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Belize Country Presentation

“Caribbean meeting on NCD medicines”

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Content

- Country introduction
- Epidemiological profile for NCDs
- Financing GDP
- BHIS and surveillance creating diseases cohorts
- Drug forecasting, procurement success and challenges
- Recommendations-thoughts



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Country Profile

*8867 sq miles

Population 387,879-Central America

6 districts -4 health regions:

North, South, West, Central

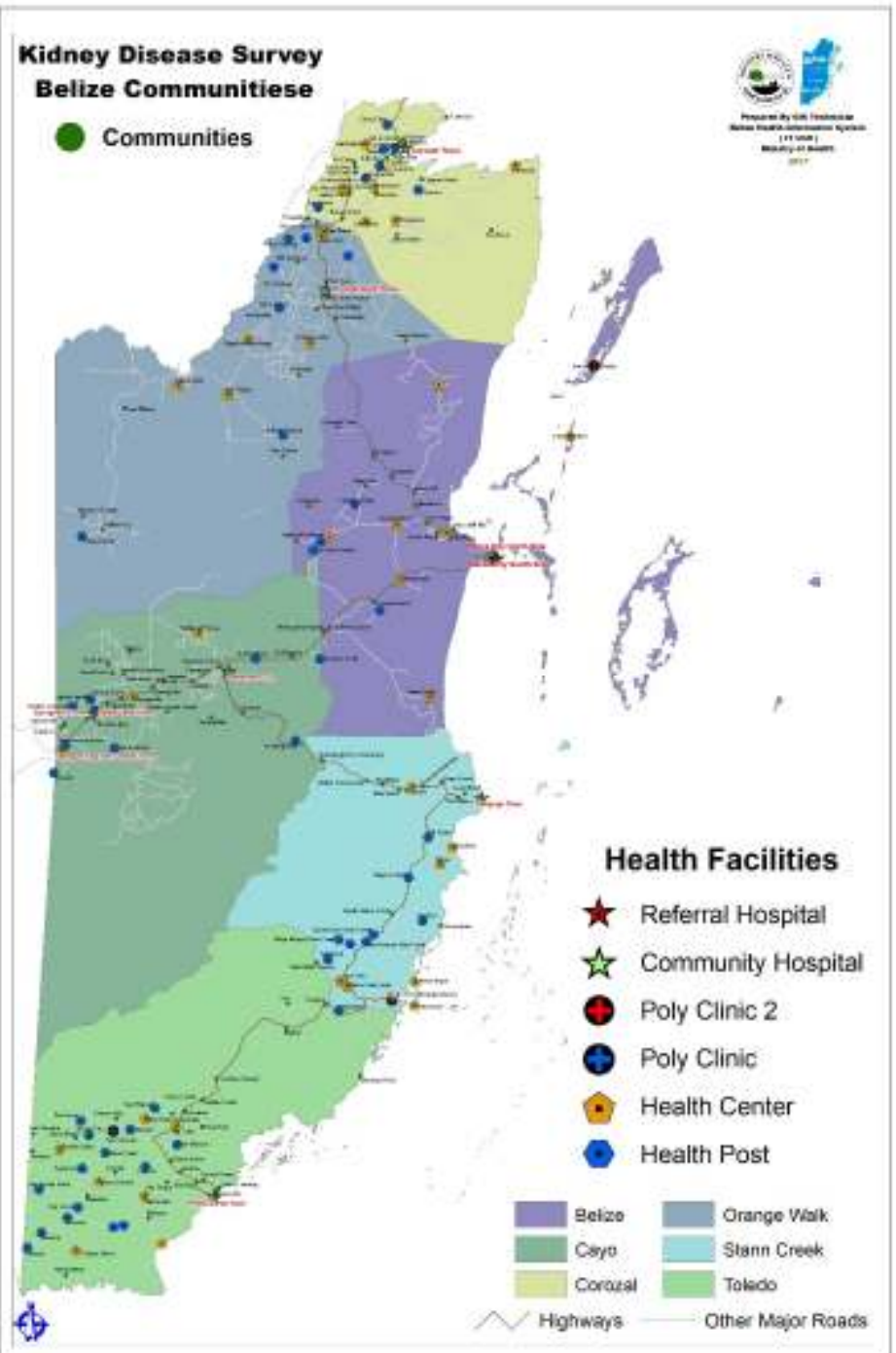
Most of the population
(estimated > 80 %) access
via public system

4 Regional Hospitals

1 Tertiary Hospital-KHMH

4 Community Hospitals

52 Health Post





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Population 2010(2017-378,000)

Table 8: Percentage of Population in each Ethnic Group by District, Belize 2010*

Ethnic Groups	No of Persons	Percentage of Population	Percentage of Population in District Claiming Ethnic Group					
			Corozal	Orange Walk	Belize	Cayo	Stann Creek	Toledo
Asian (Japanese, Chinese, Taiwanese)	3,316	1.0	0.8	0.8	1.5	1.0	0.9	0.3
Caucasian/White	4,015	1.2	1.0	0.3	1.7	1.3	1.7	1.0
Creole	83,460	25.9	8.0	7.2	56.5	18.5	22.0	5.0
East Indian	12,452	3.9	4.3	0.7	5.4	2.1	5.0	6.3
Garifuna	19,639	6.1	0.9	0.8	6.4	2.0	27.5	6.1
Maya	36,507	11.3	2.8	1.7	2.4	8.0	16.9	66.5
Mennonite	11,574	3.6	6.7	11.1	0.2	4.2	0.2	0.8
Mestizo/Spanish/Latino	170,446	52.9	79.3	79.7	34.5	67.5	33.9	19.9
Other	4,010	1.2	0.9	0.5	2.4	0.9	1.0	0.5
Not Stated	845	0.3	0.7	0.3	0.2	0.2	0.2	0.1
Total Population	-	322,453	41,061	45,946	95,292	75,046	34,323	30,785

