint specialist advisers either to supply information which is not otherwise readily available or to elucidate matters of complexity within the Committee's order of reference; and
- to communicate with any other Committee of Parliament on matters of common interest.

INTRODUCTION

Background

The year 2010 saw the outbreak of dengue fever in several regions of Trinidad and Tobago. There were 600 confirmed cases of dengue fever and 3 resultant deaths, along with reports of shortage of dengue test kits.

At the time of preparation of this Report, the first death for 2011 possibly as a result of dengue was being investigated.

The ability of the Ministry of Health to effectively deal with an epidemic was being questioned, and as such your Committee agreed that an inquiry into the methods of functioning of the Ministry of Health with respect to managing vector-borne diseases, like dengue, was a necessity.

Objectives

Your Committee identified the following as the objectives of the inquiry: -

- to ascertain whether the Ministry was able to keep pace with the recent dengue outbreak;
- to ascertain what measures have been put in place to mitigate its occurrence in the future;
- to determine the effectiveness of the dengue prevention programmes;
- to investigate why dengue test kits ran low at certain health institutions;
- to ascertain the role of the Insect Vector Control Department;
- to inquire into the scope and frequency of insect vector operations; and
- to determine the effectiveness of the Dengue Management Plan that was established for the Eastern Region.

Conduct of the Inquiry

A public hearing was conducted with representatives of the Ministry of Health on Friday January 21, 2011. Prior to this meeting, written responses were requested from the Ministry, in keeping with the inquiry objectives. These responses were received and provided the basis for supplementary questioning pursued at the hearing.

The Ministry of Health was represented at the public hearing by:

Mr. Waltrude Diaz	Permanent Secretary (Ag.)
Dr. Anton Cumberbatch	Chief Medical Officer
Mr. Asif Ali	Director Finance & Accounts
Dr. Clive Tilluckdharry	Specialist Medical Officer, IVCD
Ms. Yvonne Lewis	Director Health Education
Dr. Avery Hinds	Medical Epidemiologist, National Surveillance Unit
Dr. Kevin Antoine	County Medical Officer for Health – St. Andrews / St. David
Dr. Raveed Khan	Primary Care Physician II (NCRHA).

Subsequent to the oral evidence session additional information was sought from the Ministry.

A draft of this Report was circulated for the consideration of Members between February 8 and February 25, 2011. No further comments were received.

The Minutes of the meetings of the Committee with regard to this inquiry are attached as ***Appendix II***.

The Notes of Evidence of the hearing held on Friday January 21, 2011 are attached as ***Appendix III.***

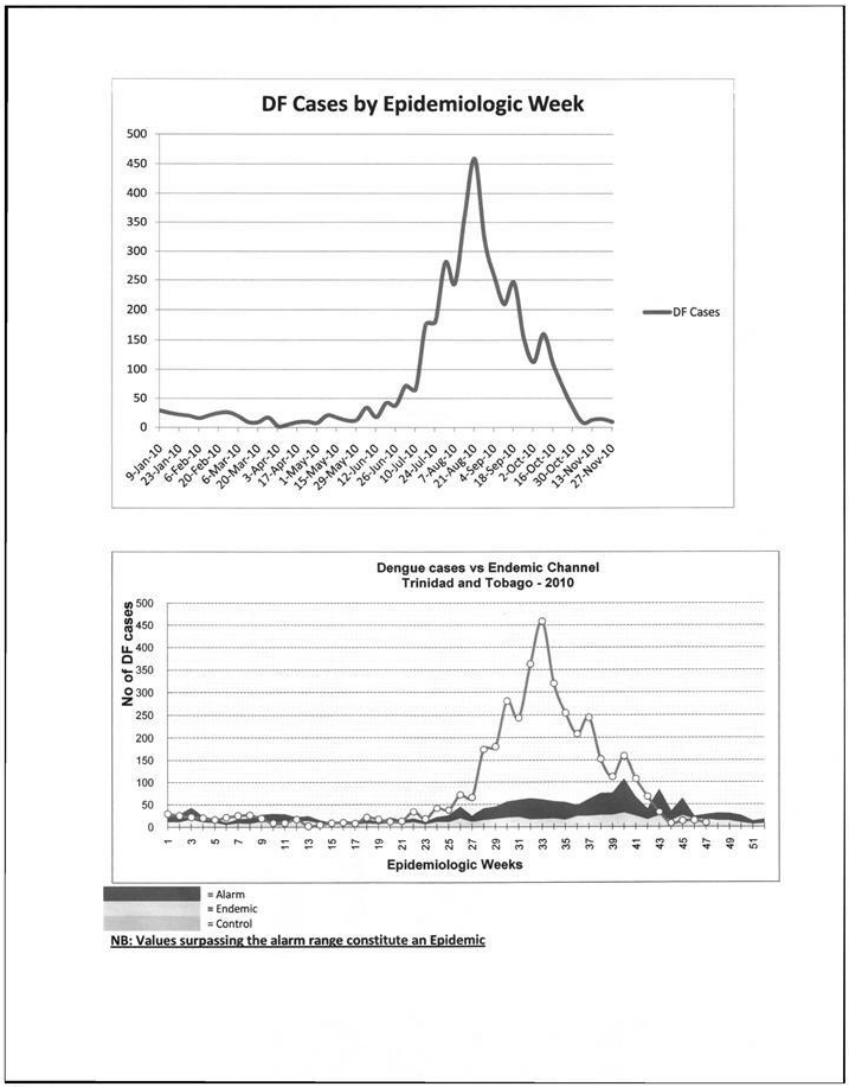
THE EVIDENCE

Based on the areas detailed in its inquiry outline, the Committee was provided with the following information by Ministry Officials.

2010 Dengue Outbreak

- Over the last 20 years there has been an increase in the number of peak periods of dengue due to environmental conditioning and climate change. This pattern change has occurred throughout the Caribbean, Central and South America.

- The Ministry presented statistics regarding dengue cases for 2010 as follows:



Relationship between the Ministry of Health and Other Bodies

- The Minister of Health chaired frequent meetings of an Inter-Sectoral Team at the policy level. The Ministry drives the daily activities related to surveillance, prevention and testing.

- There is continuous collaborative effort between the Ministry of Health and the Ministry of Local Government in the efforts to eliminate breeding grounds for mosquitoes in communities and in homes.

- CAREC worked closely with the Ministry in the analysis of water samples collected.

Research, Evaluation and Monitoring of Dengue

- Dengue was monitored across the Caribbean by CAREC using clinical and epidemiological indicators such as the number of deaths and the number of persons tested for the disease. The Ministry assessed itself on the achievement of its objectives by comparison with other countries along these lines. However, the prevention programmes were not assessed on an individual basis but rather on the Ministry's success in controlling the epidemic.

- The Ministry has assessed the implementation of its Dengue Management Plan of the Eastern Regional Health Authority (ERHA) as successful in the prevention and control of dengue cases. The ERHA engaged in active monitoring, community education and spraying efforts. The EHRA also works closely with the Sangre Grande and Mayaro/Rio Claro Regional Corporations in the clearing of garbage and blocked drains.

- Contrary to newspaper reports, the health institutions in the Eastern Region were adequately supplied with dengue test kits. The number of cases in the region declined from 67 in September 2010 to 4 in December 2010.

Public Education Programmes

- The Ministry collaborated with Cuba in developing its Public Education Programme on Dengue.

- Two five-week campaigns were run in 2010 from July 28 to August 27 and from September 13 to October 15, 2010. Advertisements were carried in the print and electronic media.

- The advertisements are aimed at sensitizing the public on reducing opportunities for mosquitoes to breed and intended to develop the awareness of primary school children through the establishment of the Inspector D.E.P (Dengue Eradication Programme) lesson series.

- The Health Education Division of the Ministry has a Dengue Public Education Plan which achieved the following between July and November 2010:

Development and Production of Dengue Health Education Material	200,000 Dengue FAQ Brochures produced 100,000 Home Care guidelines developed and produced. 2,500 Signs and Symptoms posters designed and printed
Distribution of Health Education Material to the population	180,000 Dengue FAOs distributed to population through : RHAs, THA, Community Health Facilities and hospitals, private hospitals, Insect Vector Control Regional and City Corporations, NGOs, CBOs, Schools, Supermarkets, pharmacies etc., Direct distribution to home owners, shops, palours during community public broadcasts by Motor Vehicle Driver Operators (MVDOs) 50,000 Home Care Guidelines distributed to district health facilities, hospitals and private health facilities 116,770 Dengue Source Reduction Posters distributed to the population 2,211 Dengue Treatment Algorithm distributed to district health facilities, hospitals and private health facilities

School Dengue Prevention Program	School-based Dengue Prevention Education Program Inspector DEP developed and implementation commenced School Dengue Prevention packages developed and circulated to schools in the Inspector DEP Pilot CD of Dengue Prevention Material including Lesson Plans, Parent/Teacher Information Booklet, Dengue Source Reduction Video Game, leaflets and flyers Implementation of School Based Dengue Prevention Programme commenced October 2010 and will continue throughout the school year October - Sensitisation of key stakeholders: Ministry of Education Managers and School Supervisors Teachers, County Medical Officers, Nurses and PHIs November – Implementation of School Based Dengue Prevention in schools in St. George West. January 2011 - implementation of Inspector DEP to continue in schools in all counties

- The Health Education Division also has a Public Broadcasting Program which it commenced April 2010 and is targeted at areas with Aedes indices greater than 5%, as identified by the Insect Vector Control Division.

Insect Vector Control Division

- The Insect Vector Control Division (IVCD) coordinates the monitoring, spraying and community education through the work of Public Health Inspectors. The Public Health Inspectors work with the County Medical Health Officers in this regard.

- With the vision of "*A nation empowered to live long, healthy, happy and productive lives*", the Insect Vector Control Division engages in a wide range of activities annually. These include post flooding management; pest control at government institutions; malaria, yellow fever and aedes surveillance and control; and port (airport and seaport) health.

- Other projects highlighted for 2010/2011 include (i)a Water Barrels Project aimed at reducing the Aedes index to <5% to be conducted in 6 weeks cycles and (ii) laboratory testing for dengue (in house) at the Division.

- In 2010, the Division undertook a Blitz Programme, which aimed at a shorter, quicker treatment cycle focusing on dengue fever cases in endemic areas, hot spots and on insanitary premises.

