ANALYSIS OF CAPACITY FOR DELIVERING HEALTH SERVICES FOR NONCOMMUNICABLE DISEASES IN DOMINICA

BENJAMIN CHAN
LERLY LUO
MICAELA MUSSINI
BEHNAZ BONYADIAN

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Ministry of Health, Wellness and Social Services

1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

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BENJAMIN CHAN
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Acknowledgements

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ARB	Angiotensin Receptor Blockers
BP	Blood Pressure
CARPHA	Caribbean Public Health Agency
CCM	Chronic Care Model
CHA	Community Health Aides
DCFH	Dominica-China Friendship Hospital
DMO	District Medical Officer
EMR	Electronic Medical Record
FINDRISC	Finnish Diabetes Risk Score
GDP	Gross Domestic Product
LDL	Low-Density Lipoprotein
MOHWSS	Ministry Of Health, Wellness And Social Services
NCD	Noncommunicable Diseases
PAHO	Pan American Health Organization
PDSA	Plan-Do-Study-Act
PHC	Primary Healthcare
QI	Quality Improvement
WHO	World Health Organization

Executive Summary

Country Context

Dominica, a mountainous, forested Caribbean Island nation, faces the burden of noncommunicable diseases (NCDs) as the leading cause of death with the prevalence of hypertension among adults at 22 percent and diabetes at 11 percent. Poor health behaviors are risk factors for developing NCDs, and 60 percent of the population is overweight or obese and 11 percent of the population engages in tobacco use. In response, the country has committed to the 2030 Sustainable Development Goals to reduce NCD mortality by 30 percent. Activities to date include joining the HEARTS in the Americas Initiative sponsored by Pan American Health Organization (PAHO), aimed at improving cardiovascular health.

At the request of the Ministry of Health, Wellness and Social Services (MOHWSS), a World Bank team visited Dominica in December 2022 to evaluate its capacity to deliver NCD services and identify priorities for improvement. Dominica is one of four Caribbean countries (together with Grenada, St. Lucia, and St. Vincent and the Grenadines) receiving technical support through a grant from the Access Accelerated Trust Fund, to enhance the care and management of diabetes and cardiovascular disease and improve adoption of clinical practice guidelines for diabetes and cardiovascular disease.

Methods

The mission team used an NCD System Assessment Tool currently being developed by the World Bank. This tool evaluates health systems using the World Health Organization's (WHO) Operational Framework for Primary Health Care, which examines 14 levers that drive improved healthcare quality and outcomes. Strategic levers include planning, policy, universal health coverage and funding. Operational levers include the model of care, human resources, health information systems, physical infrastructure, and supply chains. A second framework, the Chronic Care Model (CCM), was also used to obtain granular details of some of the above components. It emphasizes the need for a well-organized approach to delivering services, decision supports, clinical information systems, and self-management support for patients. Data were gathered through a review of NCD-related documents, key informant interviews, and site visits to five urban and rural primary care facilities and the Dominica-China Friendship Hospital.

Main Findings

Dominica has a sound model for offering NCD services, with most patient care provided appropriately within primary care. Although interviewees were concerned about losing staff to countries with better pay, there is a solid staffing structure with a multidisciplinary primary care team and home visits for immobile patients. Universal health coverage provides free consultations, and most other services are either free for those aged 65 years and older or under 18 years, or heavily subsidized for other ages. There are minor gaps in coverage for medications and tests (such as lipid profiles). Some facilities require refurbishment, which is currently being addressed in a separate World Bank project.

There is room to improve the work processes within primary care. While staff are engaged and committed, there is an absence of standard protocols to ensure that key services are provided consistently. There is lack of clarity on the desired frequency of screening and methods used, likely because of an absence of clinical practice guidelines. Although staff call patients who miss their follow-up appointments, such patients may still fall through the cracks. There is no formal method to track which patients have poor control of their disease and require special attention. Decision support tools, such as flowsheets, reminders, or checklists, are often used in other countries to remind providers of actions to take, but examples of these tools were not found in Dominica.

There are major opportunities to improve use of health information to manage quality. Charts are paper-based, unstructured, and reside with the patient, making it near impossible to monitor whether best practices are followed. There are paper-based registries that list which patients have diabetes or hypertension, and facilities also submit counts of services provided to the Ministry. These activities, however, are time-consuming for staff, cumbersome, and yield little insight into the quality of care. There is no list of quality indicators for NCD management, and no reports to facilities on where to improve.

Dominica has robust patient education activities on NCDs, but there are still opportunities to improve, particularly in patient self-management. Health promotion staff at the national and local level conduct healthy lifestyle and screening campaigns, communicating through radio, television, print media, and social media. Local staff offer these services in health facilities and employ outreach visits to communities at churches, health facilities, and community centers. However, there are no standards for what patients should learn about NCDs. Patient self-management support is key to NCD management, but there are a limited number of certified trainers in the country and facilities visited were unaware of this service.