*Column percentages will not sum to 100, as some persons claim more than one ethnic group

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NCDs Epidemiological description

Belize continues to undergo an epidemiological transition in which NCDs have become increasingly prominent in the disease profile and have been increasing in their share of the disease burden for well over a decade. Cardiovascular diseases (CVDs), cancers, diabetes and chronic respiratory diseases are responsible for around 40% of deaths annually- 681 out of a total of 1555 (44%) of deaths in 2011. This is compared with 28% for injuries and external causes; and 20% for communicable diseases including HIV and acute respiratory tract infections and “other” causes combined in that same year. Moreover, 320 (47%) of the 681 of the deaths due to NCDs (roughly 21% of the 1555 total deaths in 2011) were premature deaths in persons less 70 years of age of which (169) 24.8% were males less than 70 and 151 (22.2%) were females less than 70. Almost 43% of these 320 premature deaths were attributable to cardiovascular disease; 29% to cancer; 24% to diabetes and 4% to chronic respiratory diseases.



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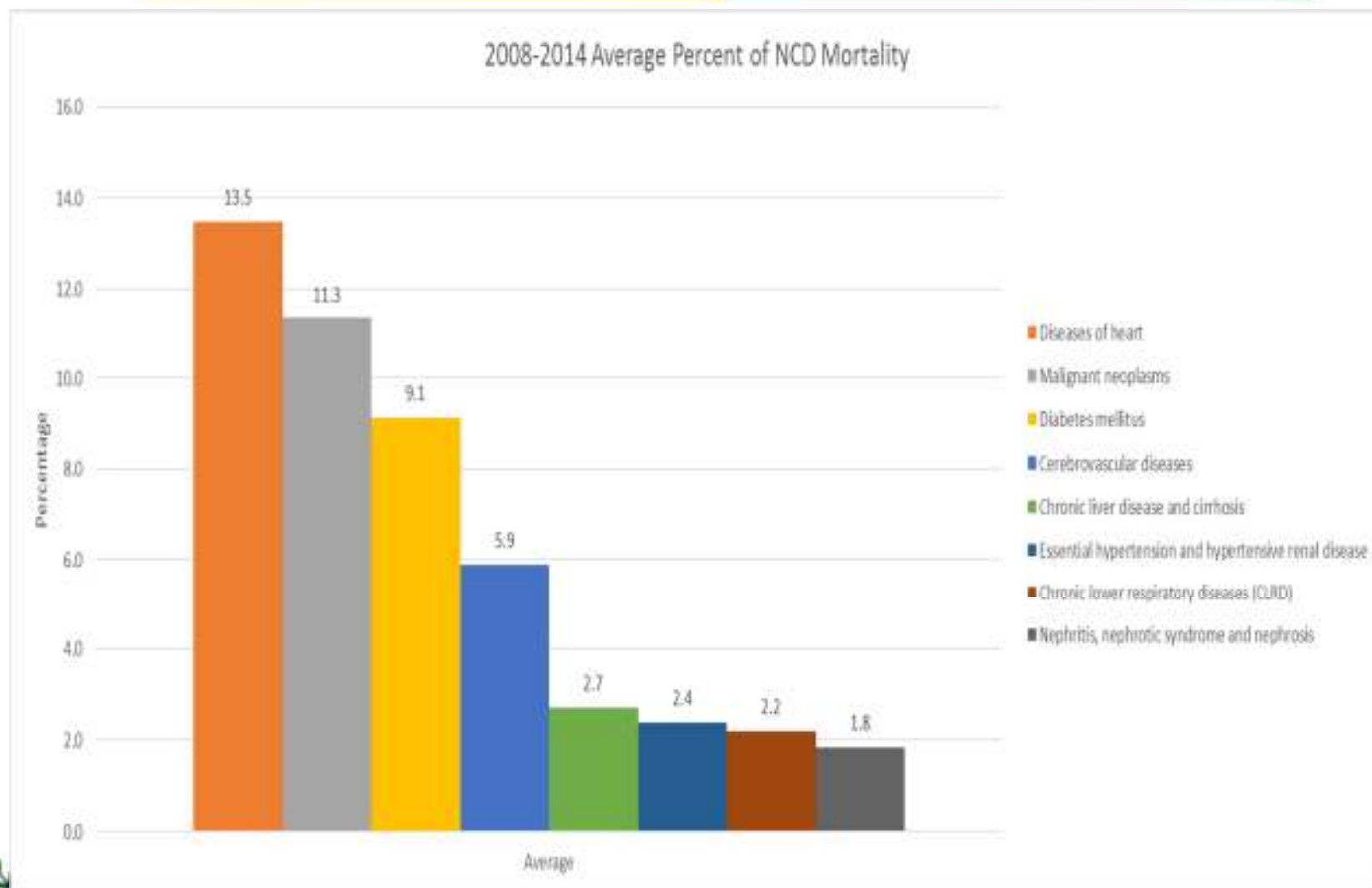




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Leading Chronic Diseases in Belize



