The Ministry of Health
BELIZE, C.A.

PRIORITIZING PUBLIC HEALTH SPENDING: LESSONS FROM BELIZE'S CHALLENGE WITH VECTOR BORNE DISEASE

A case for Increase in Public Health Investment

"Health Financing: Strategic Management, Spending Wisely"

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11th Caribbean Conference on National Health Financing Initiatives, Bonaire, Oct 25-27th, 2016

Outline of presentation

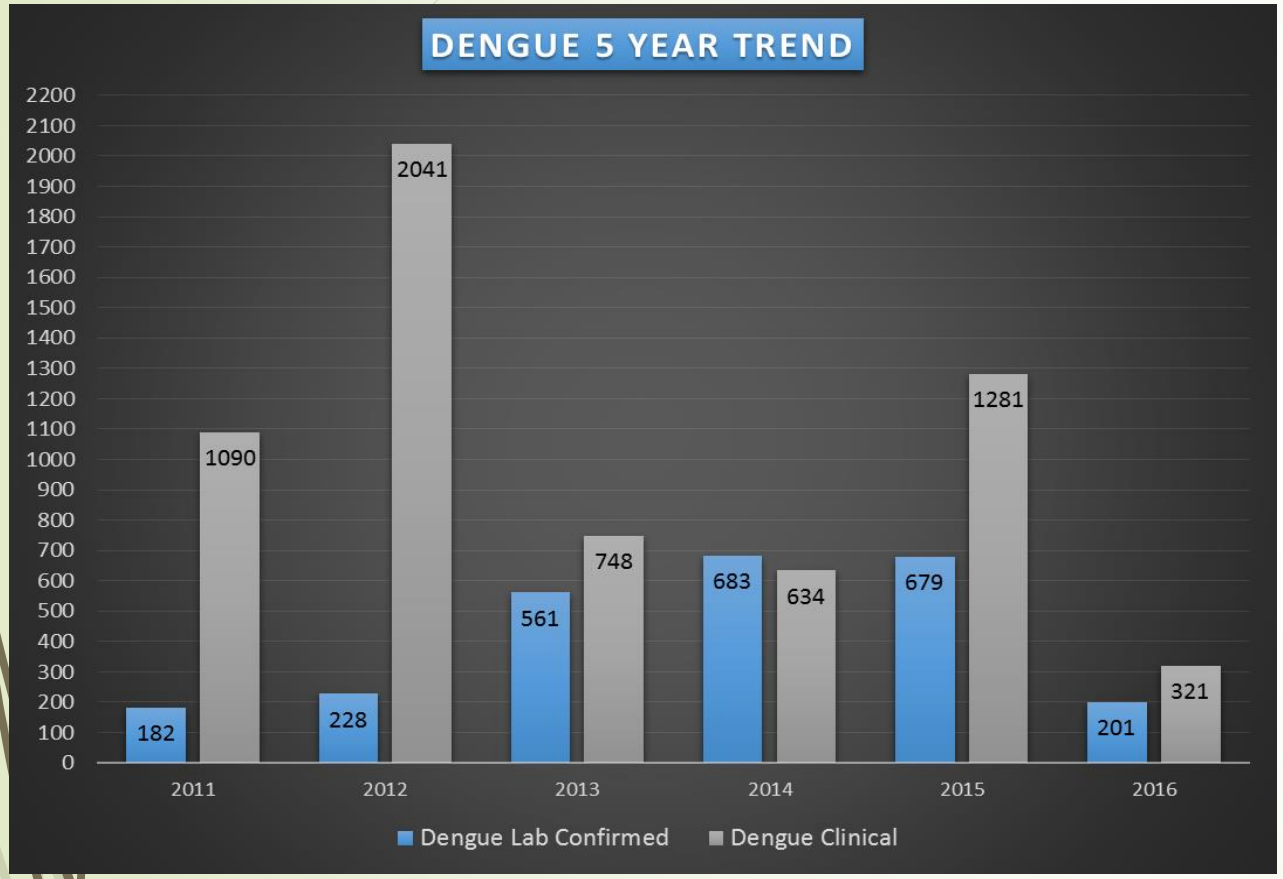
- Introduction
- Vector Control Program; update
- Health Budget
- The Challenge for Public Health
- Lessons learned
- Conclusions/Recommendations

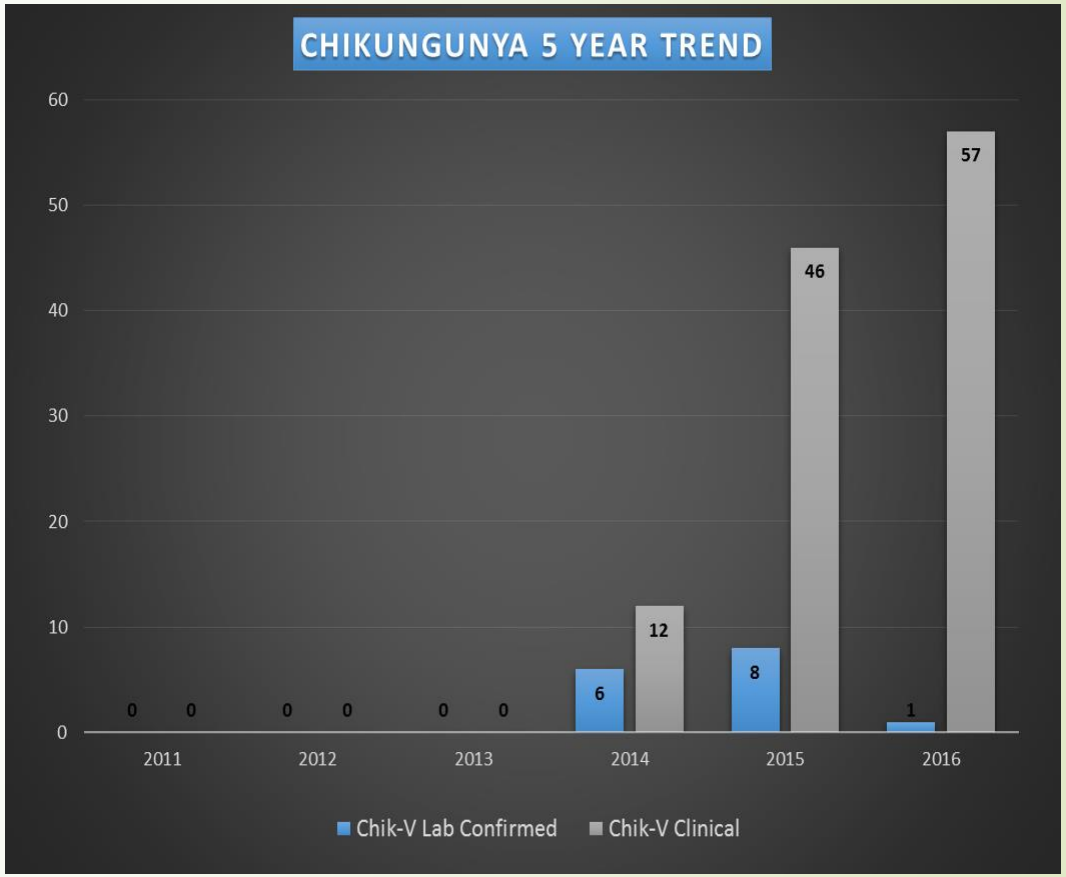
INTRODUCTION

"Health Financing: Strategic Management, Spending Wisely"

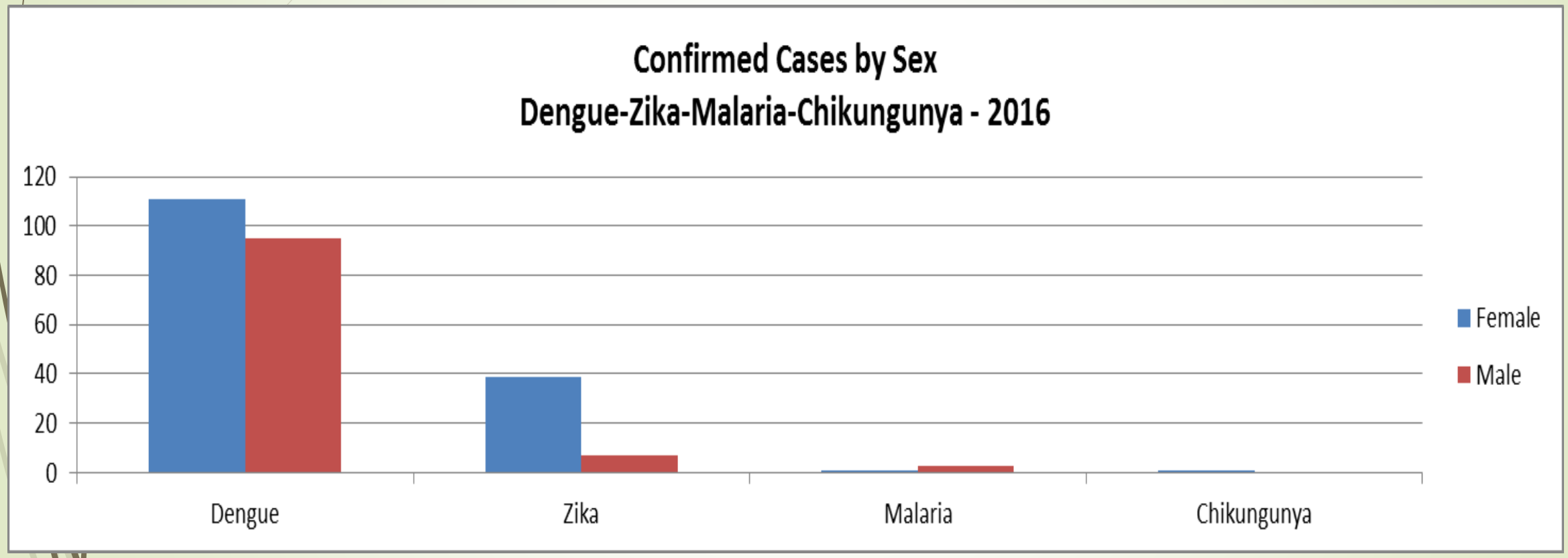
1978 Alma Ata Declaration...importance of PHC to reducing health inequalities and social injustice. 2008... Margaret Chan, Director General of WHO.."despite enormous progress in health globally, our collective failures to deliver in line with these values are painfully obvious and deserve our greatest attention...these reforms do not constitute a blueprint for action....the details must be driven by specific conditions and contexts, drawing on the best available evidence.."