The country has made progress in adopting WHO-recommended policies on taxation. Policies not yet in place include warning labels and limits to marketing tobacco, alcohol, and unhealthy foods.

Options for Investment

This analysis identifies key opportunities to improve NCDs management and options for investment:

1. **Formalize clinical practice guidelines for all major NCDs, especially hypertension, diabetes, and major cancers.** Clarify methods, frequency, and target populations for screening. For management, clarify recommended medications and frequency of follow-up assessments and tests.

2. **Reform work processes within primary healthcare sites.** Employ flowsheets to document completion of required activities at follow-up visits. Introduce other decision support tools to promote adherence to best practices. Establish a standard process to monitor and contact patients lost to follow-up and clinical pathways for managing high-risk patients. Consider establishing a national cancer screening program to monitor consistent application of screening activities. Train staff in these new processes, with repeated interactions to help resolve implementation barriers.

3. **Improve health information.** Establish an electronic registry that stores clinical data on NCD management at each patient encounter. Develop quality indicators for NCD management and provide reports to facilities on their performance. Generate patient defaulter reports identifying each deficiency in a patient's care (such as an overdue visit) so that providers can address them.

4. **Strengthen patient engagement in NCD care.** Establish a standard curriculum for patient education on NCDs. Expand the existing, small-scale patient self-management support program nationwide. Consider creating peer-support programs, matching trained volunteers with high-risk patients.

5. **Expand policies to modify healthy behaviors and make minor adjustments to the essential benefits package.** Continue current efforts to develop policies on taxation, develop restrictions on advertising, and labeling for tobacco, alcohol, and unhealthy foods. Consider adding certain tests and medications to the essential benefits package for the public health insurance program.

I. Background

Noncommunicable diseases have consistently been the leading cause of death in Dominica for the past decade. According to data from the Global Burden of Disease study, the top six causes of death in both 2009 and 2019 were all noncommunicable diseases (NCDs), including ischemic heart disease, stroke, diabetes, prostate cancer, chronic kidney disease, and hypertensive heart disease.[1] [2] Pan American Health Organization (PAHO) reports that the prevalence of hypertension among adults was 22.5 percent in 2015 and for diabetes, 11.1 percent in 2014.[3] Both of these conditions are also key risk factors for developing ischemic heart disease, stroke, and chronic kidney disease.

Poor health behaviors and risk factors drive high rates of NCD mortality. According to PAHO's NCDs at a Glance report,[4] the prevalence of the population overweight or obese in Dominica was 60.3 percent in 2016, ranking the third highest among Caribbean countries. Tobacco use was estimated at 11.1 percent in 2019, close to average for the Americas region[5] and alcohol use was also similar to the average at 8.1 liters per person per year. The one positive finding is that physical inactivity was lowest among countries in the Americas, at 21.6 percent.

Dominica has demonstrated its interest in improving NCD care through multiple initiatives. The country has set a wide range of targets for improving NCD prevention and management, in alignment with the 2030 Sustainable Development Goals.[6] Improving the quality of NCD care and reducing risk factors is one of five strategic priorities in its Country Coordination Strategy with the World Health Organization (WHO).[7] In May 2022, Dominica officially joined the HEARTS in the Americas Initiative, sponsored by PAHO, aimed at improving cardiovascular health, hypertension management, and healthy lifestyles. A National Coordinator for NCDs has been appointed within the Ministry of Health, Wellness and Social Services (MOHWSS).[8]

In 2022, the MOHWSS requested technical assistance from the World Bank to evaluate the capacity of its system to deliver NCD services and identify priorities for improvement. Dominica is one of four Caribbean countries, together with Grenada, St. Lucia, and St. Vincent and the Grenadines, receiving technical support through a grant from the Access Accelerated Trust Fund, to enhance the care and management of diabetes and cardiovascular disease and improve adoption of clinical practice guidelines for diabetes and cardiovascular disease. A technical mission was deployed in December 2022 with the primary objective of the following: (1) conducting a rapid NCD System Assessment to determine the capacity of Dominica's primary healthcare system to diagnose, treat, and manage NCDs, and (2) identifying a strategy and priorities for improving NCD care in the country.

Being a small, middle-income Caribbean nation, Dominica has the task of ensuring NCD services are delivered consistently and effectively, without the benefit of economies of scale in larger countries. Dominica's population of 74,000 is distributed across a territory of 47 km by 29 km and concentrated in coastal communities with relatively few people living in its mountainous forests. Its main urban center, Roseau, houses one-fifth of the population and has only a secondary-level hospital. Its gross domestic product (GDP) per capita is significantly lower compared to other small Caribbean states ($7,653 versus $10,064 in 2020) [9] [10], making it challenging to maintain salaries and social benefits comparable with regional peers. Global health expenditures as a percentage of GDP were 6 percent in 2020 [11], compared to 7.3 percent for the Caribbean region (Statista, 2023). It is imperative that the country uses its resources most efficiently.