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Deaths due to NCDs and PYLL

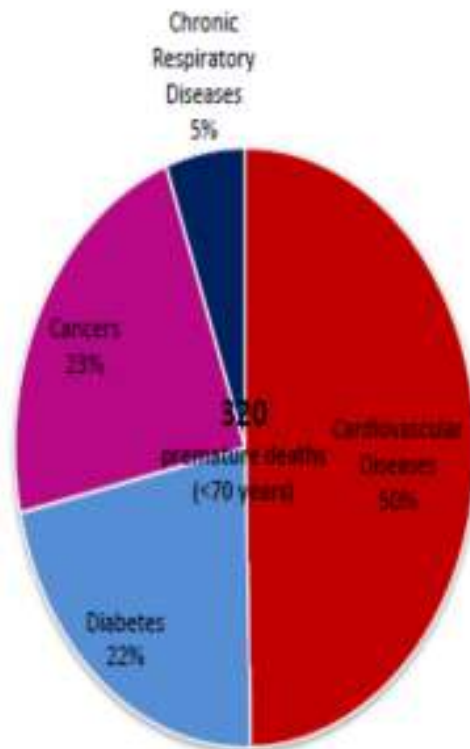
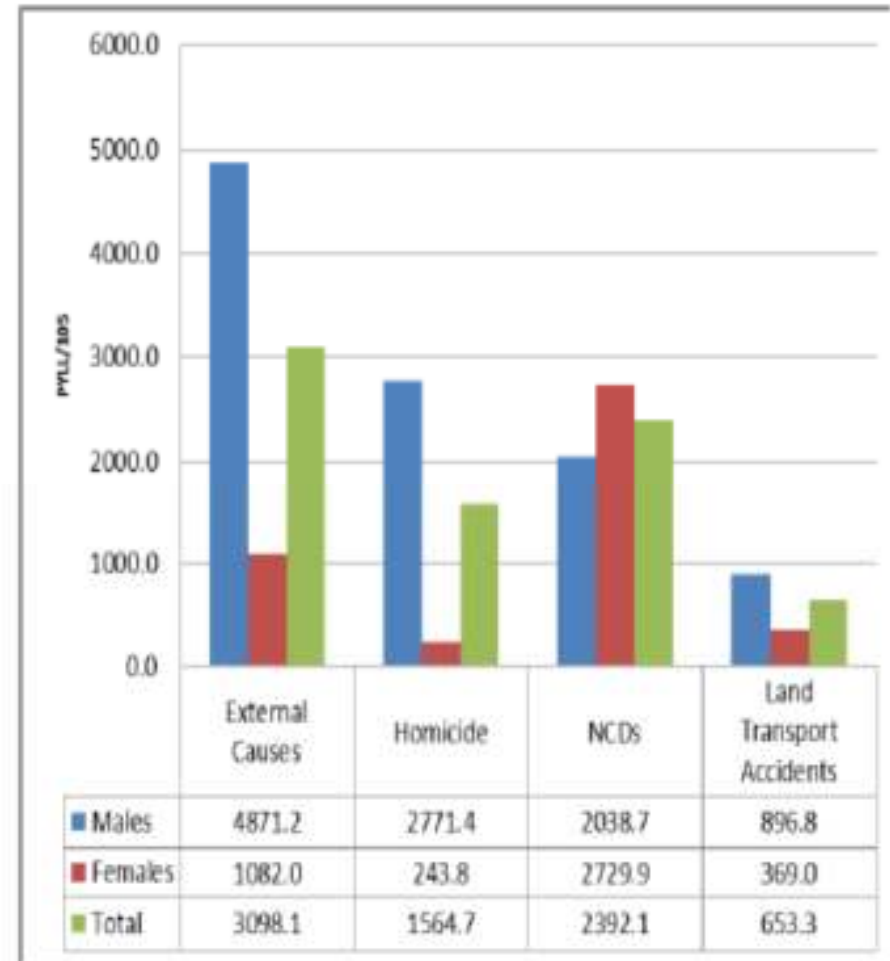