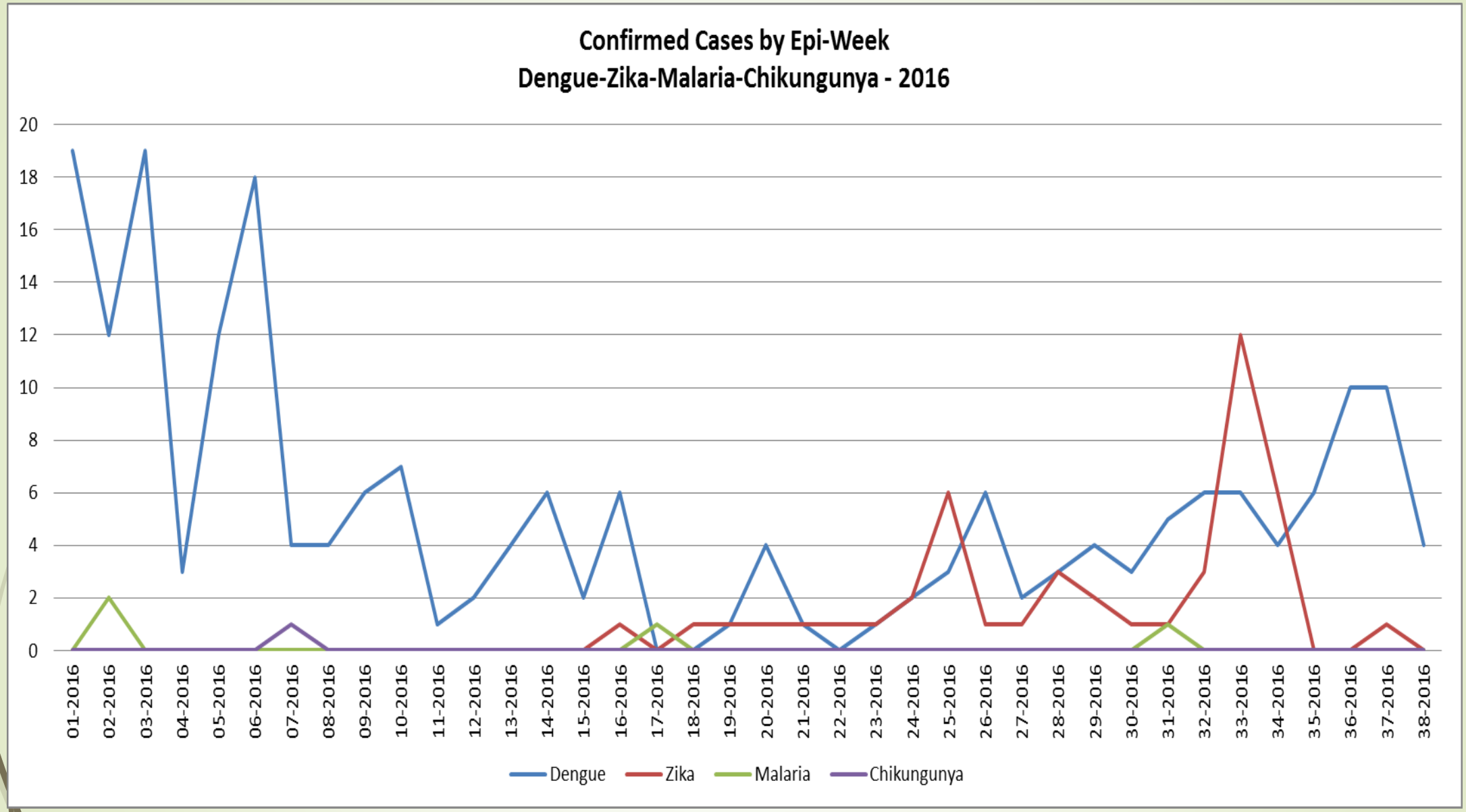
Vector Borne Illness: Belize





Confirmed Cases: 2016

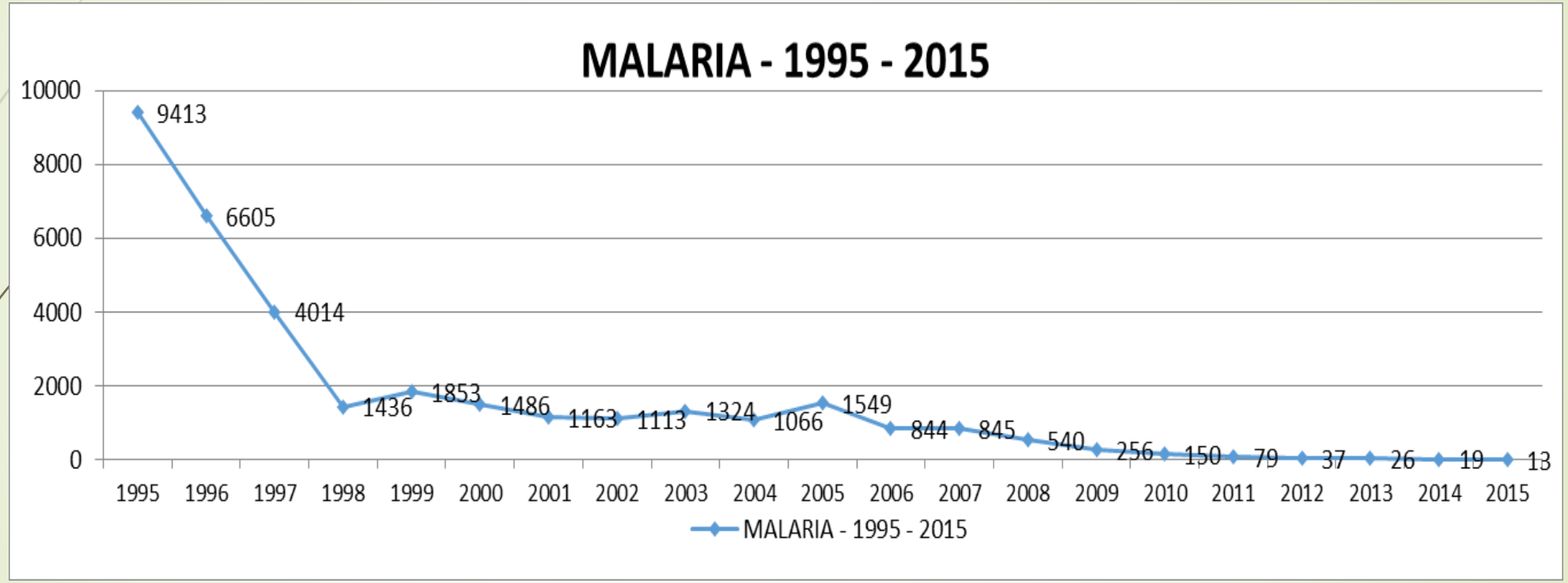



Confirmed Cases by Epi-Week
Dengue-Zika-Malaria-Chikungunya - 2016
20
18
16
14
12
10
8
6
4
2
0
01-2016
02-2016
03-2016
04-2016
05-2016
06-2016
07-2016
08-2016
09-2016
10-2016
11-2016
12-2016
13-2016
14-2016
15-2016
16-2016
17-2016
18-2016
19-2016
20-2016
21-2016
22-2016
23-2016
24-2016
25-2016
26-2016
27-2016
28-2016
29-2016
30-2016
31-2016
32-2016
33-2016
34-2016
35-2016
36-2016
37-2016
38-2016
Dengue
Zika
Malaria
Chikungunya

ZIKA CASES REPORTED FOR 2016 (WK 38)

District of Residence	Suspected	Confirmed	Pregnant	Pregnant(positive)
1.Corozal	5	0	0	0
2.Orange Walk	16	1	1	0
3.Belize	168	21	8	1
4.Cayo	90	13	10	5
5.Stanne Creek	34	3	1	0
6.Toledo	34	7	1	0
7.Unknown	2	1	0	0
Grand Total	**349**	**46**	**21**	**6**

Malaria


MALARIA - 1995 - 2015
10000
8000
6000
4000
2000
0
9413
6605
4014
1436
1853
1486
1163
1113
1324
1066
1549
844
845
540
256
150
79
37
26
19
13
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
MALARIA - 1995 - 2015