- The Ministry frequently sprays for the vector in communities without pipe-borne supplies of water. Water stored in uncovered barrels provide breeding grounds for the vector, and as such, these areas were at higher risk of dengue infection.

- The Tobago House of Assembly took the initiative over five years ago to institute a Water Barrel Replacement Programme whereby the Government subsidized the cost of replacing the water barrels used by persons with more suitable storage containers.

- Different methods are used to attack the vector such as truck mounted and residual spraying, foggers and granules placed in drinking water.

- During the dengue peak periods more sprayers are hired on contract in order to meet the demand.

- There are constraints in dealing with private and abandoned properties. The Public Health Authority cannot legally enter these properties and were confined to the serving of notices to the owners or occupiers of vacant property.

Dengue Management Plans

- Regional Health Authorities are required to produce annual Dengue Plans to be utilized by the hospitals and primary care facilities. These plans are reviewed and approved by the Chief Medical Officer.

OBSERVATIONS/FINDINGS

From the oral evidence and the written submissions received, your Committee has gained an in-depth appreciation of the major issues involved in the management of vector-borne diseases, and of what is required on the part of both the Ministry and the general public in making these efforts successful.

Your Committee is of the opinion that the Ministry of Health has developed several effective systems and programmes to address the management of vector-borne diseases, in general, and of dengue fever, in particular. Your Committee commends the fact that, across the Health Institutions, the plans in place, adhere to the standards set by the World Health Organization.

Nonetheless, your Committee has recognized that there are a few shortcomings in the approach taken by the Ministry of Health in addressing the management of dengue which are in need of attention.

Shortcoming 1:

- It appears that there is limited use of the media by the Ministry outside of the peak dengue periods. This allows for the waning of public diligence in regard to daily activities required to prevent the spread of dengue.

Shortcoming 2:

- There exists, in the plans of the Insect Vector Control Division, a water barrel project, and while the Committee was informed of the success of the programme in Tobago, there was no evidence to suggest that this has been implemented or is effective in Trinidad.

Shortcoming 3:

- Ample data was provided to the Committee regarding dengue management protocols, however, reports suggest that in practice there are some deficiencies in the competence of the personnel charged with the first stage diagnosis of dengue fever.

RECOMMENDATIONS

Having regard to the foregoing, your Committee makes the ensuing recommendations for the improvement of the nationwide management of vector-borne diseases:

Recommendation 1:

- As a matter of priority, the Ministry should develop a strategy that can sustain its public education campaign throughout the year, not just around the peak dengue period. A permanent change in societal behavior can only be effected by lengthy periods of education and sensitization of the public about the deadly effects of dengue and the preventative methods that can be utilized.

Recommendation 2:

- The Ministry must commit to spearheading the collaborative efforts between itself and other relevant players (e.g. the Ministry of Local Government, EMA, CEPEP) to ensure continuous activities within communities. The establishment of weekly or monthly operational targets can assist in achieving this.

Recommendation 3:

- The Ministry should transpose to Trinidad, the Water Barrel Replacement Programme that has been implemented in Tobago for the last five years, to address the vector-breeding conditions which exist in areas with no pipe-borne water supply.

Recommendation 4:

- A programme similar to the Inspector D.E.T project should be designed and implemented at the level of the secondary schools.

Recommendation 5:

- Efforts should be made to strengthen both the Inter-Ministerial and Inter-Sectoral Dengue Committees to ensure that the persons who comprise these Committees have the authority to effect decisions taken.

Recommendation 6:

- Further research should be undertaken by the Ministry of Health, in conjunction with the Ministry of Local Government, to identify the options available in finding a solution to the health risks presented by vacant and abandoned private lots within municipalities.

Your Committee respectfully submits the foregoing for the consideration of the Parliament.

Sgd.
Mrs. Corinne Baptiste-Mc Knight
Chairman

Sgd.
Prof. Harold Ramkissoon
Vice-Chairman

Sgd.
Mrs. Carolyn Seepersad-Bachan, MP
Member

Sgd.
Mr. Emmanuel George
Member

Sgd.
Mrs. Rudrawatee Nan Gosine-Ramgoolam
Member

Sgd.
Dr. Delmon Baker, MP
Member

Sgd.
Mr. Jairam Seemungal, MP
Member

Sgd.
Ms. Stacy Roopnarine, MP
Member

Sgd.
Mr. Danny Maharaj
Member

Sgd.
Dr. Amery Browne, MP
Member

Sgd.
Mrs. Patricia McIntosh, MP
Member

Sgd.
Mr. Faris Al-Rawi
Member

March 01, 2011

APPENDIX I

BUSINESS ENTITIES

List of Ministries, Statutory Authorities and State Enterprises that fall under the purview of this Committee:

1. **Arts and Multiculturalism**

- Archaeological Committee
- Carnival Institute
- Naparima Bowl
- National Carnival Commission of Trinidad and Tobago
- National Cultural Commission
- National Museum and Art Gallery (Royal Victoria Institute)
- National Theatre Arts Company
- Queen's Hall Board
- Trinidad and Tobago National Steel Symphony Orchestra

2. **Office of the Attorney General**

- The Law Reform Commission
- Environmental Commission
- Council of Legal Education
- Hugh Wooding Law School
- Industrial Court
- Corruption Investigation Bureau
  - Anti-Corruption Squad
- Equal Opportunity Commission
- Equal Opportunity Tribunal
- Tax Appeal Board

3. **Community Development**

- Village Councils
- National Commission for Self-Help Limited
- Export Centres Company Limited

4. **Education**

- Local School Boards
- National Commission for UNESCO
- Education Facilities Company Limited
- National Schools Dietary Services Limited

5. **Energy and Energy Affairs**

- Lake Asphalt of Trinidad and Tobago (1978) Limited
- National Gas Company of Trinidad and Tobago Limited
- National Quarries Company Limited
- Petroleum Company of Trinidad and Tobago Limited (PETROTRIN)
- Trinidad and Tobago National Petroleum Marketing Company Limited (NP)
- Alutrint Limited
- Alutech Limited
- La Brea Industrial Development Corporation
- National Agro Chemicals Limited

- National Energy Corporation of Trinidad and Tobago Limited
- NATPET Investment Company Limited
- NATSTAR Manufacturing Company Limited
- NGC NGL Company Limited
- NGC Trinidad and Tobago LNG Limited
- Phoenix Park Gas Processors Limited
- Powergen
- Trinidad and Tobago LNG Limited
- Trinidad and Tobago Marine Petroleum Company Limited
- Trinidad Nitrogen Company
- Trinidad Northern Areas Limited
- TRINMAR Limited
- TRINTOC Services Limited

6. Finance

- Central Tenders Board
- National Insurance Appeals Tribunal
- National Insurance Board
- National Insurance Property Development Company Limited (NIPDEC)
- National Lotteries Control Board
- Trinidad and Tobago Unit Trust Corporation
- BWIA West Indies Airways Limited (New BWIA)
- Trinidad and Tobago (BWIA International) Airways Corporation (Old BWIA)
- Estate Management and Business Development Company Limited
- First Citizens Holdings Company Limited
- National Enterprises Limited (NEL)
- Trinidad and Tobago Forest Products Limited (TANTEAK)
- Taurus Services Limited
- Caribbean Investment Corporation
- Tourism and Industrial Development Company (TIDCO)
- Caribbean Investment Corporation
- Trinidad and Tobago Development Finance Limited
- Trinidad and Tobago Mortgage Finance Company Limited
- Caribbean Development Network Limited
- Caribbean Microfinance Limited
- First Citizens Bank Limited (FCB)
- First Citizens Mortgage & Trust Company Limited
- Trinidad and Tobago Mortgage Agency Company Limited

7. Food Production, Land and Marine Resources

- Agricultural Society of Trinidad and Tobago
- Caribbean Agricultural Research and Development Institute (CARDI)
- Cocoa and Coffee Industry Board
- Livestock and Livestock Products Board
- Caroni (1975) Limited
- National Agricultural Marketing and Development Corporation (NAMDEVCO)
- Agricultural Development Bank
- Caribbean Food Corporation

8. Foreign Affairs

9. Health

- Boards regulating the Practice of Medicine and Related Professions
- Children's LIFE Fund Board of Management
- Eastern Regional Health Authority (ERHA)
- North Central Regional Health Authority (NCRHA)
- North West Regional Health Authority (NWRHA)
- South West Regional Health Authority (SWRHA)
- Princess Elizabeth Home for Handicapped Children
- Trinidad and Tobago Association for Retarded Children

10. Housing and the Environment

- Chaguaramas Development Authority
- Environmental Management Authority
- Sugar Industry Labour and Welfare Committee
- Land Settlement Agency
- Housing Development Corporation

11. Justice

- Legal Aid and Advisory Authority
- Police Complaints Authority
- Sentencing Commission
- Criminal Injuries Compensation Board

12. Labour and Small and Mircro-Enterpirse Development

- Broilers Examiners Board
- Minimum Wages Board
- Registration Recognition and Certification Board
- Friendly Societies
- Cipriani College of Labour and Co-operative Studies
- National Entrepreneurship Development Company Limited (NEDCO)
- Occupational Safety and Health Authority
    - National Productivity Council

13. Legal Affairs

- Law Revision Commission
- Rent Assessment Board

APPENDIX II

MINUTES OF PROCEEDINGS

MINUTES OF THIRD MEETING OF THE JOINT SELECT COMMITTEE OF PARLIAMENT APPOINTED TO INQUIRE INTO AND REPORT ON GOVERNMENT MINISTRIES (GROUP I), STATUTORY AUTHORITIES AND STATE ENTERPRISES FALLING UNDER THOSE MINISTRIES, HELD IN COMMITTEE ROOM 2, RED HOUSE, PORT OF SPAIN, ON FRIDAY, JANUARY 21, 2011

PRESENT

Mrs. Corinne Baptiste–Mc Knight	Chairman
Prof. Harold Ramkissoon	Vice-Chairman
Mrs. Carolyn Seepersad–Bachan, MP	Member
Ms. Stacy Roopnarine, MP	Member
Mrs. Patricia Mc Intosh, MP	Member
Mr. Danny Maharaj	Member
Mr. Jairam Seemungal, MP	Member
Mrs. Rudrawatee Nan Ramgoolam	Member
Mr. Emmanuel George	Member
Mr. Faris Al-Rawi	Member
Dr. Delmon Baker, MP	Member
Mrs. Nataki Atiba-Dilchan	Secretary
Ms. Khisha Peterkin	Assistant Secretary
Ms. Indira Binda	Graduate Research Assistant

ABSENT

Dr. Amery Browne, MP	Member

OFFICIALS FROM THE MINISTRY OF HEALTH

Mr. Waltrude Diaz	Permanent Secretary (Ag.)
Dr. Anton Cumberbatch	Chief Medical Officer
Mr. Asif Ali	Director Finance & Accounts
Dr. Clive Tilluckdharry	Specialist Medical Officer, IVCD
Ms. Yvonne Lewis	Director Health Education
Dr. Avery Hinds	Medical Epidemiologist, National Surveillance Unit
Dr. Kevin Antoine	County Medical Officer for Health - St. Andrew/St. David
Dr. Raveed Khan	Primary Care Physician II, (NCRHA)

COMMENCEMENT

1.1 The meeting was called to order at 9:52 a.m.

CONFIRMATION OF MINUTES (November 19, 2010)

2.1 The Committee considered the Minutes of the 11th Meeting held on March 03, 2010. There being no corrections or omissions, the Minutes were duly confirmed on a motion moved by Ms. Stacy Roopnarine and seconded by Mrs. Corinne Baptist – Mc Knight.