Figure 3. Premature NCD Deaths in Belize 2011



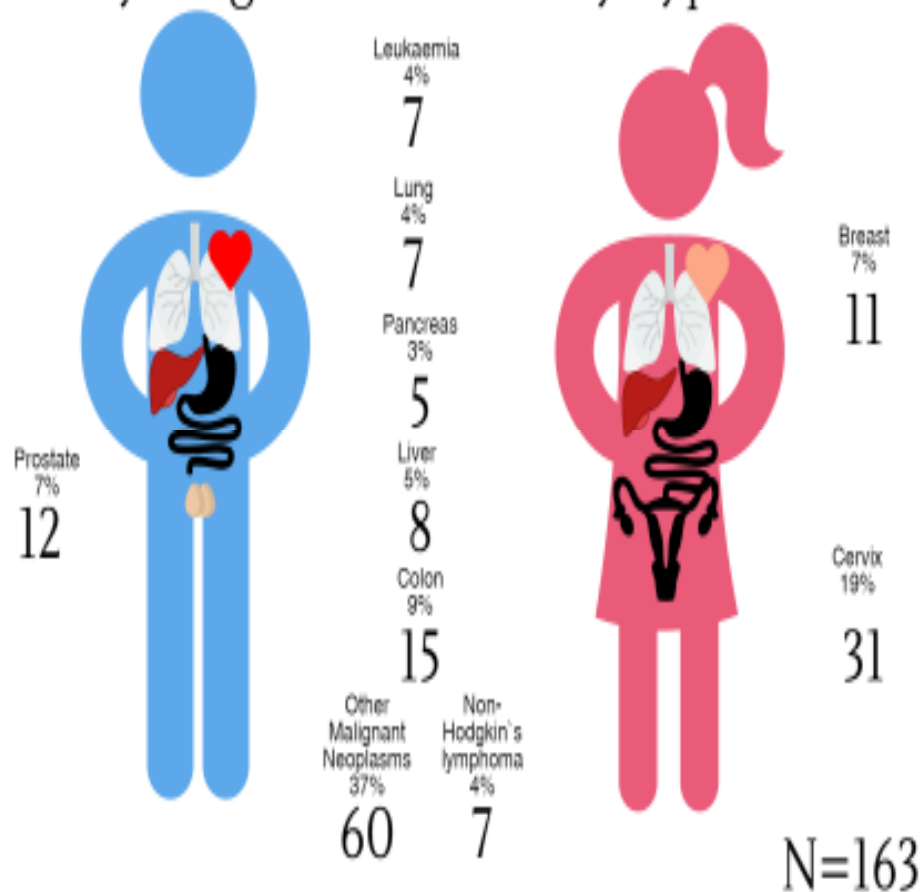
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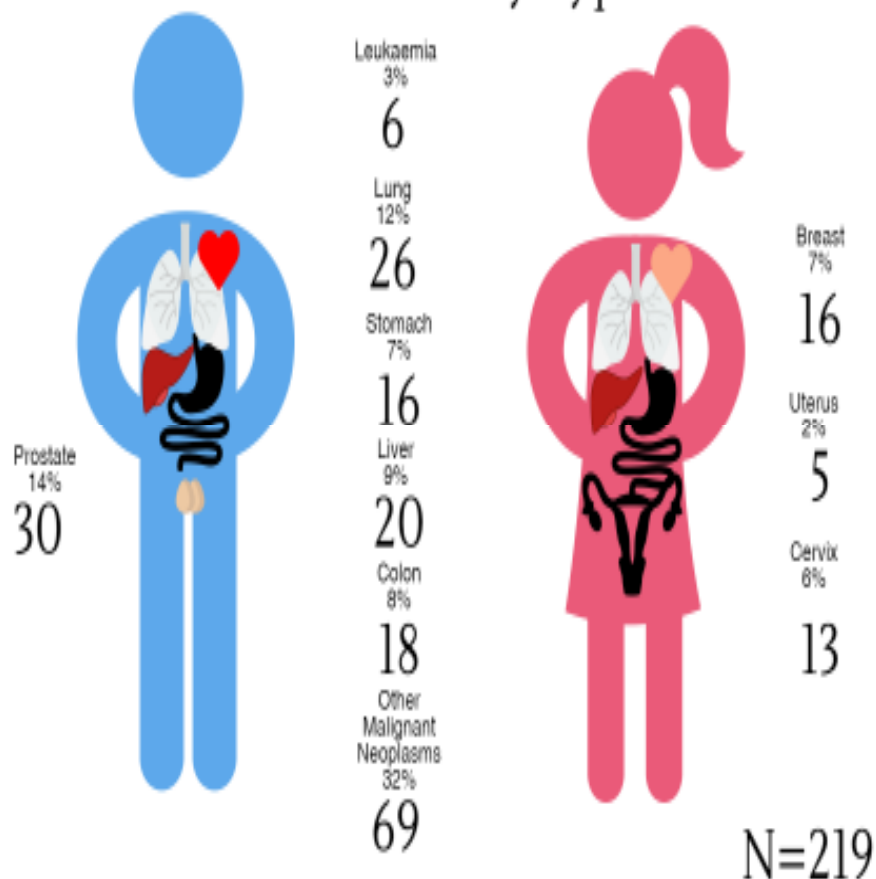


Cancer 2016

Newly Diagnosed Cancer by Type 2016



Cancer Deaths by Type 2016



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Risk Factors-CAMDI 2009

Prevalence (%) of:	Total	Males	Females
Current adult tobacco smokers	10.5	19.1	1.7
Adolescent tobacco smokers (ages 13-15) ²⁵	26.7	36.2	18.6
Binge drinking among adults	7.6	13.1	2.7
Low physical activity in adults	77.7	75.4	80.4
Overweight-obesity (BMI >25 kg/m ²)	66.3	59.2	73.6
Adults with diabetes	13.1	8.3	17.6
Adults with raised blood pressure	28.7	28.6	24.4
High cholesterol (>200 mg/dl)	5.1	4.1	6.0
Mean number of servings of fruits and/or vegetables per day (adults)	<1.5	<1.5	<1.5