Vector Recurrent Budget 2011 - 2016
Vector Control External Grants 2011 - 2016

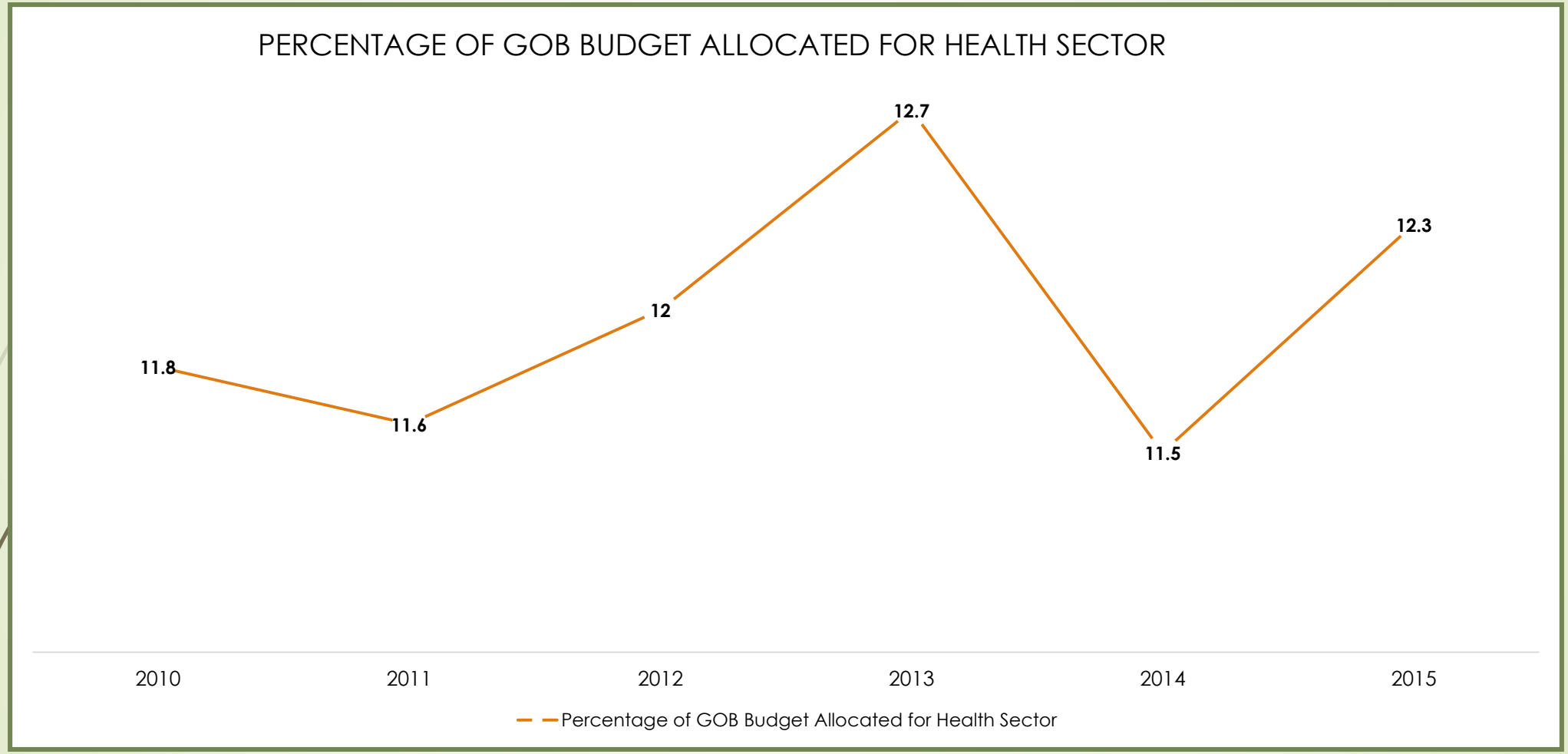
Year	GOB Recurrent Budget (BZD)
2011	$619,028.00
2012	$843,399.00
2013	$742,582.00
2014	$763,369.00
2015	$775,496.00
2016	$792,121.00

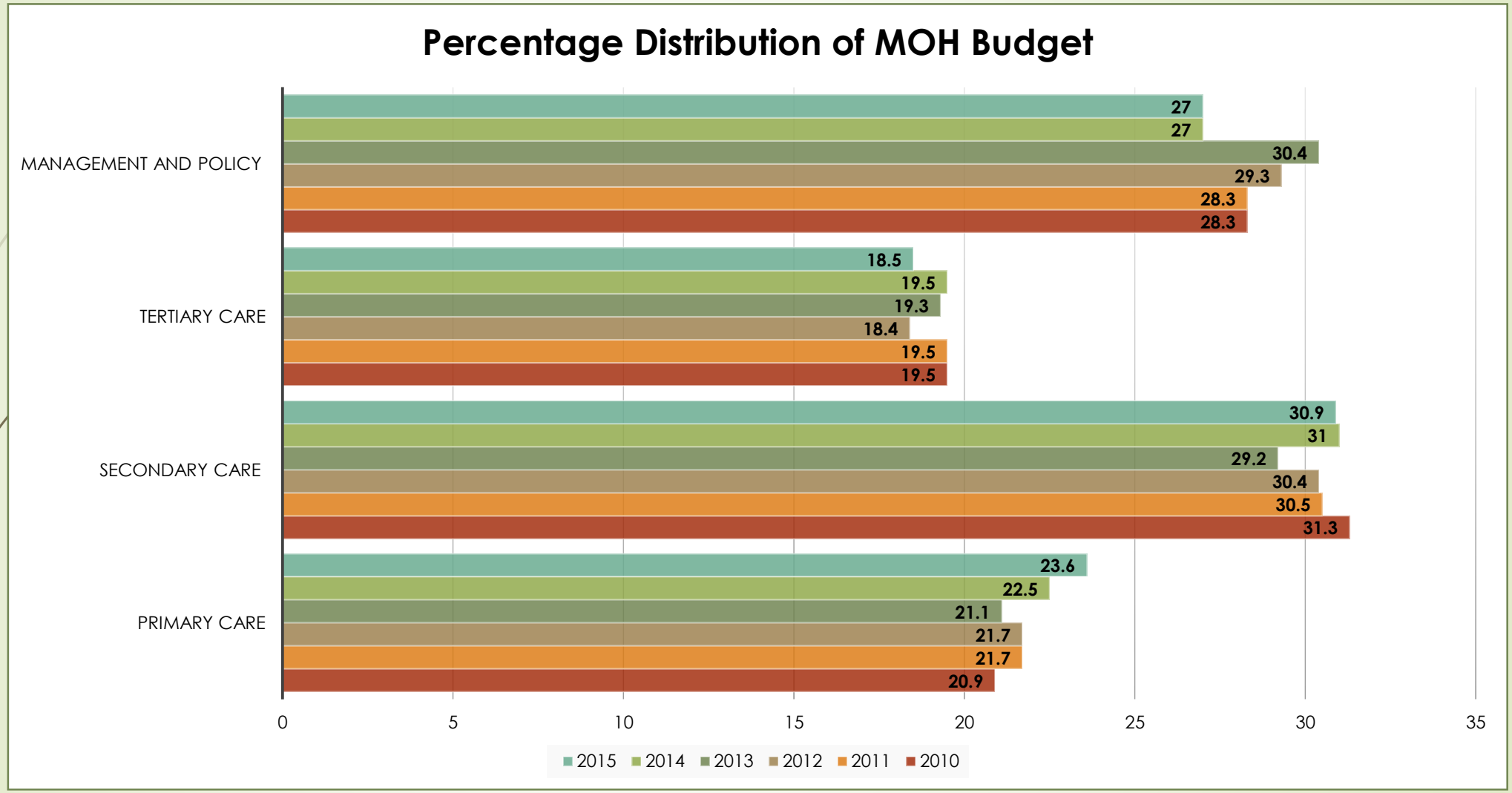
2013 Dengue cost global economy $8.9 billion US (58.4 million dengue cases plus lost time and productivity.)

2015 (Belize)Estimate loss is $ 300,000 US from dengue cases…conservative.