MATTERS ARISING FROM THE MINUTES

3.1 The Chairman referred Members to Item 4.3 and informed Members that the Committee had received several documents from the Ministry of Health, all of which had been forwarded by email.

3,2 As well, responses were also received from the Ministry of Housing and the Environment regarding the Green Fund. This was the inquiry scheduled for the next meeting.

3.3 After discussion on the non-receipt of soft copies by some Members, it was agreed that hard copy of all documents should also be provided to Members.

OTHER BUSINESS

4.1 A draft work schedule was circulated for consideration.

4.2 Members agreed that the next meeting would be scheduled for February 18, 2011 as outlined in the plan, to commence at 9:30 in camera with the hearing at 10:00am.

(The meeting was suspended)

HEARING WITH THE OFFICIALS FROM THE MINISTRY OF HEALTH
on vector borne disease management

5.1 The meeting was resumed in the Parliament Chamber at 10:15 a.m. and introductions were made on both sides.

5.2 The Permanent Secretary (Ag.) was invited to make an opening statement. He spoke on the role of the Ministry in the management of vector borne diseases and some of the challenges encountered in the process, largely in getting the public to understand and play its role.

5.3 The following issues were raised:

(a) Public Education Programme

Members were informed that the Ministry collaborated with Cuba in developing its Public Education Programme on Dengue.

Emphasis was placed by Officials on the need to have consistent and continuous public messages on the fact that dengue can be prevented. The Officials agreed that the Ministry of Health should head such an initiative.

(b) Flow Chart/ Structure in Relation to Dengue Management

The Committee was advised that the Minister of Health chaired frequent meetings of an Inter-Sectoral Team at the policy level. The Ministry drives the daily activities related to surveillance, prevention and testing.

(c) Relationship between the Ministry of Health and Other Bodies

- A relationship existed between the Ministry of Health and the Ministry of Local Government in the efforts to eliminate breeding grounds for mosquitoes in communities and in homes.

- CAREC worked closely with the Ministry in the analysis of water samples collected.

- Regional Health Authorities are required to produce a Dengue Plan to be utilized by the hospitals and primary care facilities. These plans are approved by the Chief Medical Officer.

(d) The Lifecycle of Dengue in Trinidad & Tobago

It was noted that over the last 20 years there has been an increase in the number of peak periods of dengue due to the relationship of the disease to environmental conditioning and climate change. This pattern change has also occurred in other Caribbean countries and throughout Central and South America.

(e) The Spraying Programme and Water Storage

- The Committee was told that more frequent spraying of the vector was done in communities without pipe-borne supplies of water. Water storage in uncovered barrels provided breeding grounds for the vector and as such these areas were at higher risk for dengue infection.

- During the dengue peak periods more sprayers are hired on contract in order to meet the demand.

- The different methods of spraying were used including truck mounted, residual, foggers and granules placed in drinking water.

(f) The Research, Evaluation and Monitoring of Dengue

Members were advised that dengue was monitored across the Caribbean by CAREC using clinical and epidemiological indicators such as the number of deaths and the number of persons tested for the disease.

The Ministry assessed itself on the achievement of its objectives by comparison with other countries along these lines.

The prevention programmes were not assessed on an individual basis but by success in controlling an epidemic.

(g) Breeding grounds for mosquitoes on Private Property

Officials indicated that there were constraints in dealing with private and abandoned properties. The Public Health Authority could not enter these properties and were confined to the serving of notices to the owners or occupiers of vacant or overgrown property.

5.4 The Permanent Secretary (Ag.) made closing remarks indicating that his Ministry is open for consultation.

5.5 The Committee requested to be supplied with the following:

- A copy of the Dengue Management Plan for each Regional Health Authority
- An organizational chart showing the integrated structures of the agencies involved in dengue management

5.6 The Chairman thanked the Officials from the Ministry for their attendance.

ADJOURNMENT

6.1 The meeting was adjourned at 12:00p.m

I certify that these Minutes are true and correct.

Sgd.
Chairman

Sgd.
Secretary

January 24, 2011

APPENDIX III

NOTES OF EVIDENCE

Ministry of Health Officials

Mr. Waltrude Diaz	Permanent Secretary
Dr. Anton Cumberbatch	Chief Medical Officer
Dr. Clive Tilluckdharry	Specialist Medical Officer, IVCD
Mr. Asif Ali	Director Finance & Accounts
Ms. Yvonne Lewis	Director Health Education
Dr. Raveed Khan	Primary Care Physician II, (NCRHA)
Dr. Avery Hinds	Medical Epidemiologist, National Surveillance Unit
Dr. Kevin Antonie	County Medical Officer for Health St. Andrew/St/ David

Madam Chairman: Good morning, ladies and gentlemen. It is my pleasant duty to welcome you to this first meeting of our joint select committee where we will be looking at the Insect Vector Control activities of the Ministry of Health. I think that the officers of the ministry would be aware that the purpose of this meeting committee is really to inform Parliament and public with respect to the issues that we require into.

The Insect Vector Control and specifically dengue, is an issue of critical current importance, and this is why our committee thought that we would give you an opportunity to inform the public and all the work that you have been doing, and exactly what your programmes are to deal with this. With that short introduction, I would introduce myself. I am Corinne Baptiste-Mc Knight, Chairman and I would invite the members of the Ministry of Health to introduce themselves.

Members of the Ministry of Health introduced themselves.

Members of the Committee introduced themselves.

Madam Chairman: Thank you very much indeed. Now, can I invite the Permanent Secretary in the Ministry of Health to make an opening statement?

Mr. Diaz: What I would like to say in the opening, is that dengue and the activities to limit and if we want to prohibit dengue has always been a priority for the Ministry of Health.

10.20 a.m.

Mr. Diaz: But, what they have found is that this fight against dengue is not for the Ministry of Health alone, there are other bodies that become involved the Insect Vector, the Ministry of Works and Transport, et cetera, and we have found that the level of how we prioritize dengue for our activities is not necessarily a priority for the other non-Ministry of health bodies, which are key also, to the fight of dengue.

I also wish to state that the Ministry of Health has a dengue plan, which we revised annually or as activities take place. In ensuring that this plan works, we try to prepare during the dry season, when dengue is at its low. We always ensure, during the year, that there are inter-sectoral meetings that take place, inter-sectoral, in terms of inviting the other stakeholders, non-Ministry of Health stakeholders, to come and meet, so that we can plan what we are going to do for dengue.

Finally, in opening, I would like to say the Ministry of Health faces a challenge, which is getting the public at large, to recognize its role, and to play its role in dealing with the dengue problems that we have in Trinidad and Tobago.

Madam Chairman: I thank you, Mr. Diaz. Let me emphasize that one of the benefits of this meeting, which is a public meeting, is that it gives you an opportunity to involve the public; to be very out-front, clear and precise with what assistance you need from the public, what you see as areas of responsibility for the public. So that, I would hope that you would use this opportunity and tailor the answers to our questions; the questions that you will get from parliamentarians to assist you. Okay. Thank you.

Mr. Diaz: Also, when necessary, the technical officers would provide some of those specifics, in terms of what you need to know.

Madam Chairman: Who would like to lead off?

Mrs. Seepersad-Bachan: You not going right through?

Madam Chairman: No.

Prof. Ramkissoon: You said that you have some public education programmes, is that correct?

Mr. Diaz: Yes. We would allow Miss Lewis.

Miss Lewis: Yes, we do.

Prof. Ramkissoon: Cuba has a very good dengue programme, in terms of controlling dengue. Do you have any links at all with the Cubans?

Miss Lewis: Actually, yes. There is one person from Cuba and he is a part of the National Surveillance Unit, Dr. Padron, whom we have also referred to as we develop our strategies, in terms of dengue public education.

Mr. Al-Rawi: Question to Mr. Diaz. Thank you for your open statements. I too am very grateful to participate in this venture. I think it is a very important exercise for the citizens of our country and I think it is an excellent forum to be able to communicate the difficulties which the administration faces, notice I have not said Government, in its rollout plan. If I could jump you back to a very important comment that you made. That is, whilst the Ministry of Health has an annual plan, there are non-Ministry involvement factors to be put into the context. Could I ask you, please to provide us -I want to use the word flowchart as to what your structure is, relative to dengue management in Trinidad and Tobago in two senses. Firstly, what is the existing structure and secondly, what ought to be the optimal structure? Factoring in that question your answer, as to where the system is falling apart. Basically in summary, to get the thought clear, what is the structure and relationship between the Ministry of Health and other bodies, whether non-Ministry bodies, as controlled by the Ministry or otherwise. It may include the municipal corporations for example.

Mr. Diaz: May I refer to Dr. Cumberbatch?