Table 1. Prevalence of Selected NCD Risk Factors in Belize

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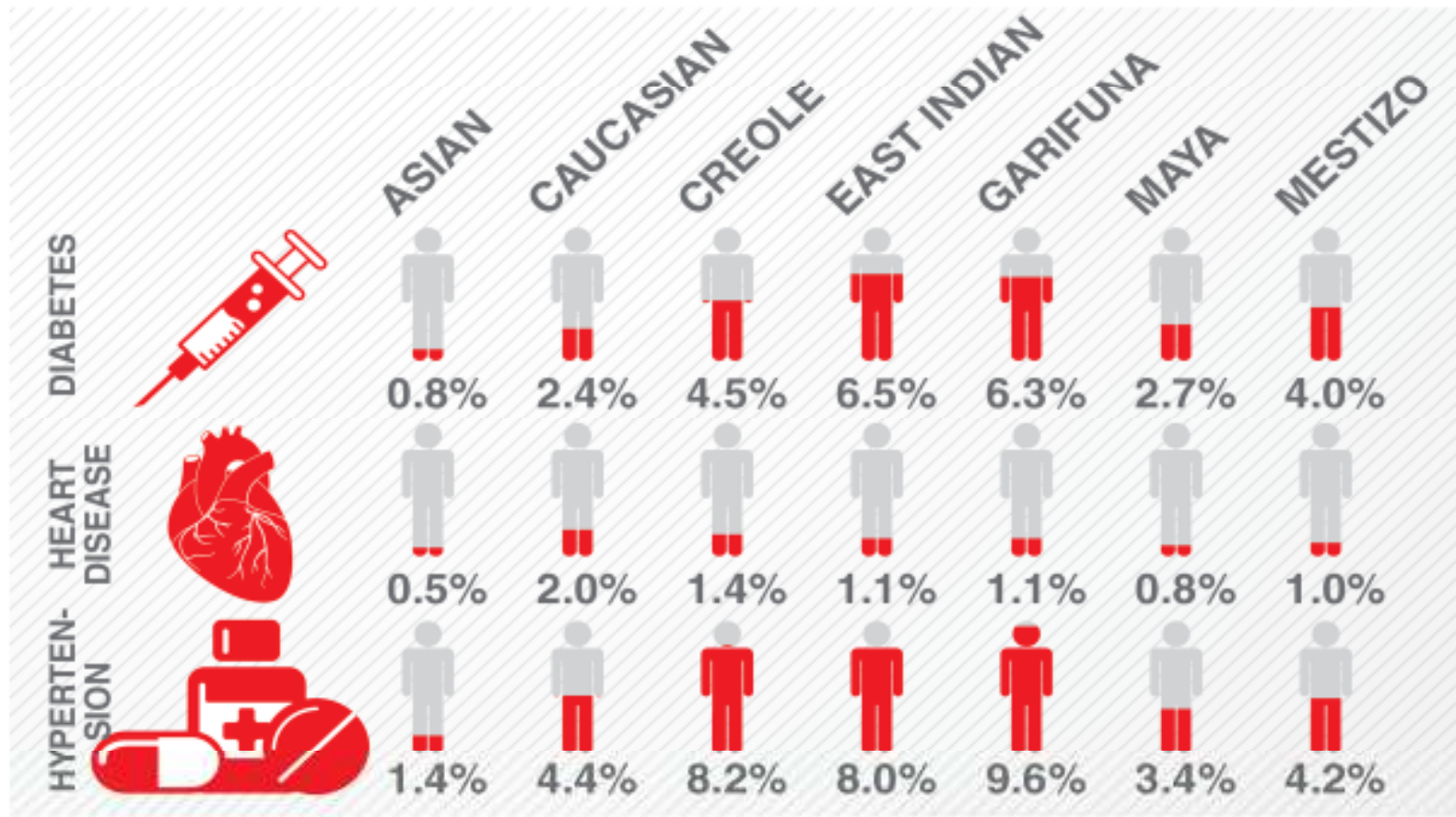




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Prevalence of specific chronic conditions by ethnic group.



Source: Statistical Institute of Belize, 2011

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Hypertension in Active BHIS Population Aged 20 to 90 Years by District and Sex Belize End 2016

District	Female	Male	Total
Belize	5503	2973	8476
Cayo	4467	2147	6614
Corozal	2224	1221	3445
Orange Walk	1366	701	2067
Stann Creek	2443	1223	3666
Toledo	1442	652	2094
Unknown	18	11	29
Total	17463	8928	26391

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Diabetes In Belize 2016

Diabetes in Active BHIS Population Aged 20 to 90 Years by District and Sex

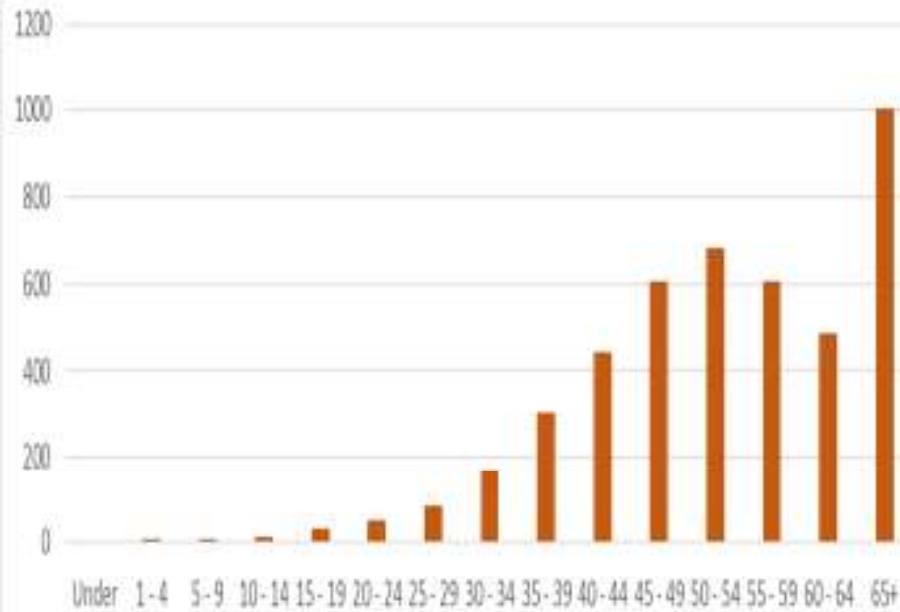
District	Female	Male	Total
Belize	2743	1643	4386
Cayo	2170	1160	3330
Corozal	1147	544	1691
Orange Walk	919	473	1392
Stann Creek	1086	601	1687
Toledo	884	390	1274
Unknown	12	13	25
Total	8961	4824	13785