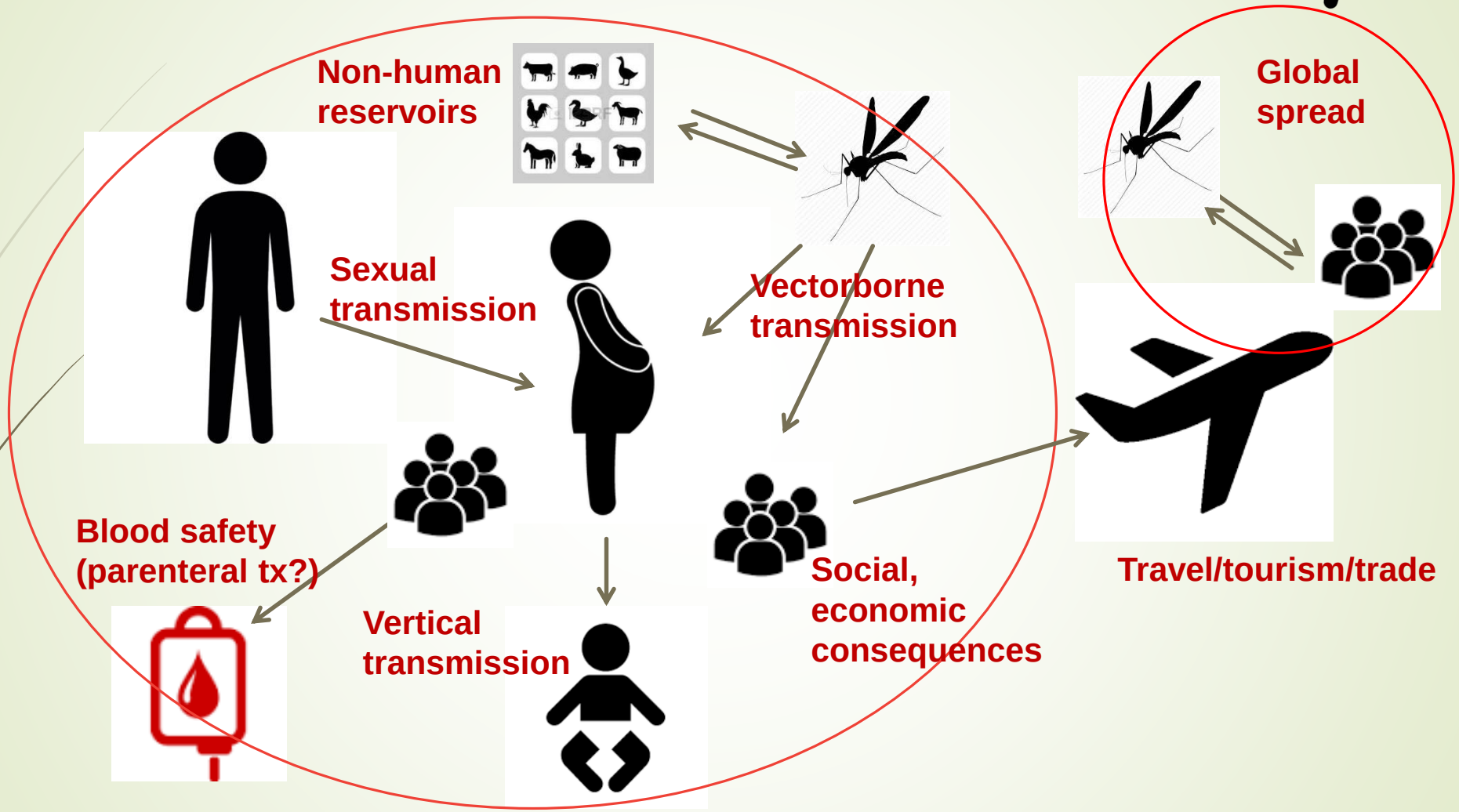
Source	AMAZON MALARIA INITIATIVE	GLOBAL FUND	EUROPEAN UNION	DFID – UK
2011	USD $51,316			
2012	USD $33,210			
2013	USD $12,586			
2014	USD $22,715	JUN 2014 – JULY 2016 USD $200,000		
2015			BZD $1,684,636 DEC 2014 – JAN 2016 € 750,000 – total BZD varied based on EURO conversion and fall in value over duration of project	
2016				BZD $98,673 SEPT – DEC 2016

PUBLIC EXPENDITURE IN HEALTH: BELIZE




Percentage Distribution of MOH Budget
MANAGEMENT AND POLICY
27
27
30.4
29.3
28.3
28.3
TERTIARY CARE
18.5
19.5
19.3
18.4
19.5
19.5
SECONDARY CARE
30.9
31
29.2
30.4
30.5
31.3
PRIMARY CARE
23.6
22.5
21.1
21.7
21.7
20.9
0
5
10
15
20
25
30
35
2015
2014
2013
2012
2011
2010

Public health concerns: Zika

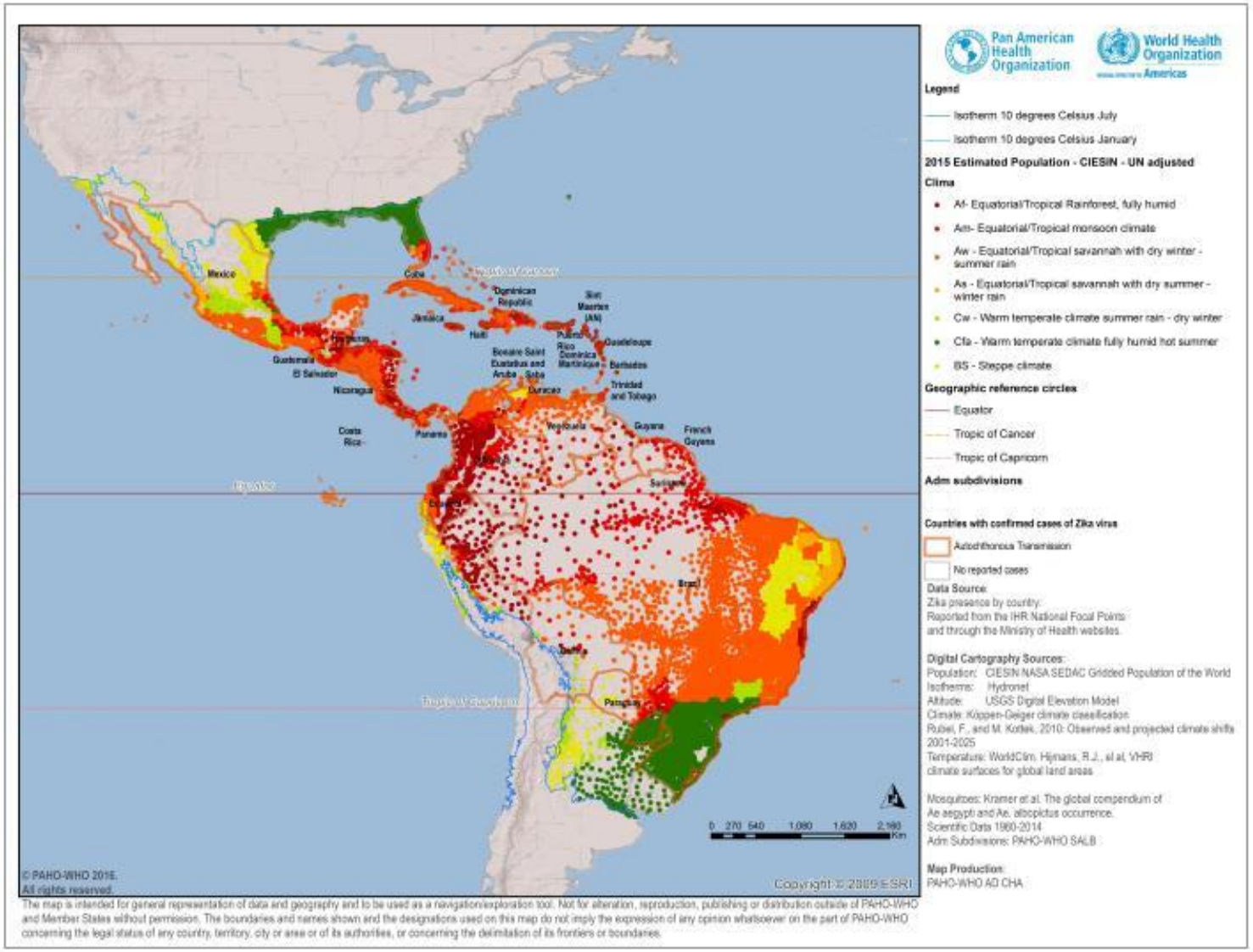


World's Deadliest Animals

Number of people killed by animals per year

Futuro del Virus Zika en la Región

Población en las Américas que viven en zonas <2000 m sobre el nivel del mar y dentro de las isotermas de 10º Celsius delimita la supervivencia del mosquito Aedes aegypti durante el invierno en los climas tropicales /templados