Dr. Cumberbatch: Thank you very much. Good morning. Let me also say that we appreciate the opportunity to speak to the public on the issue of dengue, which is 30 years in Trinidad and Tobago. It is our sixth epidemic and it is not a problem. The issue of the structure, what in fact is in place, is at the level of the Ministers you have an Intersectoral Dengue Committee that is driven by the Minister, of Health that met—frequently would meet normally when you have an epidemic approaching. What that suggests, I am going to speak to the structure, the technical

structure that we have in place, we do surveillance both of mosquito, man and virus all the time. Let me repeat that. Technically, there is a structure in place in the Ministry and there is a surveillance of mosquito, man and the virus.

In terms of organizational arrangement, at the level of the Ministry the Ministry of Health chairs an Intersectoral Meeting that brings together critical stakeholders at the policy level, with respect to integrated vector management control. That is how we put dengue. We put dengue within the context of integrate vector management control.

The Ministry of Health plays a role there and sit at the table. The Ministry Local Government is a very critical player there. The people who are responsible for water also should be sitting there. Sometimes national security would be at the table and any agency that deals environmental management also sit there at the table.

The Ministry drives that programme by identifying some core critical things that need to be done in the prevention stage, in the question of the surveillance and when we see epidemics taking place.

That committee, that is an oversight committee that we report to. Within the Ministry, there is a committee that I chair that brings together the entire health system, in terms of the RHAs, Insect Vector Control, all our health education divisions and departments and including linking with the private health sector and NGOs. I chair that meeting. That structure provides for every RHA, which speaks to the hospital and the primary care system must have a dengue plan and that plan is submitted to me for approval. There are core elements in that plan, in terms of organizational arrangements for epidemic responses and for what we would call normal monitoring because they are sending information to the surveillance unit.

The each hospital must have a dengue plan. Each primary care system must have a dengue plan that speaks to where you would be doing your screening. We supply the standards of protocol of management that is based on the World Health Organization. That is updated and we updated it last year again.

In terms of clinical standards of management clinical observations of definition of cases, we supply that for Trinidad and Tobago. We also supply, through the Health Education Division the messages that are put to the public, in terms of the surveillance, the preventive message that we put to the public.

We also interact at the level of local government at the level of the health committees, where we ask them to supply to us, through our public health inspectors. We monitor the environment to ensure that removal of the necessary problems that would encourage breeding in the community and in the homes. We use our public health inspectors in both the Ministry of Health and Local Government to do that. I get reports on that continually. Reports are supplied to the Vector Control.

Vector Control, which directly reports to me, is the Chemical Control and surveillance unit that we use for the vector management and vector surveillance. We are linked with the Trinidad and Tobago Public Health Lab and CAREC that speaks to the question of viral surveillance, so we check. Dengue has four types. We are continually looking and analyzing the types of infections that we have, to know what is the circulating viral types. That is also linked to the Caribbean Epidemiology Centre and to the rest to the Caribbean community and linked to the PAHO/WHO system. What you have in place is what we call best practice integrated vector management control that speaks to linking the government agencies with the health system, with the environmental agencies that are linked to the local environment and the community in which we liaise with, through the immediate. Therein lies

some of the challenges that we get.

A critical part of the integrated vector management control, besides the role of government agencies, surveillance and the health system, both in response to treatment, there is a role for the media in the management of public information in a public health problem and there is the role for the public in how you control an issue like dengue.

The critical ingredient is to prevent the transmission of the virus by controlling the vector. That is the critical ingredient. Aedes Aegypti, which is the number one mosquito that creates the problem in Trinidad although we have Aedes Albopictus also, really lives and around your home. 95 per cent of the times it lives in and around your home. So, essentially, we are breeding the vectors in and around our homes.

The Ministry of Health and the Ministry of Local Government cannot go into someone home and clean it up. We cannot do that, so we appeal to the public to remove the breeding sites from in and around your home. The Aedes Aegypti breeds in clean water. So any clean still water, any container that you have in and around your homes, all the cups, bottles and barrels of water. So, a big problem in Trinidad and Tobago, with respect to recurrent infestation over the years is where you do not have pipe borne water. If you are storing water in barrels- we have the epidemiology information to support this, once we continue to have water storage in barrels, in the semi-rural and rural areas, that is an ideal environment for breeding Aedes Aegypti. The sooner we can eliminate that as an issue in the country, it goes a long way, in terms of the removal of the threat.

The other problem that we face is that there is the perception in the country that whenever you see mosquitoes, one must spray. We keep insisting that to control mosquitoes infestation elimination of the breeding sites is the key. That is the key that Cuba used. I also want to add something to what Miss Lewis said. We have brought Cuban experts to Trinidad and Tobago before and they continue to liaise with through the Pan American Health Organization, in terms of dengue management. We brought them here to assist us. Our doctors, terms of managing the acute very dangerous dengue shock and dengue haemorrhagic, we have a liaison with Pan American Health Organization, not only for Cuban experts, but experts throughout the world to assist us over the years and we have built up quite a capability in responding . I want to get back to the elimination of the breeding sites. I also want to make a statement. I have said it before on public television and I would repeat it again. There is no country in the world that have sprayed mosquitoes and eliminated them; no country. You cannot eliminate mosquitoes by chemical control. It is not an objective that countries try to realize. What you do, is to eliminate the breeding sites depending on what kind of problem, whether it is malaria, dengue that you have.

Fortunately for us, dengue in Trinidad and Tobago, which is driven by the Ades Aegypti is a house mosquito. If we have to control the breeding sites, the control of the breeding site is not only for when you have an epidemic. It is a daily activity 365 days every year. It also relates now to the question of behaviour of our citizens, in terms of home sanitation and environmental sanitation. Once we continue to throw cups out from our cars, once we continue to have garbage around our house in and around, you will continue to have mosquitoes and rat infestation. It is fundamental. It is fundamental and it is not only when you have an epidemic that you do that. It has to be done and this is how Cuba accomplished it. Also what they have done and we have attempted to—we are putting a programme in place together with the Ministry of Education to try to achieve behavioural control with our

children because we seem to be having a difficulty with the adults understanding this.

Home inspection, school inspection, community inspection, government building inspection to ensure that you do not have containers of water or garbage in and around that you are not cleaning up and you also opening your homes to fresh air when we are spraying because the Aedes Aegypti will also live inside of your closets and below beds. It is a behavioural change that is required by the population, with respect to environmental sanitation and cleanliness that will assist us tremendously in reducing the mosquito population. Once we do that on a continuous basis, the surveillance that we have, the chemical control that we have over clinical management will ensure that any indication of an increase we will be able to stop it right in its tracks and also the proper use of the chemical control. The demand for spraying when you see mosquitoes, over and over, by the population is going to bring us into a situation where you are going to get resistant to insecticides. Insecticides are toxic materials. As I said, you cannot spray mosquitoes to death. We have been spraying for the last 60 years because we had malaria, we have dengue and yellow fever as a problem. Yellow fever is not a problem, it is under control. We have not had cases for last 15 years because of immunization. That is point we want to make. Even though the Ministry can put in the best chemical control, the best surveillance, if we do not, at all times, during the year, the clean-up of the environment, so that you do not breed mosquitoes, we do not have houses that allows on the side of the houses where the water runs off, to collect water and breed mosquitoes in your roofs, so the question of house design, all of that becomes important. Once we do that, we will have a very clean environment. We will get the benefit, not only on mosquito control, but also other problems like leptospirosis that comes with rat infestation and all the other environmental issues that Trinidad and Tobago suffers from.

There is a behaviour change that it is required for us to keep clean sanitized, home, work, and community environments that give us the basis to then apply scientific techniques for control.

Mr.Al-Rawi: Thank you, Dr. Cumberbatch. You really dove to the heart of the societal need to wake and realize that we are all part of the solution. I accept that point. Part of our mandate as parliamentarians; see to seek to help you in getting your objectives achieved. You have touched upon many areas, which include structure, cause, monitoring, best practices and ultimate societal participation for solution. If I could focus on the issue of structure, thank you for informing us that there is indeed a structure and there is a reporting change of command to you. What I am interested in- and forgive me for coming from a position of less information than you have, ostensibly this is the opportunity for the osmosis to happen from the higher potential to the lesser potential. What I am really looking for is the structure being as I understand, of report chain to you, of governmental and non-governmental and state agency and non-state agency, even including NGO and corporation participation from what you have told me. Do you think, first of all that structure is adequate?

Secondly, what is the frequency of reporting that is actually achieved, and thirdly, where do you think the system, if it has broken, has broken down and how can we, as parliamentarians, assist you in tightening that process?

Dr. Cumberbatch: On adequate, the issue here is that the surveillance, which we do all the time, which leads us to say we may be on the verge of a problem, but when we are not having the problem, to get the other agencies to prioritize the prevention, we tend to be a group of citizens that respond to emergencies.

Mr.Al-Rawi: Sorry to interrupt you. Frequency of reporting and if you had to go to preventive point, who would

you say is the best body to achieve that preventative exercise? Am I answering my own question and saying the local government bodies?

Dr. Cumberbatch: The Ministry of Health has to take the lead here because we do the surveillance. However, when we speak of the role of the community in local government, that role should be a daily role. I do not know whether you want to say we should be prioritizing to clean our homes, if you understand what I am getting at?

Mrs. Seepersad-Bachan: I want to ask a complimentary question. What I think the member is asking you is about the bodies involved. I would really like to know all the bodies that you are referring. You spoke about the Insect Vector Control that is one. You spoke about the Ministry of Works and Transport as another body. You spoke about the Local Government. What are some of the other bodies that are-

Dr. Cumberbatch: The Ministry of Education. We are liaising with them.

Mrs. Seepersad-Bachan: Are there any NGOs that you have to work through?

Dr. Cumberbatch: Well, we linked with NGOs depending on what is the issue. In terms of the medical practitioners, the private sector, we link with them, with respect to management of the problem. We also link with NGOs depending on what is the particular crisis at the time, but in terms of routine prevention, the NGOs really linking with the local government at the community level becomes the important thing. The important point in prevention is really elimination of breeding sites all the time, on a daily basis. The people responsible for community environment and home environment management is the Ministry of Local Government. They are the ones. We provide support, through our Public Health Inspectors. They also have public health inspectors, but we provide support, in terms monitoring the environment. The cleaning up of the environment is the responsibility of both the home owner and the local authorities.

The other major stakeholder involved here would be the Water and Sewerage Authority, in terms of water. If you remember what I said about water storage; water storage and our epidemiological statistics are quite clear, is the area in which we have a challenge with water storage is the area you would see over the years the number of dengue cases being higher than the areas that you do not. So, water storage.