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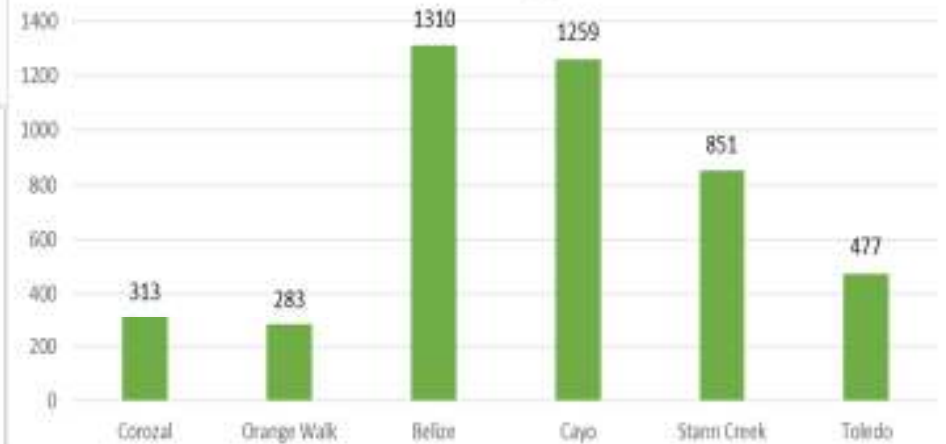


Diabetes profile-Epi unit source

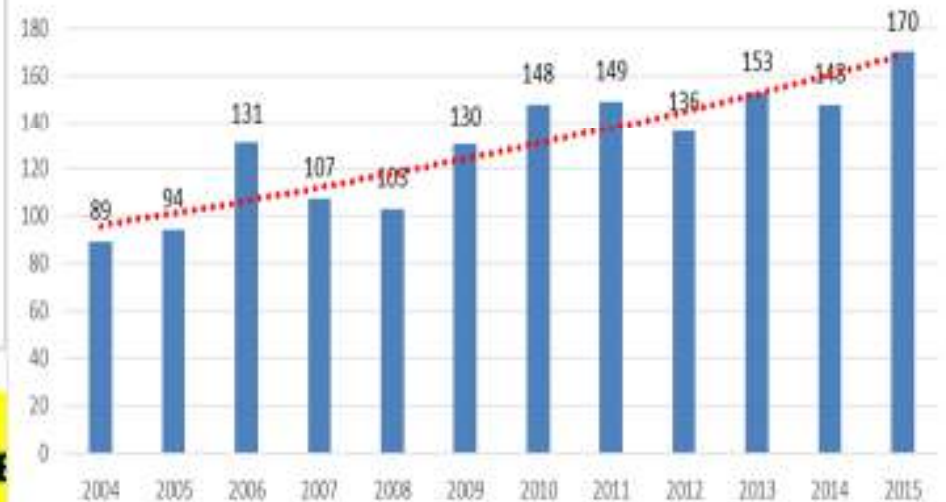
Diabetes Morbidity by Age Group



Diabetes Morbidity by District



Number of Diabetes Deaths 2004 - 2015





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Obesity and Overweight

- In 2008 71% of the population was considered to be overweight; 65.4% males and 76.6% females. (PAHO/WHO)
- Of this group , 34.9% were considered obese; 20.4% males and 45.4% females.
- It was noted with greatest prevalence in Mestizos 69.5%, and of lowest prevalence in East Indians at 53.8%



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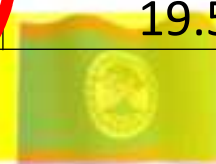


Obesity rates in Belize /District-2014

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Age	Corozal	O Walk	Belize	cayo	Stann Creek	Toledo	Total
15-19	130	229	1066	469	815	776	3485
20-24	413	799	1911	1269	1391	1259	7042
25-29	319	697	2158	1123	1640	1402	7339
30-34	230	514	1991	811	1569	1195	6310
35-39	143	306	1664	524	1361	970	4968
40-44	65	153	1435	328	1165	793	3939
49-49	33	71	1225	235	982	687	3233
Total	1333	2769	11450	4759	8923	7082	36316
% of total	2.3	4.7	19.5	8.1	15.2	12.1	
rate 100000	371.4	771.5	3190.3	1326.0	2486.2	1973.3	10118.7
%	0.7	1.5	6.1	2.6	4.8	3.8	19.5

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Obesity and Belize

Obesity 20 to 90 Years by District and Sex

Belize End 2016

District	Female	Male	Indeterminant	Total
Belize	10461	4424	1	14886
Cayo	6532	1692		8224
Corozal	1761	278		2039
Orange Walk	3482	616		4098
Stann Creek	6043	2304		8347
Toledo	4190	1817		6007
Unknown	22	13		35
Total	32491	11144	1	43636