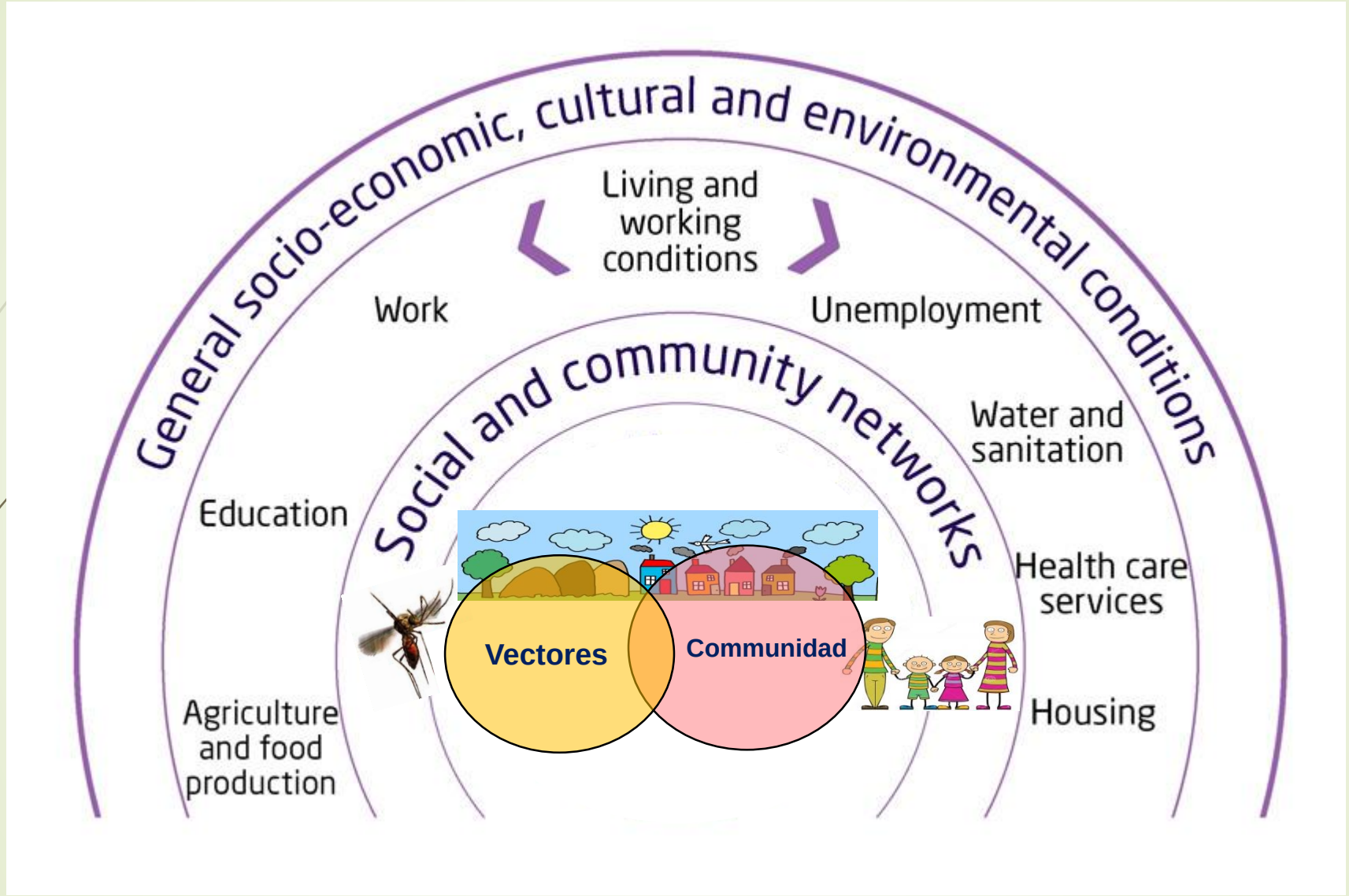
520 millones de personas

(520.152.791)

Preparing for the inevitable: the WHO R&D Blueprint

With more frequent travel, globalized trade and greater interconnectedness between countries, infectious disease outbreaks of international concern are becoming as inevitable as they remain unpredictable

http://www.who.int/csr/research-and-development/en/



The Dahlgren-Whitehead model. Dahlgren and Whitehead (1991).

FRAMEWORK FOR DISCUSSION-Health Financing

- TO INVEST MORE ???....THAT IS ONE QUESTION!!!! Where to find more?

- HOW TO INVEST TO MAXIMIZE RESULTS AND BEST SERVE THE MAJORITY OF THE POPULATION…THAT IS THE OTHER QUESTION!!!!!

THE CASE FOR VECTOR BORNE DISEASES

- Chronic-Non Communicable Diseases
- Violence and Injury…Mental Health
- **Vector Borne Diseases**: Dengue, Malaria, Chik V, Zika, Spondweni viruses, Mayaro Fever, etc.

- EBOLA SCARE!!!! Wake up call…….

CONTEXT

- The issue related to Essential Public Health Functions (IHR)
- Ebola, vector borne diseases……address the issue of capacity of the Health System, particularly the element of Governance/leadership of the MOH and need for intersectorial collaboration.
- Is a problem that arises out of globalization, urbanization, and encroachment into different ecosystems.
- And puts into evidence the complex nature of pathogens (viruses) that continuously mutate making it a challenge for development of vaccines and increasing possibility of transmission from sylvatic to human hosts…

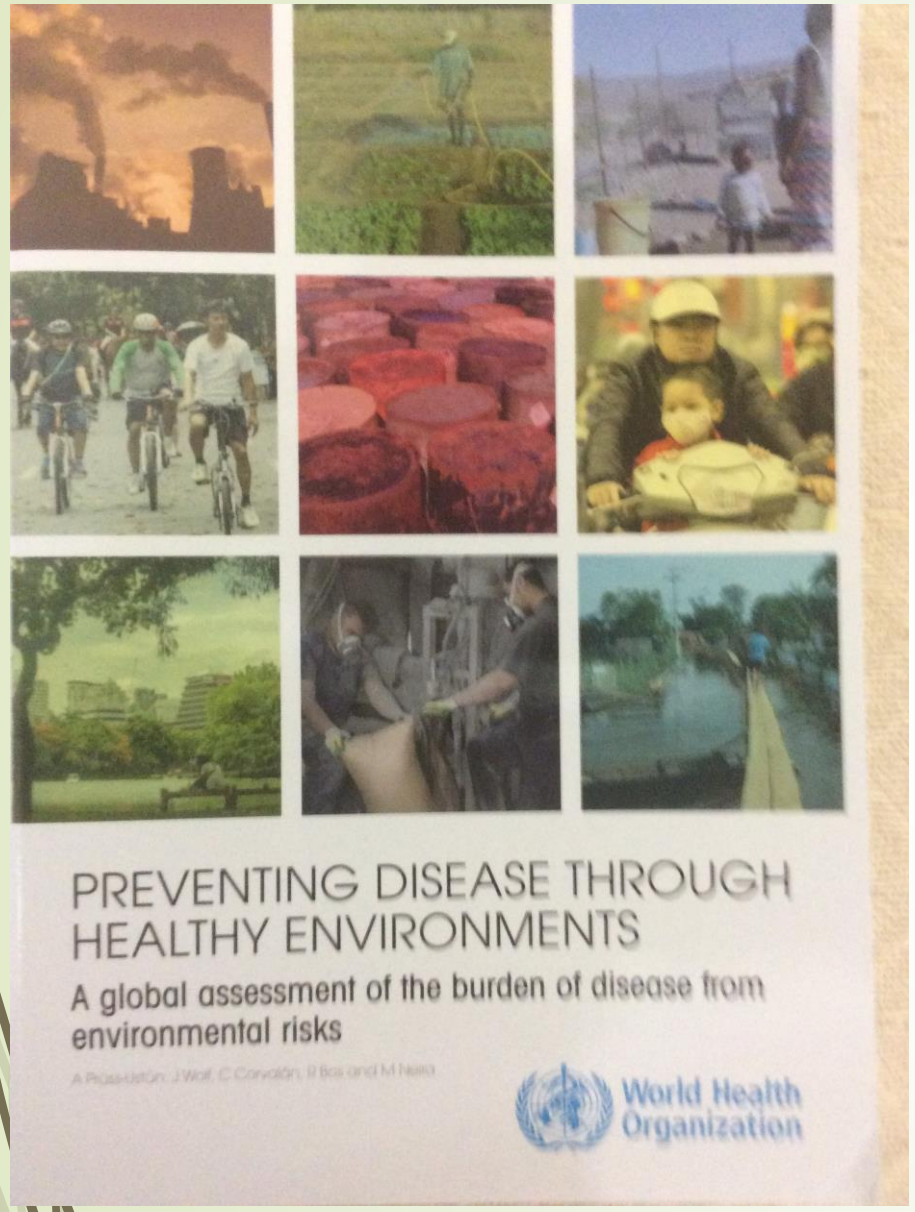
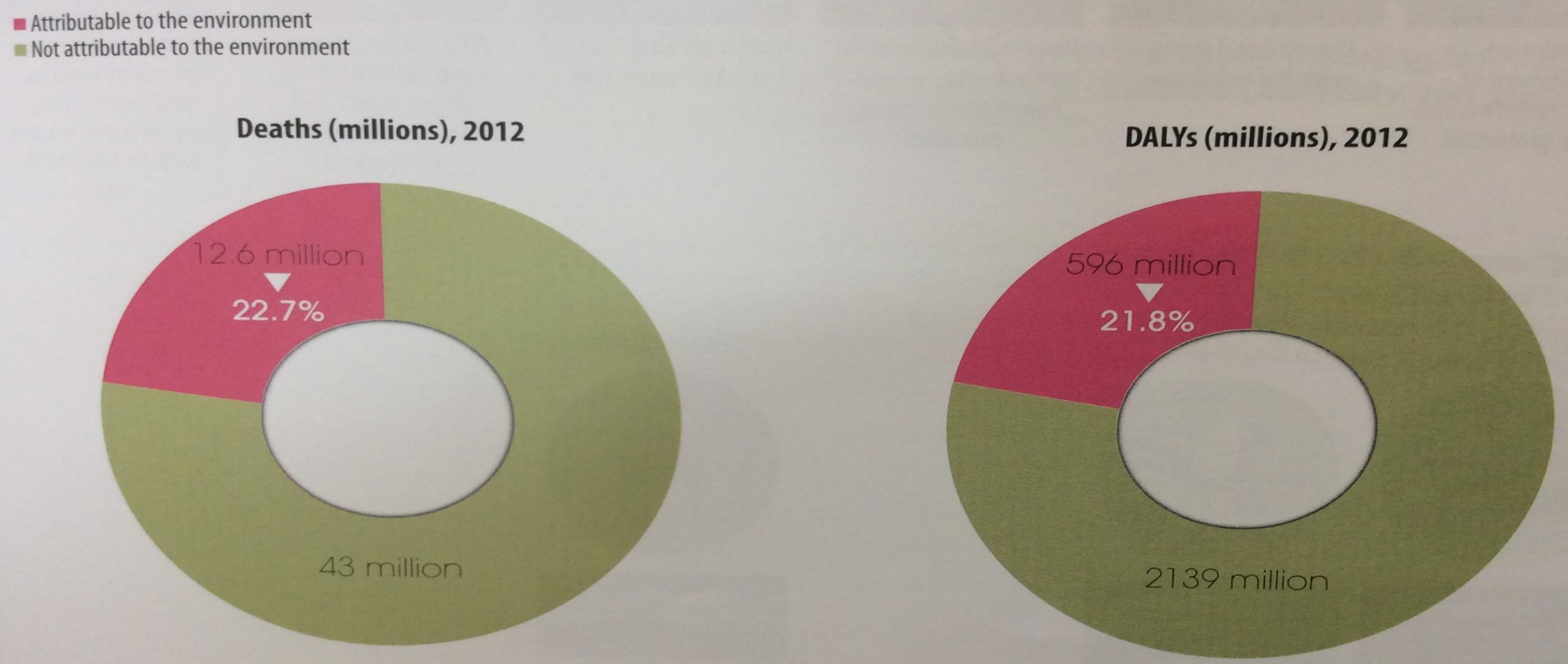

PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS
A global assessment of the burden of disease from environmental risks
World Health Organization

Figure ES1. Fraction of deaths and DALYs attributable to the environment globally, 2012



■ DALYs due to preventable environmental risks
■ Proportion of disease attributable to the environment
Main areas of environmental action to prevent disease

LOWER RESPIRATORY INFECTIONS

52 million

35%

Household and ambient air pollution, second-hand tobacco smoke

DIARRHOEAL DISEASES

57 million

57%

Water, sanitation, hygiene and agricultural practices

MALARIA

23 million

42%

Environmental management to reduce vector proliferation and contact between vectors and humans

NEONATAL CONDITION

26 million

11%

Air pollution, mother exposure to second-hand tobacco smoke water and sanitation i birth settings

CANCERS

49 million

20%

Air pollution, management of chemicals, radiation and workers' protection

UNIPOLAR DEPRESSIVE DISORDER

8 million

11%

Occupational stress, work-life imbalance

CARDIO-VASCULAR DISEASES

119 million

31%

Household and ambient air pollution, second-hand tobacco smoke, chemicals

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

32 million

35%

Household air pollution, workers' protection

ASTHMA

11 million

44%

Air pollution, second-hand tobacco smoke, indoor mould and dampness, occupational asthmagens

MUSKULO-SKELETAL DISEASES

23 million

22%

Occupational stressors, poor work postures, prolonged sitting, carrying water and solid fuels for household needs

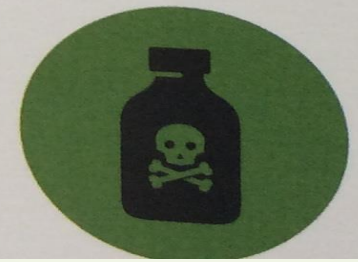
UNINTENTIONAL INJURIES (OTHER THAN ROAD TRAFFIC)

74 million

ROAD TRAFFIC INJURIES

31 million

SELF HARM



Attributable fraction (percentage of DALYs)

3
2
10
0

Men a
all DAL
higher
cookin
exposed
due to

18 Core Capacities Evaluated:
-Prevent
-Detect
-Respond
-Hazard and Point of Entry

33% scored acceptable

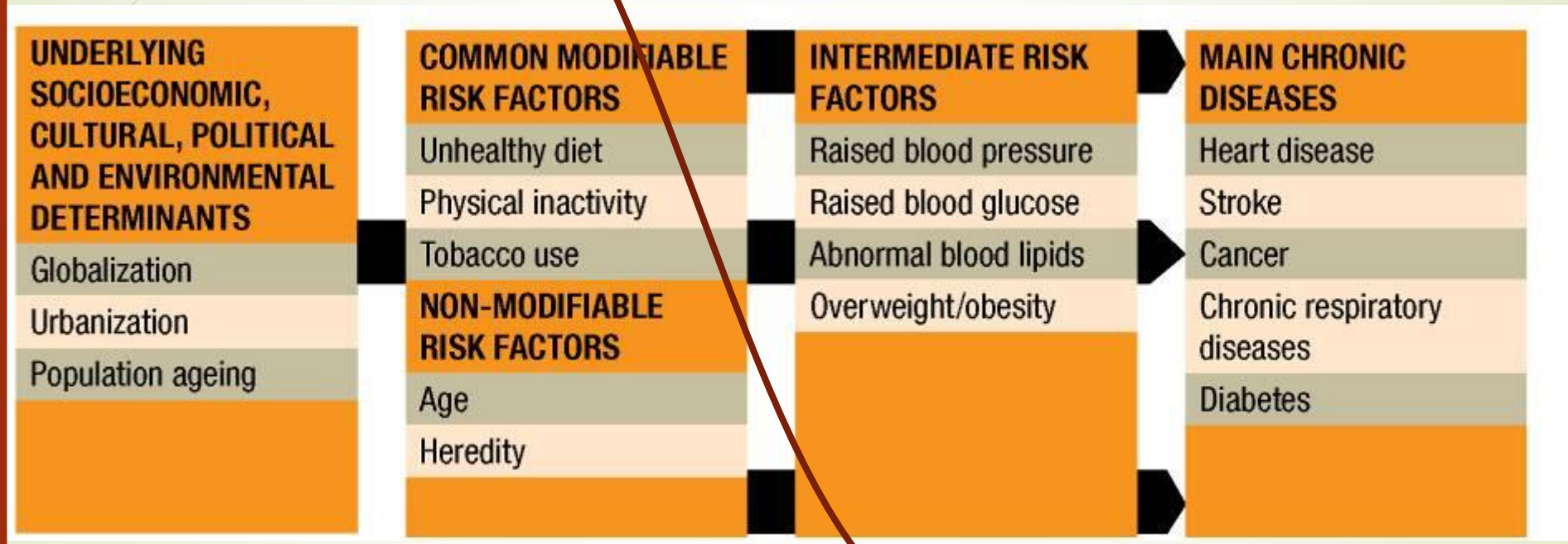
Summary of Scores - Belize

Core Capacities	Indicators	Score
National Legislation, Policy and Financing	P.1.1 Legislation, laws, regulations, administrative requirements, policies or other government instruments in place are sufficient for implementation of IHR.	2
	P.1.2 The state can demonstrate that it has adjusted and aligned its domestic legislation, policies and administrative arrangements to enable compliance with the IHR	2
IHR Coordination, Communication and Advocacy	P.2.1 A functional mechanism is established for the coordination and integration of relevant sectors in the implementation of IHR.	1
Antimicrobial Resistance	P.3.1 Antimicrobial resistance (AMR) detection	1
	P.3.2 Surveillance of infections caused by AMR pathogens	1
	P.3.3 Healthcare associated infection (HCAI) prevention and control programs	2
	P.3.4 Antimicrobial stewardship activities	1
Zoonotic Disease	P.4.1 Surveillance systems in place for priority zoonotic diseases/pathogens	3
	P.4.2 Veterinary or Animal Health Workforce	2
	P.4.3 Mechanisms for responding to zoonoses and potential zoonoses are established and functional	2
	P.5.1 Mechanisms are established and functioning for detecting and	

Real-Time Surveillance	D.2.1 Indicator and event based surveillance systems	3
	D.2.2 Inter-operable, interconnected, electronic real-time reporting system	3
	D.2.3 Analysis of surveillance data	3
	D.2.4 Syndromic surveillance systems	3
Reporting	D.3.1 System for efficient reporting to WHO, FAO and OIE	3
	D.3.2 Reporting network and protocols in country	2
Workforce Development	D.4.1 Human resources are available to implement IHR core capacity requirements	3
	D.4.2 Field Epidemiology Training Program or other applied epidemiology training program in place	3
	D.4.3 Workforce strategy	1
Preparedness	R.1.1 Multi-hazard National Public Health Emergency Preparedness and Response Plan is developed and implemented	2
	R.1.2 Priority public health risks and resources are mapped and utilized.	3
Emergency Response Operations	R.2.1 Capacity to Activate Emergency Operations	3
	R.2.2 Emergency Operations Center Operating Procedures and Plans	3
	R.2.3 Emergency Operations Program	2

	hazards.	
Linking Public Health and Security Authorities	R.3.1 Public Health and Security Authorities, (e.g. Law Enforcement, Border Control, Customs) are linked during a suspect or confirmed biological event	**2**
Medical Countermeasures and Personnel Deployment	R.4.1 System is in place for sending and receiving medical countermeasures during a public health emergency	**1**
	R.4.2 System is in place for sending and receiving health personnel during a public health emergency	**1**
Risk Communication	R.5.1 Risk Communication Systems (plans, mechanisms, etc.)	**2**
	R.5.2 Internal and Partner Communication and Coordination	**2**
	R.5.3 Public Communication	**3**