The other area, the other NGO—I would not call it an NGO, but the public media, in terms of educating the public, both in times of crises and in times of non-crisis in repeating the messages about what do you need to clean your homes and also when are you putting out stuff to be picked up. We need a continual message; public messages, to get our population to understand about environmental sanitation at home and also to understand the responsibilities. Because I do not know whether cleaning up someone's home inside your house can be transferred to a government agency.

Mr. Seemungal: If I may interrupt to ask this question. You said we need maintenance, public drive, but who is spearheading this public drive to educate the public as to how to behave and how not to behave. Should it not fall under the Ministry of Health?

Dr. Cumberbatch: We would be happy to support those behavioural changes, but behaviour changes in a society is not just the remit of the Ministry of Health, it is much more than that, in terms of—as I have said, we have approached the Ministry of Education to introduce, into the Ministry of Education, something called the Inspector Dengue Eradication Programme (DEP) Programme, that is speaking to the children, educating and informing about

issues of environmental control. Behaviour change is not just messages at one level. We use media or medium, depending on who we are speaking of to, and what are we speaking about. Different communities listen to different voices, but the message must be consistent. What we are going to say to the children, what we say to the adolescent, what we say to the adults, we would different approaches to get their attention and how do we measure that. What we can do in the Ministry is measure and monitor the effect of the behaviour change. As I said, we monitor both the vector, the virus. We also monitor the level of cleanliness in a street. We check that.

Mr. Seemungal: Do you have an Inter-ministerial Task Force to deal with this epidemic? Have you any committee within which the other Ministries that you have alluded to at the high level meeting on a regular bias to work out this programme that you are speaking about.

Dr. Cumberbatch: The programme you are speaking about is worked out already. We are just trying to reinforce it. As I said, you asked me to identify areas where we may be not as strong and what we are saying is at the behaviour change level in the community, in terms of breeding sites elimination, at the area of reduction of the question of water storage area. The area of consistency of the environmental cleanup. Those are the areas where we are not doing as well as we would like to , because as in any epidemic you can prevent the epidemic, if your prevention programmes are very well, but we seem, when we speak of these things outside of an epidemic, not to get the same kind of attention from the Ministry's point of view. The environmental cleanup is not just in relation to mosquito infestation. If I may make a point, when we have floods and we look and see what comes down in the flood, it is the same issue. It is no different. Environmental sanitation at the community, at the home, at the top level, is not what it should be, and dengue is one of the results of that. There are other diseases that also impact on us. Leptospirosis is another one. There are others that we can speak bout. I am saying, for us to move forward, we have to take into consideration, to move the public to a different level of environmental sanitation to protect ourselves.

10.50 a.m.

Mr. Jairam: The question is, who will be taking the leading role in this exercise?

Dr. Cumberbatch: As I said, the Ministry of Health is quite happy to take the leading role, if I may speak on behalf of the Ministry. It is in our interest when the disease happens we have to respond to it, and it is very costly and it puts a tremendous strain on the health system.

Dr. Baker: I can see the excitement on this side. Everybody wishes to throw some questions on that side over there. We are happy that this is the first team that has appeared before the Committee, and there are no adversaries when we sit here, this is just a way by which we can find the means to support the work that the ministry is doing.

Now, let me just take this from a different angle. Our biggest concern for those of us who sit on this side would be with the infection rates. You mentioned man, mosquitoes and virus, so it is man and virus that is our biggest concern. When we look at the management of dengue infections over the years, we can tell whether your system that is in place now is working or not, by looking toward what that system hopes to achieve. I would assume that the objective is to reduce the number of infections that we have as the years goes by, at least, by managing those cases that we have so far. Because of your monitoring system, there should be some data as to what the trends would have been over the last decade, because you have been managing these infections for the last 30 years. If

anyone here has the data, what has been the trend over the 10 years? Give me a fair assessment as to how well your management team has been working, based on the number of infections that we have had over the last decade.

Dr. Cumberbatch: We will be only happy to do that. I may turn you over to, if I can, with the permission of the Chair, our national epidemiologist to take you through the epidemiological cycle of dengue in Trinidad and Tobago. I just want to put it in a context.

The spread of dengue is a global phenomenon down to the tropical countries. So 50 years ago you had about 13 countries in the world that had dengue, and over the last 50 years you have 109 countries, and the effect of global warming in the recent last five to 10 years has been dramatic. So within that context, I would turn you over to our National Epidemiologist, who will take you through these statistics, Dr. Hinds.

Dr. Hinds: Thank you for the opportunity to address this Committee. I want to put the question you have asked into the context of the cycles that we have seen and the changes and patterns of the cycles as opposed to listing the number of cases from one year to another. What we have and can make available to the Committee is data, in the initial instance, over the last 20 years going back to 1989 and even before that. It has shown that on an approximately four to six-year basis, we have what I refer to as peaks, cycle peaks of dengue occurrence. What we have seen in the last may be 10 years is that the peaks are coming closer together. So, instead of having a large peak on a four to six-year basis, for example, we had a peak in 2008 and another in 2010. This reflects the situation that occurs and that obtains in the rest of the Latin American and Caribbean region. The regional pattern of dengue occurrence has changed to an extent.

So, whereas it took a while for the mosquito population to reach a critical point in its carriage of the dengue virus, and for the environmental factors to reach a breaking point as well, which will facilitate the outbreak situation, those conditions are now almost perennially right for the ongoing transmission of dengue, and this has been alluded to by the CMO. The conditions are not solely under the control of the Ministry of Health and not solely under the control of any health body in any part of the Latin American and the Caribbean regions.

So what we have seen, for example, in 2002, there was a cycle peak with over 6,000 cases; in 2008 there was another cycle peak with approximately 3,500 or so cases; and in 2010 we have had a cycle peak with just over 4,700 cases. This pattern is what we are attempting to break by a concerted effort and a concerted approach to remove the multifactorial cause of the spread of dengue, multifactorial being the behaviour which leads to environmental issues being the actual existence of the mosquito and the breeding sites that should and can be eliminated—the practice of not protecting oneself from mosquitoes bites where you can in the household. All of those things need to be addressed in concert in order for the problem to be solved.

What we are seeking to do to summarize and answer your question is to shorten those cycle peaks. Since we have frequent occurrences of dengue, what we do have is a population that has been vastly exposed to dengue, and the multiple exposures are a potential hazard for more serious dengue cases. I would like to add at this point that in spite of that, what we have found is that the concerted effort to improve the training that the medical professionals in responding rapidly to acute dengue shock syndrome and dengue hemorrhagic fever has been improved and revisited. Training has resulted in overall better outcomes and a smaller proportion of adverse outcomes in the population in spite of a regional situation where dengue is on the increase in this part of the world.

Dr. Cumberbatch: Madam Chair, can I add something to that? As we have the attention of the national community, I just want to say that the increase in dengue that we are speaking about is not an isolated disease. In South and Central America and coming down this part of the world there has been the rapid increase in malaria and yellow fever. Brazil, the Columbia and Peru, over the last three to five years, there have been rapid and major outbreaks of yellow fever and malaria coming down the chain. It comes down toward us and, fortunately for Trinidad and Tobago, we have done very well in the immunization against malaria. So the vectors are here in great numbers, and we saw last year where the monkeys were dying, but because our population is well immunized—we want to make a plea here for the public to ensure that anybody who is not immunized against yellow fever, which is a 10 year coverage, to please do so. This has been the result of climate change.

They were seeing it in South and Central America where the vector diseases, as a result of environmental issues and climate change is making a major resurgence. These countries are battling malaria, yellow fever. Brazil was battling malaria, yellow fever and dengue at the same time. So we have been doing fairly well. We have total control on yellow fever, and we want to continue with that and, certainly, with the malaria. Because of these other countries having malaria, the risk to us for people with malaria coming in become greater and greater. There is also the question of malaria density in the virus in the forest; we are seeing an increase in that. So it is not just dengue, the impact of environmental control, and this is not going to go away because climate change is not going to go away as a simple matter. I do not know if Dr. Tilluckdharry wanted to make a comment on this for us to understand the risk involved.

Dr. Tilluckdharry: Thank you very much. It is a pleasure to be here today representing Vector Control and the Ministry of Health to talk about dengue. Bearing in mind that Dr. Cumberbatch mentioned certain countries are also experiencing outbreaks of yellow fever, the aedes aegypti mosquito is also a vector for the yellow fever, hence it is important to note that yellow fever is the only disease that a vaccine is available. As mentioned, about 2.5 billion people are at risk or living in areas with dengue fever, that is nearly 40 per cent of the population worldwide.

Last year, I attended a conference in Barbados where 19 other Caribbean countries shared information about dengue fever, and I must tell you that we are not isolated. In fact, we are doing fine, in the sense that even right next door in Puerto Rico they were seeing about 800 cases per week with a total of about 77,000 cases of dengue fever and about 770 deaths. Now, the reason for that in Puerto Rico, unfortunately, was that there was a change in government and they laid of the staff hence they did not have adequate manpower to do the necessary work. As mentioned previously, what are the risk factors? What we are seeing is an increase in dengue not only in Trinidad but globally. One thing that was mentioned was climate change. The climate change has influenced the population of the vector which is the aedes aegypti mosquito. It lives in clean stagnant water.

Now, last year, we experienced a long hot dry spell. The vector, the aedes aegypti mosquito live for a shorter period of time, but produces more eggs. So with the onset of the rain these eggs hatched and there was a multitude of the adult aedes aegypti around. These eggs can withstand drying for months and sometimes years. So that the simple thing like a container being left outside and exposed to rain, the eggs will remain there and with a little water or rain fall it hatches and emerges. So we have to emphasize the importance of source reduction, meaning trying to get rid of any potential breeding site for the mosquito, and that is the key to controlling dengue.

It has been tried throughout even within Central America and Latin America, but there are some challenges involved in getting the society, and the communities more involved, and this is probably one of the messages that we have to stress today, that we must see a stronger community spirit in cleaning the environment in getting rid of the vector. Dengue is just like diabetes.

We mentioned that the Ministry of Health has embarked on a DEP Programme involving school children to assist the population. The school children would be taught how to identify where the mosquito can breed, and in turn that information can be relayed to their parents who would probably do something constructive and try to get rid of the containers.