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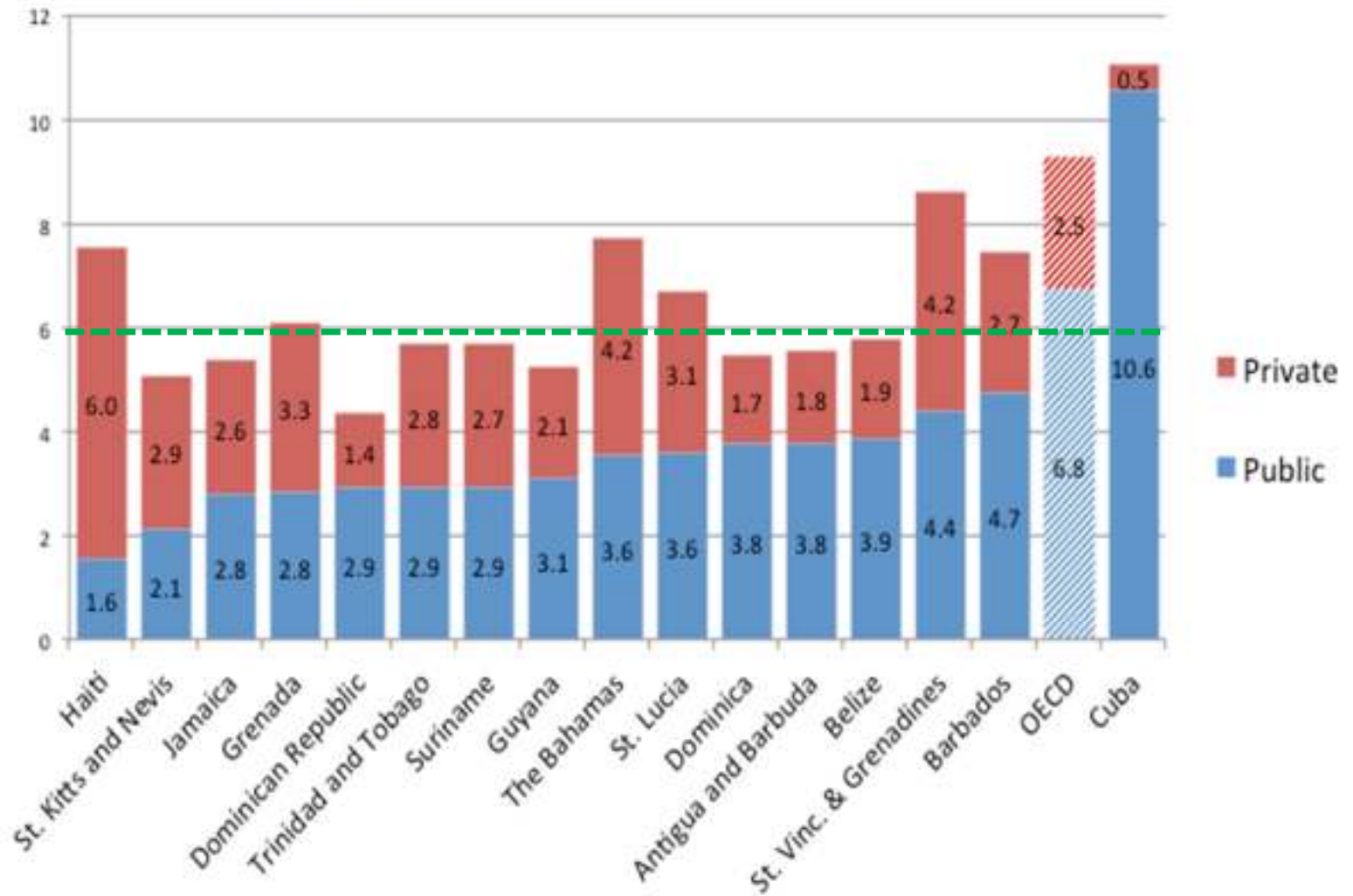




Public Financing in Health.. a challenge for the Caribbean

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Health Expenditure as % of GDP



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Belize Health Information System

- Web-based system utilizing a relational database management system designed to be used in any type of health facility – from hospital to outpost
 - Came on stream in 2008 & currently distributed in all major public health facilities & labs countrywide
- Provides a comprehensive & integrated infrastructure to capture clinical, laboratory, pharmacy (EHR) & supply chain management data in “real time”

Source: Belize Health Information System Booklet – Available at health.gov.bz

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Belize Health Information System

- Data replicated to a central data server
- System-generated numeric unique identifier for patients
- Incorporates use of standardized data lists for improved data capture and integritySecurity
- features User role-based access to modular system features
- automatic system activity logs

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Case-based data extraction & analysis

- Effort to maximize & optimize BHIS data, also avoiding duplication of efforts & creation of parallel & vertical reporting systems
- Collaboration with CARPHA, CDC, PAHO – began in 2010 with data assessment & mapping exercise, SOPs

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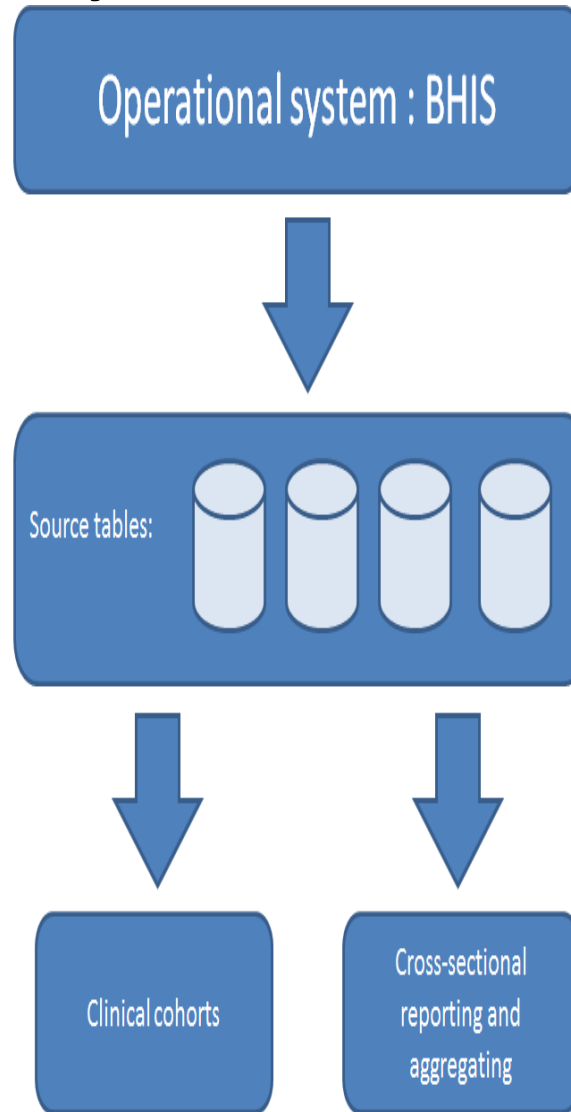