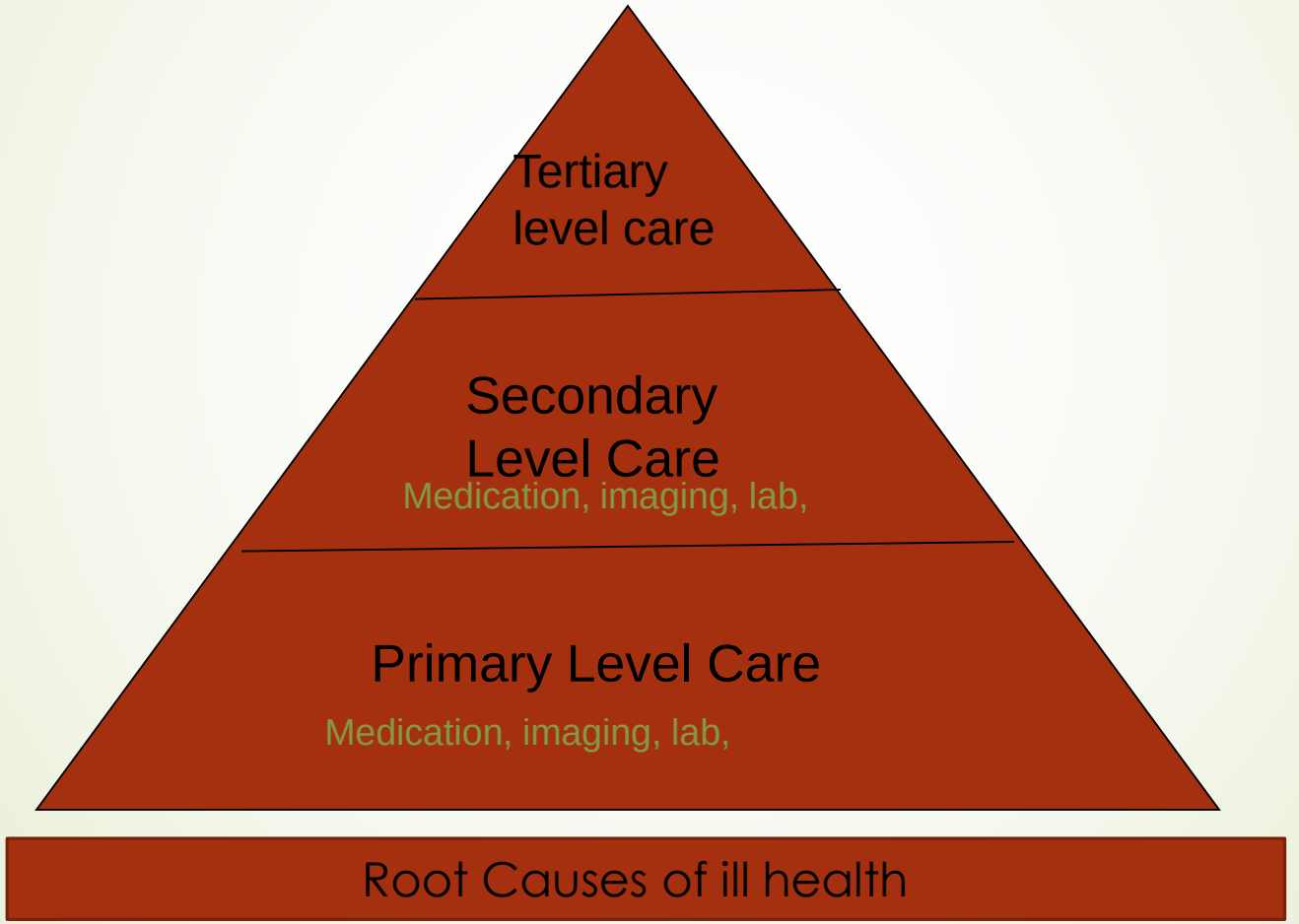
Causes of chronic diseases



Returns/good outcomes

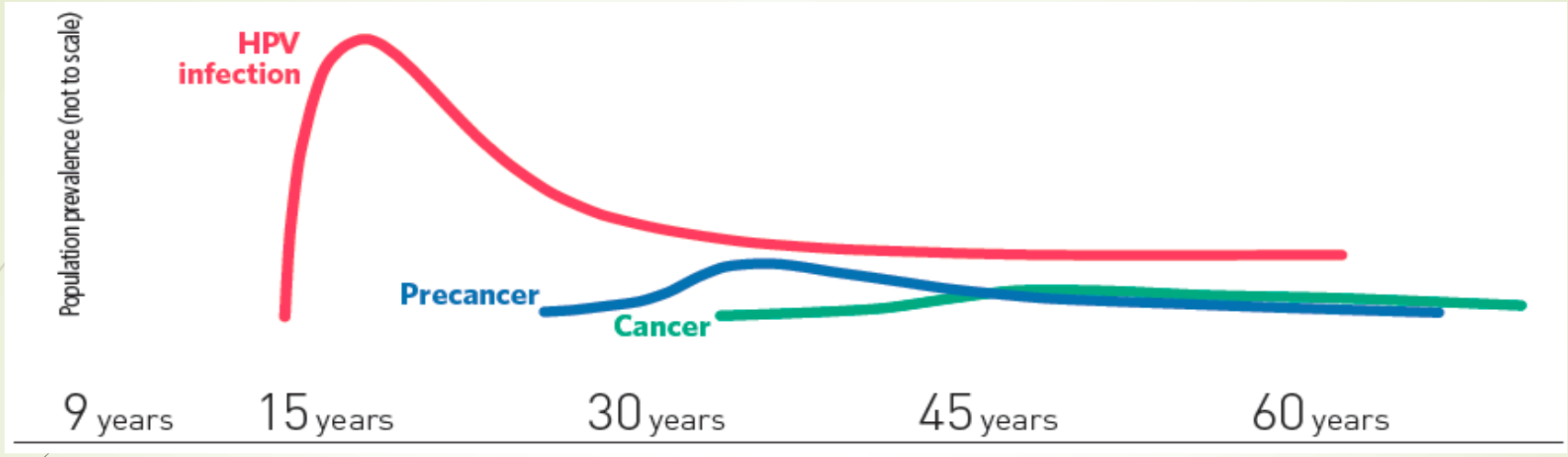
Investment $$$$$$$$$$$$$$$$$$$

Levels of Care



Efficient flow of patients through the system

LIFE COURSE APPROACH TO PREVENT HPV INFECTION AND CERVICAL CANCER



PRIMARY PREVENTION	SECONDARY PREVENTION	TERTIARY CARE
HPV Vaccination **Health education** **Adolescent health services**	**Screening and treatment of precancerous lesions** HPV testing, Pap, VIA, cryotherapy, colposcopy, LEEP, etc	**Diagnosis and treatment** **Pathology,** surgery, radiotherapy, chemotherapy, Palliative care

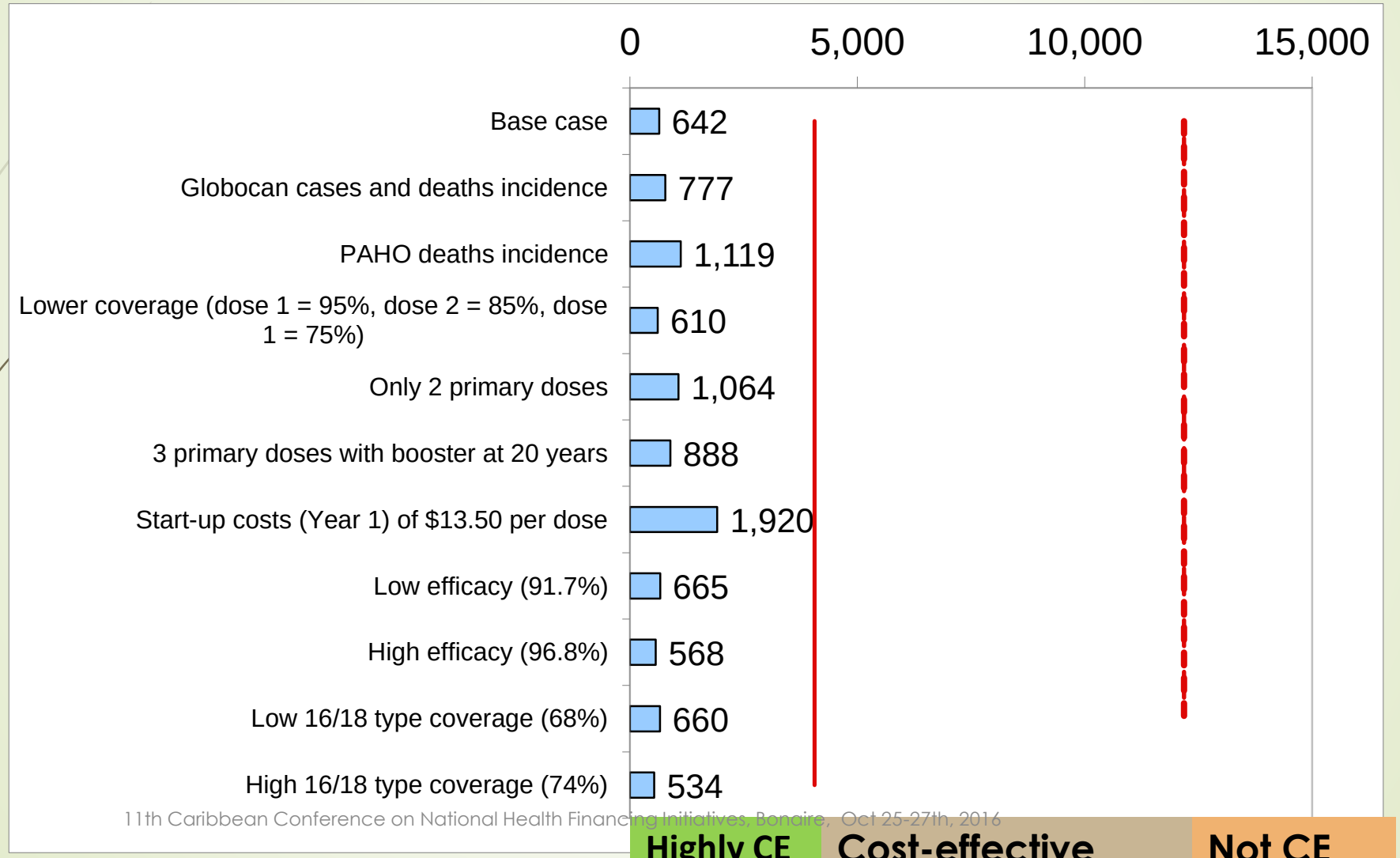
COMMUNITY → PRIMARY HEALTH CARE → SECONDARY HEALTH CARE → TERTIARY HEALTH CARE

ORGANIZED PROGRAM

Information system/Management/Monitoring and evaluation

Source: WHO Guidance Note. Comprehensive Cervical Cancer Prevention and Control. 2012