Similarly, childhood obesity in Trinidad is increasing and that is causing diabetes as well, but Prof, Telucksingh is involved in that programme. So you see, it is just as important as diabetes or even heart disease, but when someone dies from dengue it is a big problem, because it is preventable. We are seeing the vector; we know where they are breeding, and the population knows everything about dengue. They could tell you what are the possible containers where you can find the mosquito breeding, but yet they would not do anything to eliminate the source of breeding.

So, apart from climate change, we talk about the increase in the population. More houses are being built so you have more artificial containers for the mosquitoes to breed in, and on top of that we have been using—the public has been demanding the use of more insecticides—insecticides for a long period of time. The problem of insecticide resistance can developed, apart from the ill-effects of the insecticide on the human being, but on the environment. So, dengue is a challenge globally, and Trinidad is not isolated. In fact, our figures last year, despite the fact there was an outbreak, there were only four confirmed deaths unlike the other Caribbean countries. Thank you.

Mrs. Seepersad-Bachan: Madam Chairman, I have two questions I would like to ask; one is for Dr. Cumberbatch and the other on the same issue.

Madam Chairman: Ask the both questions and let them answer.

Mrs. Seepersad-Bachan: Well, the first one is with respect to the issue of the plans by the various regional health authorities. We note here that we do have a response forwarded by the Ministry of Health I think it is, on the Eastern Regional Health Authority, and there are some questions that we asked. I know you may not be prepared this morning, or I do not know if you are, but with respect to the other regional health authorities, the issues that we raised as a Committee dealt with the shortage of dengue kits, et cetera which the Eastern Regional Health Authority responded by saying, no there was no shortage of kits and the Insect Vector Control played the vital role in the dengue management plan.

What I really want to ask you Dr. Cumberbatch is, how frequently do the Regional Health Authorities report to you and how do you monitor their performance? Do you have plans from the other regional health authorities?

Dr. Cumberbatch: We did not send all the information that we have. I think if we did that in terms of electronically, it would have really overwhelmed you. In my possession, at the start of April every year, what we would call preparing for the rainy season, each RHA has to send to the office of the CMO a comprehensive dengue preparation plan which we go through. So in my possession, I do have those plans. That speaks to what the hospital

has to do; the primary care system; the public health inspectorate; and your surveillance measures, et cetera. That is the plan. However, on a weekly basis, I get surveillance data that is reported through the Surveillance Unit. The Surveillance Unit that is headed by Dr. Hinds is linked into the Insect Vector Control which also gets surveillance data from the community. So, the plans are there; the surveillance linkages are there.

The issue here is not that we do not know or we are not in control of the health response. The problem that we have in Trinidad and Tobago with dengue is when you have dengue which can be caused by four viral types—dengue, one, two three and four—getting one type does not prevent you from getting the second type.

Unfortunately, with dengue, the more frequently you get dengue infection which is by type one, then type two, type three, the complication rate increases. So someone who gets dengue infection once and they get it a second time by a different type, the potential to have a very adverse outcome increases dramatically.

That does not mean that some types of the dengue virus, type two and type three are variant. So in Trinidad and Tobago it would be very difficult to find someone who never had dengue. So the population is not becoming hyper endemic. What does that mean? I am getting to your point. I just want to make sure we understand why we are so concerned. You do not need an epidemic for someone to die of dengue hemorrhage fever in Trinidad and Tobago, because of repeated infections you do not need epidemic numbers.

In epidemiology terms, Trinidad and Tobago is described as a country that is endemic for dengue fever. The viruses live here. We do not have to import them anymore, they are all here; type one to four. Another scientific observation is that people of Asian descent seem to also have adverse outcomes being affected by the dengue virus. When you have multiple infections, the children become at high risk in terms of adverse events which we saw this year and in 2008. There was a disproportionate number of children with severe complications. Fortunately, the health system did well, but there was a disproportionate number of our children having very severe responses to the dengue virus.

The issue here is that we have to stop this, because, you do not need an epidemic for someone. So, somebody can routinely now, in any month of the year, get dengue, for example a child, and end up in our intensive care unit. There is no need for an epidemic. And the second thing is that as the dengue fever spreads, and as we have this as a challenge, it puts a tremendous strain on the health system when we have to respond to it. We have to divert resources to deal with it when you have great numbers. You have to put up special wards special screening.

I just want to get to the point about the dengue kits. The dengue kits that are used in the health system out in the clinical areas and in the hospitals are screening kits. They are there to aid the doctor in making a diagnosis. It is not the dengue screening kits that we used in the health system. I am not talking about the confirmatory test that we do in our public health lab. They are not diagnostic. If you do not use them in the proper timing with the proper sequencing and the proper conditions, you get bad results. Dengue is a clinical diagnosis that the doctor makes and manages the patients in front of him.

There has been an unfortunate reliance. Maybe we may have caused it to some extent, where the public perceived that if they do a dengue screening test and it is positive or negative, everything follows from that. We want to dispel that publicly today. The screening tests; that is what they are, assist the doctor in diagnosis. The important thing is the clinical history and diagnosis by the doctor that leads to management and not the test. So you

can have what people perceived to be a positive dengue test and it is not dengue, and the reverse is also true. It can be negative and you can have dengue. So, we need to be careful with that screening test.

Mrs. Seepersad-Bachan: I hear you. All I am saying, Madam Chairman, they are referring here to these dengue management plans from each of the regional health authorities, I am wondering, through you, if we can receive copies of those from the prior years. How did you measure the effectiveness of these plans? How did you monitor the performance of these plans? Let me just move now very quickly—

Dr. Cumberbatch: If I can say quickly how we measure it, we have a surveillance system that I said measures the aedes index. So, part of the regional health responsibility at the public health level is to do the surveillance in communities to allow for the vector control to spray. So by the aedes index, I can tell whether, in fact—we monitor these indices every month and every two weeks—your vector control activity is working.

Mrs. Seepersad-Bachan: So that is your performance measurement.

Dr. Cumberbatch: And also the number of patients is presented to you; the complication rates and the virus circulation. So, we have performance indicators of the outcomes that we check all the time.

Mrs. Seepersad-Bachan: Let me just move very quickly to the second point. Just taking off again from the questions my colleagues raised, I am looking at the chart that—

Dr. Cumberbatch: Some of the charts that we sent to you.

Mrs. Seepersad-Bachan: —well this is one of the charts provided in your submission which shows the cycle. We looked at the peaks and the trough of it, and to me somehow there seems to be a period in-between of four to five years whenever you would have that slowdown in the dengue, and then it peaks again. So, you are saying, if I gather correctly, Dr. Tilluckdharry, this peak took place in 2008.

Dr. Tilluckdharry: In 2008 and now in 2010.

Mrs. Seepersad-Bachan: In 2008 we are seeing almost 622 cases which were very high. I want to speak to the spraying programme. I understand the point you are making about the issue of the insecticide resistance but, first of all, during that time, before that, you had quite a very low rate of 11 and 18 and so on, in 2006, 2007 thereabouts, and then in 2008 you had 622 cases. To begin with, and probably you can confirm for me, what was your spraying programme like?

Dr. Tilluckdharry: In 2002, there was the introduction of the third stereotype, stereotype 3. There was an outbreak then in 2002/2003 and it remained until 2008. What happened? The population now is exposed to this new stereotype and not until 2008 we saw another outbreak.

Spraying activities were done throughout from 2002 onward, and it continued. Now, remember based on the surveillance that Dr. Cumberbatch mentioned of not only the dengue cases, the virus, the viral type, but the vectors, certain localities would have a higher infestation and it may be due to various reasons. One of the main problems is the lack of pipe borne water in those localities, and in those counties where we do have the highest incident of dengue associated with the lack of pipe borne water.

Now, I was told that in Tobago in certain areas there was an arrangement or an exercise through the Tobago House of Assembly whereby they exchanged water barrels which were being stored for water for drums. I think the public had to pay half and the Tobago House of Assembly paid next half. Now, with a drum, it is covered,

and despite the size, the amount of mosquitoes that breed in it is very little compared to a barrel, strange enough, but that is true. So in terms of the source of breeding, 70 per cent of the breeding of mosquitoes in Trinidad overall is in water barrels stored for drinking purposes or other purposes.

In some localities it may be buckets; in some localities it might be just the brick holes that are exposed, or in some localities it might be the water container that is used to put for their dogs in the kennel.

So, spraying activities are done every day in some areas. We have to do different types of spraying. Now, we are dealing with an adult mosquito breeding in water, so you have certain stages undergoing in the water eggs, lava and pupa and then it emerges. You probably have seen the truck mounted spraying that helps to knock down the adult infected mosquitoes. It would not affect the lava stage, the mosquito that is maturing in the water.

Off all confirmed dengue cases inside of the homes, the walls are sprayed, and this is called residual spraying. The rationale for that is if you have an infected mosquito after it takes a blood meal—bites you and at the same time injects you with the virus—it rests on the wall. So, it would pick up the insecticide and die. That is the effect of the residual spraying.

There is a third type whereby a mist-type is emitted from what is called thermal fogger around the homes. Again it is to knock down the adults. So, you have the truck mounted spraying; thermal fogging around the homes; the residual spraying of the walls and then the application of the granules in the drinking water. That is the only known larvicidal we have in Trinidad that is safe to use in drinking water, meaning to say, you can drink the water, when use at the correct concentration.

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Dr. Tilluckdharry: There are others on the market like BTI which is a bacillus; now, we have to move away—Really and truly it is an integrated approach. One must move away from high reliance on spraying and insecticides to safer methods. The safest method is prevention—remove the source of breeding, but there are other biological agents such as even the little fish, the billins, which are being used right now at the Mount Hope Medical Complex in the underground drains to feed on the larvae of the mosquito. I mentioned bacillus, BTI—so that is what they call an integrated sort of management in the control of dengue.

Mrs. Seepersad-Bachan: If you look at the high rate in 2008 with the 622, it is my understanding that in 2009 there was a termination of 100 sprayers, is that the reason—

Dr. Tilluckdharry: No, that is not the reason.

Mrs. Seepersad-Bachan: First of all is that correct that we terminated a number of sprayers in 2009?