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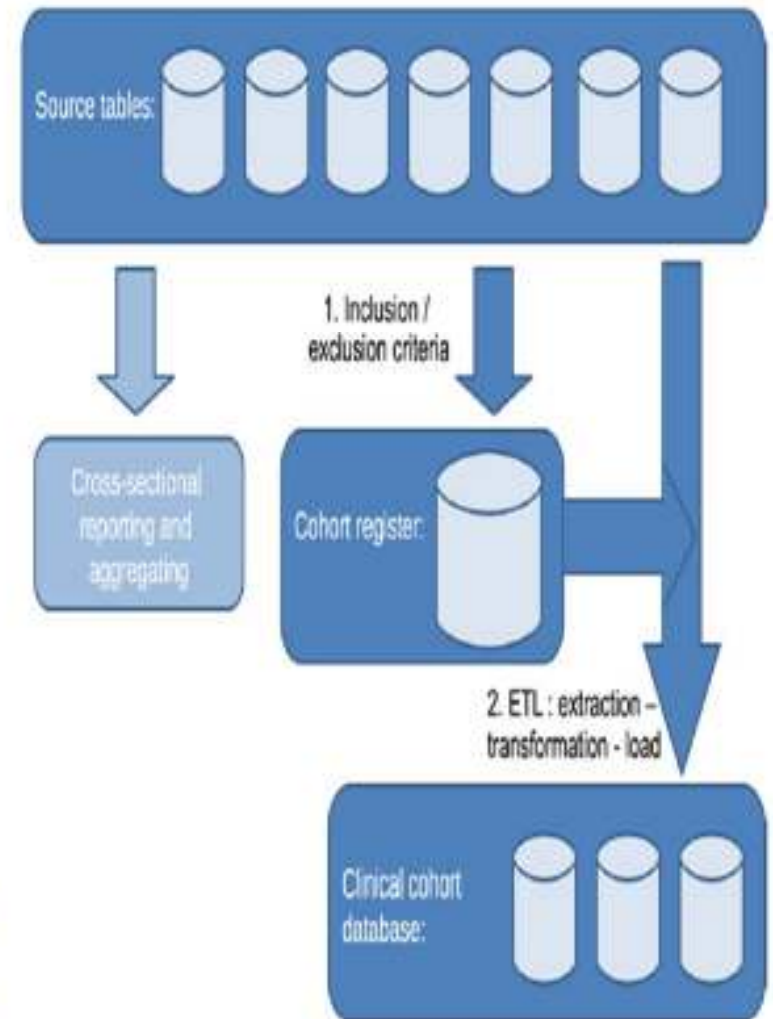


BHIS Reporting System

Analysis and reporting layer



Setting-up a cohort for longitudinal analysis





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Pharmaceutical supply system

- Distribution of medicines is based on consumption rates.
- allocations made for growth and for outbreaks and fluctuations etc.
- This information is generated in reports from Supply Chain Management Module of the Belize Health Information BHIS).
- BHIS can accounts for more that 80% of the stock distributed within any health facility once utilized properly the actual quantities are visible in reports pulled from the Information Systems Supply Chain Management Module and Dispensing Module respectively.

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Forecasting Methodology

- CMS forecasts with data from regional and district pharmacist and TAs
- This exercise is usually done every 12 months-coincides with budget
- Forecasting Method used mostly was Consumption Method & Morbidity and Mortality
- The Monthly Issue Rate verified with Reports from BHIS
- ABC Analysis is used for figures beyond budget.



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Procurement Practices

- All Pharmaceuticals including those that are specific to the treatment of NCD's are procured via a Maximum Price Contract .-Generic meds
- Prices include Storage & Delivery.
- Belize is part of COMISCA recently initiating pool procurement of minimal items.
- MOH acquires via PAHO strategy fund KIV testing kits-, ARVs TB-MDRTB drugs TB drugs .
- Benefits - prices are excellent /affordable
 - - quality assured medications
- Challenges –Political Will / buy IN
 - --time frame all the process take to be complete and delivery time thereafter can be quite extended and drawn out.
- Opportunity- resolved by proper planning and forecasting.

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Challenges

- lack of adherence to the standard treatment guidelines (changes in patterns of prescribing- leads to stock outs, over and under prescribing issues affect forecasting
- issue is the lack of compliance of 100% usage of all the Modules of the Information System
- Manual reporting is still active and utilization may not be seen effectively and existing lack of M and E in forecasting activities by pharmacist in health facilities –capacity building
- over forecasting without evidence based medicine Morbi-mortality data

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Challenges

- Medications are all Imported about 20 different private companies
- Legislations and laws are either out dated and pending regarding patents, restrictions, control etc. existing draft policy on medicines
- We have a fragmentation in procurement MOH/NHI in suppliers-contracts
- E.g. NHI pay to private pharmacies through a system of per medication per patient per encounter-MOH procures separately

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Recommendations

- Procurement key item through PAHO Strategic Fund.
- Political will to change procurement policies and laws that govern procurement /sales of essential drugs

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