Cost per DALY averted
(includes household treatment costs saved)



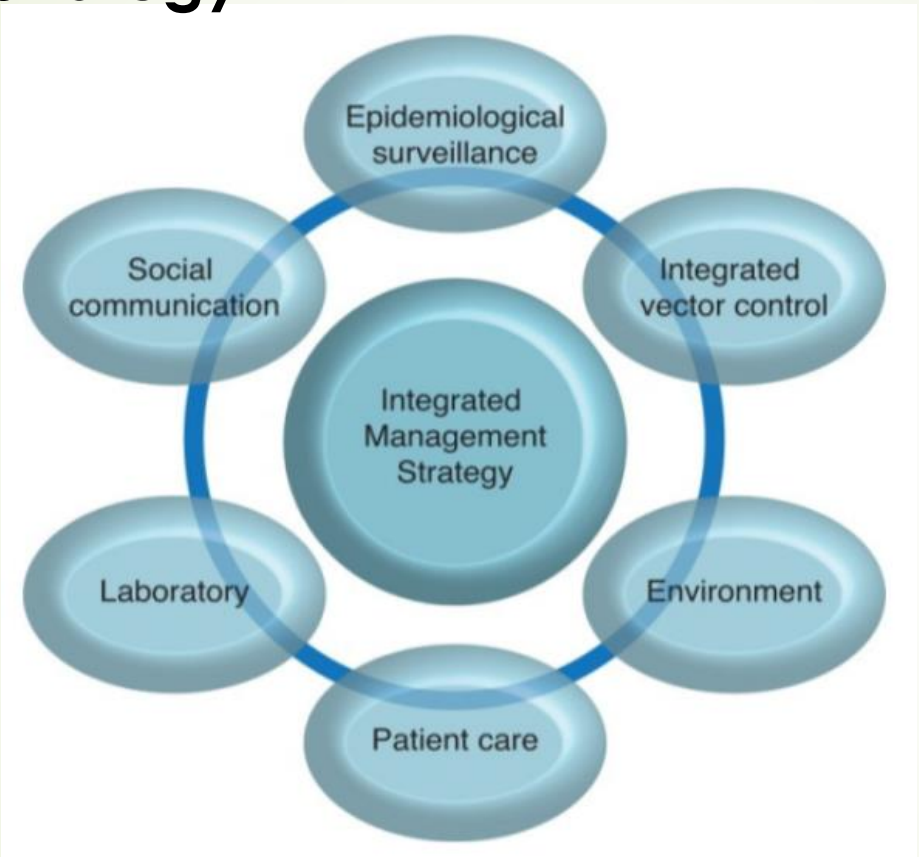
Summary

Burden of disease	• Most common cancer in Belize women • Disease highly preventable and disproportionately affects poor vulnerable women with cultural barriers to screening and treatment
Vaccine impact	• 51 deaths prevented per 1 cohort of vaccinated girls • 69 cervical cancer cases per 1 cohort of vaccinated girls
Cost-effectiveness (includes treatment savings)	Highly cost-effective ($642 per DALY averted)
Cost-effectiveness (excludes treatment savings)	Highly cost-effective ($1533 per DALY averted)
Cost of vaccination	$215,000 annually (50% of current EPI budget assuming $9.8/dose)
Cost of cancer treatment	• $144,000 costs saved by women/households annually • 6 Cases of invasive cancer treatment= cost of vaccinating 10 year old cohort= prevents 69 cases
WHO position	• Introduction recommended if –Cervical cancer prevention is national public health priority –*Vaccination cost-effective and sustainable*

Lessons

- Spraying in essence has minimal impact on vector control….20% effective
- Need to strengthen core capacities for IHR
- Changing world and new emerging diseases which we are not prepared for….need to invest in strengthening system (IHR)
- Need to develop Community-based interventions with Community involvement (INTEGRATED VECTOR CONTROL STRATEGY)
- Use of technology…GIS for targeting.
- Long term cost and effects on society for Zika is yet unknown but looms large!!!!

Integrated Vector Management Strategy

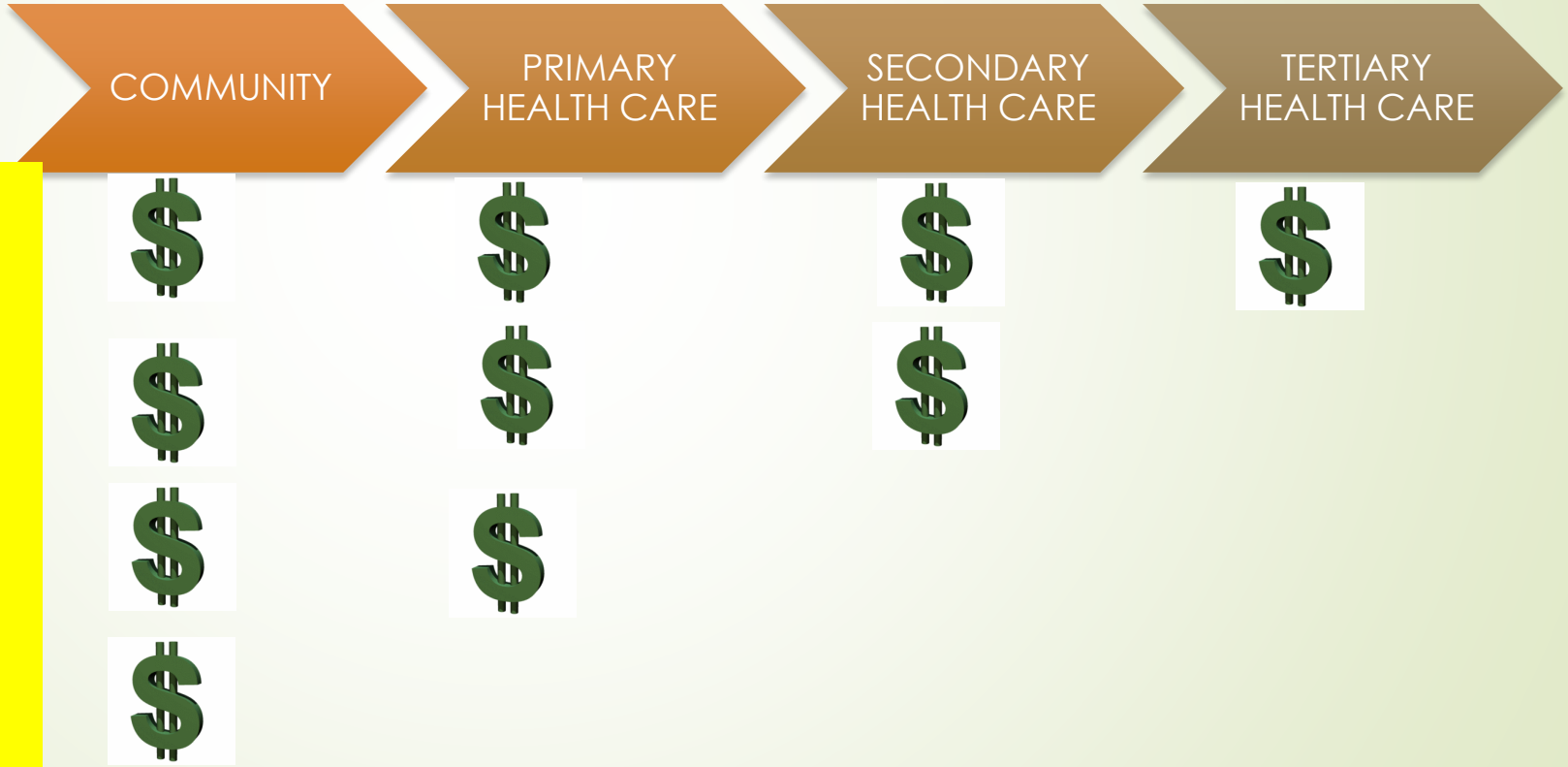


Conclusions/Recommendations

- Investment gap exists in health……..20% countries in Caribbean meet minimum requirement of 6% Public Expenditure in Health for UHC
- Efficiency in spending…….only 20-24% of budgets invested in Primary care (Belize:NHI spends over 50% budget at primary level)
- 60-80% of needs can be met at primary level yet over 50% budgets are for secondary and tertiary institutions.
- Focusing on Root Determinants can yield significant cost savings over the medium to long term; and more permanent and sustainable effects on health status of the population.
- Strengthening our Core capacities for implementation of IHR
- Implement the Integrated Vector Control Strategy
- Requires political will and multisectorial approach.
- SDG's new challenge/targets for the future.

Efficient and effective Investment Strategy in Health.

1. Chronic-Non Communicable Diseases
2. Violence and Injury…Mental Health
3. Vector Borne Diseases: Dengue, Chik V, Zika, Spondweni viruses, Mayaro Fever, etc.




SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

Thank you