Dr. Tilluckdharry: Well, not that they were terminated. They were hired temporarily—when I started in the division, what they called the expanded programme, whereby workers were hired temporarily depending on the situation, so we hired more sprayers in 2009 and they were hired like for three-month period to cover the peak period of the dengue situation. They were not terminated prematurely, but they are rehired depending on the situation.

Mrs. Seepersad-Bachan: For this year 2010?

Dr. Tilluckdharry: Yes, because they were all trained.

Mrs. Seepersad-Bachan: For last year?

Dr. Tilluckdharry: Yes.

Mrs. Seepersad-Bachan: This is what I am trying to find out, are they back on stream for 2010?

Dr. Tilluckdharry: They are back on stream. All the sprayers were back on stream.

Mr. George: Were they there in 2010?

Dr. Tilluckdharry: Yes, effectively from January 01st to March. That is the next letter of employment, so it depends—we, meaning vector control, would recommend to the Ministry if we need them for a further three to six months, depending.

Mr. George: Thank you very much, Madam Chairman, through you, to Dr. Cumberbatch, you were speaking earlier on about the extent to which the fact that we do not have a 24-hour supply of water to all of the population is a significant contributor to this, because you indicated that because people have to store water in barrels that you have this difficulty and it tends to promote the spread of dengue.

If I said to you that: one, this has been an issue of longstanding; two, that as we speak only about 20 per cent of the population has 24-hour pipe supply and so storing water is an activity that 80 per cent of the population undertakes. I would suggest that of that 80 per cent some considerable number have tanks which, I think, are impervious to mosquitoes, I do not know. But, you have a proportion that, as you right say, stores water in barrels and we are likely to have this situation continuing for sometime before we can resolve it by giving everybody 24-hour pipe borne supplies to their homes.

What has been and what would be your response, faced with this? You indicated that, for example Dr. Teeluckdharry said, in Tobago you tried to get people to move away from drums and store in containers that are more covered and then you spoke about the use of granules. What else can you do if I say to you that as the Minister responsible for WASA, we are still some way away from giving people 24-hour supply and that people would still have to continue to store water in containers of one type or another? I say this asking in the fight against dengue if you are continued to be faced with this what would you do?

Dr. Cumberbatch: The critical ingredient there is the type of container that you store the water in. You have to make sure that it is a closed operation so that the mosquito does not get access into and allow to breed easily. Also the education to the community or the householder, how to keep checking the container. When we talk about barrel—I am sure that you have driven in parts of Trinidad and Tobago where you would see at the side of the road a barrel, that is what we are talking about, or at the back of the house the barrel, as opposed to having a water tank with a cover, with a drainage system.

So what we are advocating in the Ministry is that the Ministry would be quite happy to advise on the types of containers that home owners should have to reduce that. They are not saying that you have to put pipe-borne water in everybody's house, even if that is the ideal, but while we are getting there the types of containers—and you are quite right, it is not a new problem, many years ago they attempted to put a mesh on top of the water. I do not know how many people remembered that. They used to sell that, it was a kind of fine mesh, but behaviour patterns again, people would remove the mesh. In fact, at one point in time—Trinidad and Tobago—they used to actually put those little fishes that we speak about in the drinking water, but people were afraid to use the water because of the fish, because the fish would eat the larvae.

Even when we sometimes—as I say the education of the public—put abate into the water, which is the drinking water, some people do not want to consume the water because they are unsure of this chemical that we just put in the water whether it is dangerous or not. So the type of container becomes the important thing and then the education of how to monitor. The other thing that is also possible, we do have in Trinidad and Tobago people with proper tanks with covers but they leave the cover open or there is a hole, so mosquito is breeding there, the container is very high and nobody checks. So, the proper container is important, but the education and the use of it and the continued surveillance of it. But I said, we see it a lot in the semi-rural and rural areas where they would just leave the barrel because they are waiting on a truck borne supply to come and deposit the water.

So, there are so issues, but certainly we can work on it as inter-agencies. The Ministry of Health can certainly advise the types and in terms of the—I do not know whether the idea of subsidizing the tanks, because whenever we raise that question, the question of cost comes in. [*Interruption*] Well, that is an issue that has to be dealt with on your side, but I am saying that whenever we raise the issue, the issue of cost comes up from the homeowner and that may be something at the policy level. Can we share the cost with people so that we do not have these open barrels that is really putting them at great risk—because what is happening here is that the homeowner is attempting to get a life-saving commodity, but in the behaviour you are also introducing a risk, because somebody has to check the barrel every day. If you have an open barrel everyday it is going to be a problem. The barrel behind your house, sometimes they collect rain water, but the barrel is open, so there are things that we can do and the Ministry is certainly willing to assist in terms of identification of the types that one can utilize, and the education working with local government to monitor what is happening.

Madam Chairman: Dr. Cumberbatch, as a result of this discussion would you be willing to discuss with the Ministry of the People and Social Development, including assistance with obtaining proper water containers as part of the self-help or one of the programmes in his Ministry.

Dr. Cumberbatch: We would be delighted to do such. This has been brought up before—

Madam Chairman: Would you undertake to do that?

Dr. Cumberbatch: On behalf of the permanent secretary, I will.

Miss Roopnarine: Thank you, Madam Chairman. From the discussions that we have been having it seems as though the approach to the reduction of dengue is two-fold; proactive and reactive, and one of the things that we have seen this year is the introduction of the Inspector Depth Programme which seems to be a very good initiative and I want to commend the Ministry of Health for that.

Now, in terms of the reactive aspect there are times where we would be hit with some serious flooding, and of course the result of that is that we have an infestation of mosquitoes leading to dengue. Now, my understanding is that there is a certain time period by which when you spray you have to wait for a certain time to be able to spray again. During the rainy season in terms of the areas that are prone to flooding there might be a situation where there is flooding today and then within three or four weeks there is flooding again, so you find what happens, and I would give you an example—let us say Woodland in particular, there is flooding and when the water goes down we have the Ministry of Health who comes in and sprays then in a couple of weeks time it happens again, and we were informed that you cannot spray. How do you treat with a situation like that?

Mr. Tilluckdharry: I am fortunate to be on the inter-ministerial committee on flooding as well and I think I shared some information with the hon. Emmanuel George—insect vector does work after flooding. Now you mentioned about Aedes Aegypti and it likes clean water. With flooding, really and truly, the main aim is to assist the householder in sanitizing your homes, so Insect Vector Control Division would use a biocide in the homes which would act on bacteria, fungi, et cetera.

There is no strong association with dengue and flooding per se, because the Aedes Aegypti likes to live in clean, stagnant water. However, you may find a high incidence of the Culex Mosquitoes which is more of a nuisance so fogging would be done to get rid of the mosquitoes in and around that area. In fact in any unsanitary condition you would have flies, mosquitoes, cockroaches, et cetera. So yes, post flooding management is one of our programmes. We assist the regional corporations in helping the householders in getting back to homes to some clean condition, by mainly doing biociding and fogging to get rid of the Culex Mosquitoes

Miss Roopnarine: Just for clarity, are you saying that there is no relation between flooding and dengue?

Mr. Tilluckdharry: Flooding and dengue—rain water in a container, yes. Clean and stagnant water is where the mosquito would breed, the Aedes Aegypti. In flooded water, drain water, culex—and I must say that over 90 per cent of the mosquitoes in Trinidad belong to the culex form. A small percentage is the Aedes Aegypti. The culex is more of a nuisance, yes, it can also transmit to West Nile virus, fortunately for us we do not have any known cases in Trinidad and Tobago, but the main problem is more of a nuisance.

Prof. Ramkissoon: I want to come back to the spraying, the individual at the home level, your message is quite clear, keep your environment clean, take care of your environment and spray less. At the level of the Ministry or your vector control unit where you do the spraying of neighbourhoods from time to time, you said that mosquitoes are developing a resistance to the chemicals, do you find therefore that your spraying is becoming less effective or you are using stronger chemicals?

Mr. Tilluckdharry: Studies in the past were done and in terms of the insecticide resistance, there are certain localities, yes, there are certain degrees of resistance, so, for example, malathion. It is intention of the division, based on the last conference in Barbados, to try to use different insecticides

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One alternative is probably to rotate by utilizing, what you call a pyrethroid is not as effective as the malathion and there is even a higher incidence of resistance. So we need to do more work when our Entomologist comes on board, to reexamine all our different insecticides that are being used. But so far the malathion is effective as well as the larvicides that we use in drinking water—

Prof. Ramkissoon: Just a follow up. You know that malathion is linked up with cancer.

Dr. Tilluckdharry: I know there are a lot of reports—if you check the internet—about causes of cancer, but there is not a direct correlation between malathion use and cancer, because is still being used worldwide. Yes, it has side effects; it has ill effects, but one has to use it in proper concentration, proper condition, using the appropriate protective gears, et cetera, and then it depends on the time of exposure. So the workers are only allowed to being exposed to the insecticide for a certain number of hours per day.

Mrs. Nan Ramgoolam: Thank you, Chair. My statement and question focus around research, evaluation and

monitoring. First, I must thank the persons at the Ministry of Health for sharing this information with us and to the wider public. Coming from the Ministry of Health, we know that your approach to your work is to diagnose, to prescribe, to administer or implement and evaluate. I note that in your action plan 2009-2010 Fiscal year, one of your programmes specifically, you diagnose the problem and challenge of dengue and it is a major challenge, as Dr. Cumberbatch indicated. We also note on this page that you identified some serious programmes in column 2 with specific activities to engaging, and objective to be achieved. I also note that you identified your monitoring and evaluating mechanisms. My question is: have you evaluated your various programmes—because there are quite a few here—and approaches to delivery and how do, or did you, know that you have achieved your objectives? Because Dr. Cumberbatch talked about achieving one objective when Minister Seepersad-Bachan asked about the reduction in dengue, but I am looking at all the programmes, so a systematic approach to evaluation. How do you know that you have achieved your objectives in the various programmes so that you will not be taking—probably it is going to inform us as how to proceed in the future; we will not be taking a broad brush approach. Which programme was more effective in helping to reduce dengue so as to assure the population that things are getting better? The second question is specifically to Dr. Cumberbatch and it points again to research and evaluation. You said we are doing fairly well when compared with other countries. How do you come up with that statement or conclusion? Is there a benchmark we use when compared with these countries that you called? For example, resources, money expended per capita. How do you compare it? What rationale was used to compare, to make a statement that we are doing much better than other countries? It points to the whole issue of reliability and validity of engagement and the use of resources. I ask these questions simply because we are here to help you. Do you have a strong R and D Unit? Do you have qualified people to engage an ongoing research to inform the medical persons, and so on? So that we would like to know what your challenges are, as well, where that is concerned, because it is critical.

Thank you.

Dr. Cumberbatch: In terms of your opening statement with respect to diagnose/treat, one of the critical ingredients in the Ministry of Health at the level of public health is prevention. That is a very, very critical thing, with respect to dengue prevention. In terms of how we compare ourselves, as I said we are a member of the CAREC countries and dengue is monitored across the Caribbean diaspora, also South and Central America: When we make a judgment on whether we are doing better or not, is along infection lines, number of cases and number of deaths. When we have an epidemic, the question of cost becomes an issue, in that it is difficult—I can pass you to the finance director who will tell you what it is the direct cost involved. What he cannot tell you is the indirect cost, in that at the moment we cannot say to you what has been the cost in the health services in responding to the epidemic; what was the medical cost. We can tell you the number of test kits we bought. But when we have something like dengue, we have to redirect our doctors, open for longer hours; we have to now utilize our beds that would have been utilized in managing another disease. We are overwhelmed in the health system. So the billions of dollars that is running the health system—and let us say if we made an assumption that from a direct cost of the point that it cost us $25 million to respond to dengue in routine, when an epidemic comes, that $25 million, we then redirect $50 million, not only at our level, but in the private sector, to deal with it.

When you have something like dengue, the indirect cost is also felt in the question of loss of man hours of work, because many people stay home because of dengue or because of their children having dengue. So to say that—we can make a comparison with our direct cost, but I am saying, that does not capture the real context. However, we use clinical indicators and epidemiological indicators to indicate where we are in comparison to others in terms of when they have an outbreak, what has been the number's; what has been the number of patients hospitalized and, of course, the number of deaths. We use these as indicators.

In terms of evaluating whether our programmes at the level of prevention, health education, clinical protocols, rate of seeing patients, the inter-sectoral coordination between the ministries, we do not evaluate on a direct basis on each particular activity on the programme. What we evaluate is whether, in fact, we have successfully been able to control the epidemic, because what you are looking at here—and I just wanted to make a point, because you were talking about 2008 and 2010. The reason we have concerns is that climate change is saying to us that this five years that you are accustomed to, is no longer on the cards. What people are experiencing is repeated dengue epidemics. Yes, there is a question of effectiveness of what health does, and we can pull out vector control and look at their effectiveness in relation to their outcomes. But the biggest outcome for vector control is if we did not have an epidemic.

So from the health point of view, if we can spend $30 million and do not have an epidemic, the unit cost of what we just did there, it may seem to be high, but the fact that you prevented an epidemic, you would be saving yourself hundreds of millions in other areas. As I said, the reason I put the first point, because dengue is a public health problem and you really have to prevent it as opposed to have it to try to treat it.

So with public health problems, a public health intervention is—the cost of prevention is always high in relation to the return. The return is not having the problem. For Yellow Fever it is a different matter, in that, because yellow fever can be managed by an immunization, the cost of intervention is relatively cheap, but the impact is large.

So, to summarize, we do not evaluate at the Ministry, every activity that is done by departments. They have to do that, but it is the assimilation of all the activities. And we keep making this point about integrated vector management control. So it is the overall programme you are looking at to see whether, in fact, you were able to not have an epidemic, control the numbers of Aedes Aegypti by our surveillance, control the number of patients, because when you do have an epidemic, you have to respond to it.

Madam Chairman: Thank you, Dr. Cumberbatch. We have time for two more questions, so I will have Mrs. Mc Intosh and Mr. Maharaj, in that order.

Mrs. Mc Intosh: Good day again. Before I express my own concerns, I would like to do so on behalf of my colleague, Sen. Faris Al-Rawi, who has had to leave. Sen. Al-Rawi—first it is a request—would like to know if you can provide an organizational chart which shows the integrated structure of agencies with whom you collaborate, like NGOs, et cetera. Then his second concern was: does the Ministry of Health actually have the finances necessary to manage this dengue programme?

Dr. Cumberbatch: If I may, it is always better to have more. However, there is sufficient. We keep making the point over and over and over, that there is a role here for the community. So the area of priority and concern is not

what is the Ministry doing at this point in time, but what it is that the homeowner, the community, needs to do to eliminate the breeding sites, especially now, throughout. There are issues with construction sites—we did not want to mention these things—where in construction sites that are abandoned or you have mosquito breeding in vast numbers. So it is really in the reduction of the breeding sites that we need the assistance. It is the questions of the barrels for the water that we need assistance. It is not so much that the Ministry of Health—as I say, we are always happy to receive more resources, but we know that there are constraints in resources. But we would like to see resources being directed in these areas, in prevention, so that we can work with the community to make sure that we do not create the environment for more.

The question of the role of the media—because information to the public in maintaining the situation at your homes; how to identify and eliminate these mosquitoes, and if you become ill—because this is another critical thing—what is the responsibility of the media when you have a public health emergency like an epidemic? How do we utilize the media to inform the public when to go to the professionals, what to do at home so that you do not create a crises, because when you create the crises it comes into the health system and then whatever we are doing in the health system, we have to stop that to see many, many patients who may not have dengue, because people are panicking.

So we would like to ensure that the resources that can be applied can also go in the area of local government or with the sanitation et cetera, in terms of information, communication and education like our Inspector Depth Programme, and also in the area of the water management. We will be happy at the Ministry to always receive more, but we are saying in the prevention module, it is really in those areas we need to beef up the response.

Madam Chairman: Thank you. Mr. Maharaj?

Mrs. Mc Intosh: No, I have not asked my concerns. I put forward Sen. Al-Rawi's. I have a major concern I would like to ask.

Madam Chairman: Very briefly. We have exactly 10 minutes to finish.

Mrs. Mc Intosh: Prevention and source of breeding have constituted a large part of our deliberations this morning, by both Dr. Cumberbatch and Dr. Tilluckdharry. My concern—and I express this on behalf of my constituents—what are your efforts—although I know this is not your purview—to have abandoned houses, abandoned buildings that are overgrown that are prime breeding grounds for mosquitoes, drains and ravines that are prime breeding grounds; what are your efforts to have the relevant authorities address this? Because this is a real, real problem in my constituency and one of the reasons why I really want to address this dengue concern; abandoned houses where people have migrated and died and nobody is responsible. They are overgrown; you could hardly see the house, and mosquitoes are flying out of there. I have experienced this myself. How do you address this?

Dr. Cumberbatch: We have that same concern that you have, in that we are constrained by the laws of Trinidad and Tobago when it comes to private property. We have to go through the courts, to get the authority of courts to intervene. I do not want to say anything more about the courts. The way the system is set up as it is now over time from before, the public health authorities do not have the ability, besides serving a notice and all that comes with it. So while you have a public health problem—and just what you are describing, we are conscribed by the legal arrangements, that we just cannot go in and do things, and that is the system. So maybe we may want to review that.

So even though we identify a problem and we can ask use the yellow fever ordinance to go in and serve a notice, but there is the question of serving a notice and the time involved. So while all of that is going on, the nuisance continues. Not only that, I, myself have appeared in front the courts and not always was the outcome favourable for public health. So I say no more.

Mr. Maharaj: Thank you, Madam Chairperson. Looking at the graph on Table 4 for the confirmed dengue fever cases, 1989 to 2010 and as identified, we see certain trends. Now what is really standing out here is after every major peak there is a decline. And if you look, let us say, 1996, 395; we go straight down, 63 and then we go straight back up, peak again, and then we have some —the **solar** trend from 1990 to 1992 it goes back up and then in between from 1993 to 1996, and then we look at, from 2002 to 2009, and it seems that when there is a major peak, we are very effective in bringing it back down, and then something takes place again and it goes back up. This relates directly to the whole idea of the social consciousness, which correlates with the figures. So, essentially, what we are saying is that we are failing somewhere along the line to maintain the social consciousness. This is over a long period. So, clearly we need to develop a new strategy or strategies to maintain that social consciousness so we would not see these dips and inclines. I just wonder what are the new strategies to maintain that social consciousness. I see one here, but are there any additional strategies in place?

Dr. Hinds: I think I would like to share the response to the question of the peaks with Dr. Tilluckdharry, but with an epidemiological eye, the cycles that you see do have a multifactoral causation and, you are quite right, part of that is the waxing and waning of public consciousness in the immediate sequel or the immediate aftermath of an outbreak situation. There is a heightened level of enthusiasm in removing breeding sites, et cetera, but quite apart from that, there is the natural cycle of the prevalence of the dengue virus in the vector population and I will let Dr. Tilluckdharry answer that. And there is, of course, the fact that having a human population now that has been just exposed, largely, to the prevalent-circulating type, you do have a certain level of resistance to that type that has just circulated, because a lot of the population has just been exposed. What you do have in subsequent peak years is often a different stereotype that enters the population and causes another peak. So there is that factor and then I would let Dr. Tilluckdharry address the issue of the vector and the virus.

Madam Chairman: Thank you very much, Ladies and Gentlemen. I will just give the Permanent Secretary the opportunity for a last word.

Mr. Diaz: All I would like to say is, on behalf of the Minister and all the officers in the Ministry of Health, we are thankful for the opportunity to come to this honourable House before this Committee to share our activities and to share our concerns with, not only the House, but the public with respect to the dengue situation in Trinidad and Tobago, and I look forward and I hope for the use of the press to impress upon our population at large, their role in ensuring that the environment around the homes remain clean so that we could have a reduction in the breeding spaces of the virus and the Ministry of Health looks forward to a continued collaboration with all our partners, not only in the public sector, in other ministries and departments, but even NGOs to ensure that we deal with this national issue in the way that it ought to be dealt with, and we remain open as the Ministry of Health, as the divisions in the Ministry of Health, for consultation to ensure that this takes place.

Madam Chairman: I thank you all very much and just remind you all that what we have heard today is that

basically, the cure for dengue lies within our grasp. Make sure that we are not breeding the mosquito and we have no more dengue and those resources can be put to something else.

I thank you very kindly.

11.58 a.m.: *Meeting adjourned.*