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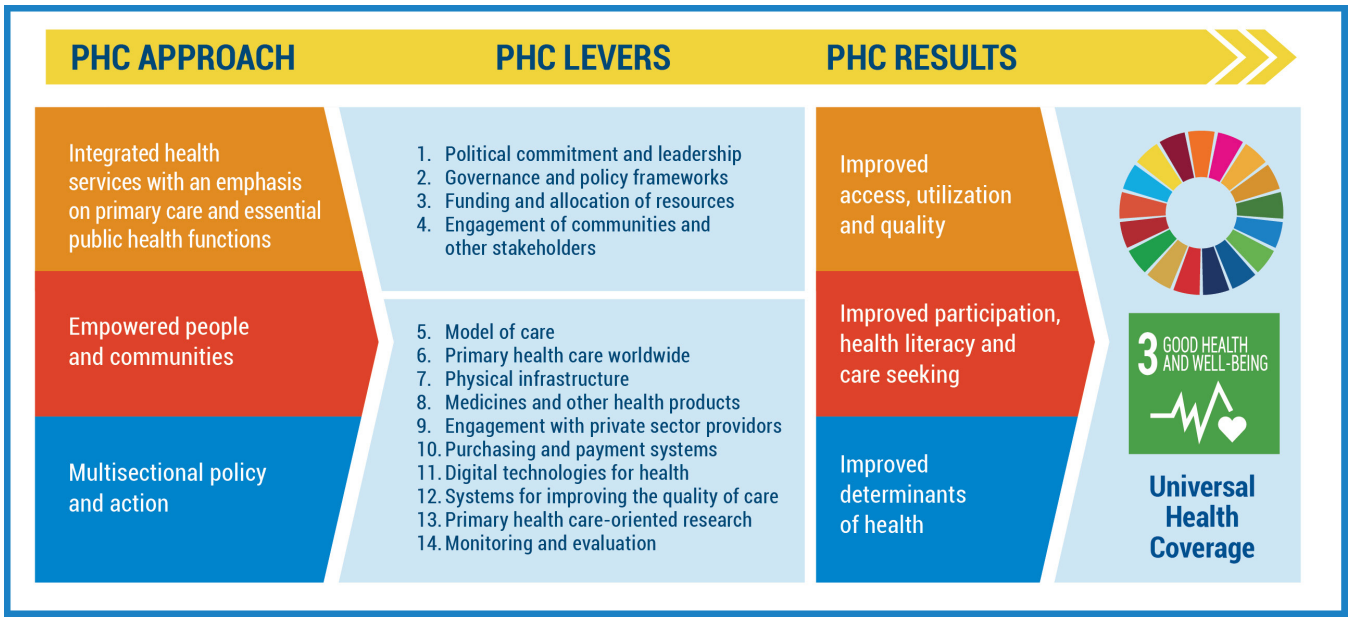
[1] Institute for Health Metrics and Evaluation (IHME). 2023. "Dominica." https://www.healthdata.org/dominica
[2] GBD 2019 Diseases and Injuries Collaborators. 2020. "Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019." *Lancet.* 2020 Oct 17;396 (10258):1204-1222. doi: 10.1016/S0140-6736(20)30925-9.
[3] PAHO. 2021. "Country Profile: Dominica." https://hia.paho.org/en/countries-22/dominica-country-profile
[4] PAHO / WHO. 2019. NCDs at a Glance: *NCD Mortality and Risk Factor Prevalence in the Americas.* PAHO. https://iris.paho.org/handle/10665.2/51696?show=full
[5] Ibid.
[6] WHO. 2017. "National NCD Targets for Dominica." https://extranet.who.int/ncdccs/Data/DMA_Dominica_NCD_targets.pdf
[7] WHO. 2018. *WHO country cooperation strategy at a glance: Dominica.* Geneva. https://www.who.int/publications/i/item/WHO-CCU-18.02-Dominica
[8] Annex 2 provides a table of selected health indicators in Dominica and three other OECS countries in comparison to the region.
[9] All dollar amounts dollars, are in U.S. dollars, unless noted.
[10] World Bank Data. https://data.worldbank.org/ ; https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=DM
[11] WHO. 2023. "Healthcare expenditure as share of gross domestic product (GDP) in Dominica from 2010 to 2020." [Graph]. In Statista. https://www.statista.com/statistics/952542/dominica-health-expenditure-share-gdp/

II. Methods

A World Bank team used an NCD System Assessment Tool currently being developed by the World Bank to conduct this analysis. Dominica is one of few countries where this tool has been field tested so far. The publication date of the tool is expected to be mid-2023.

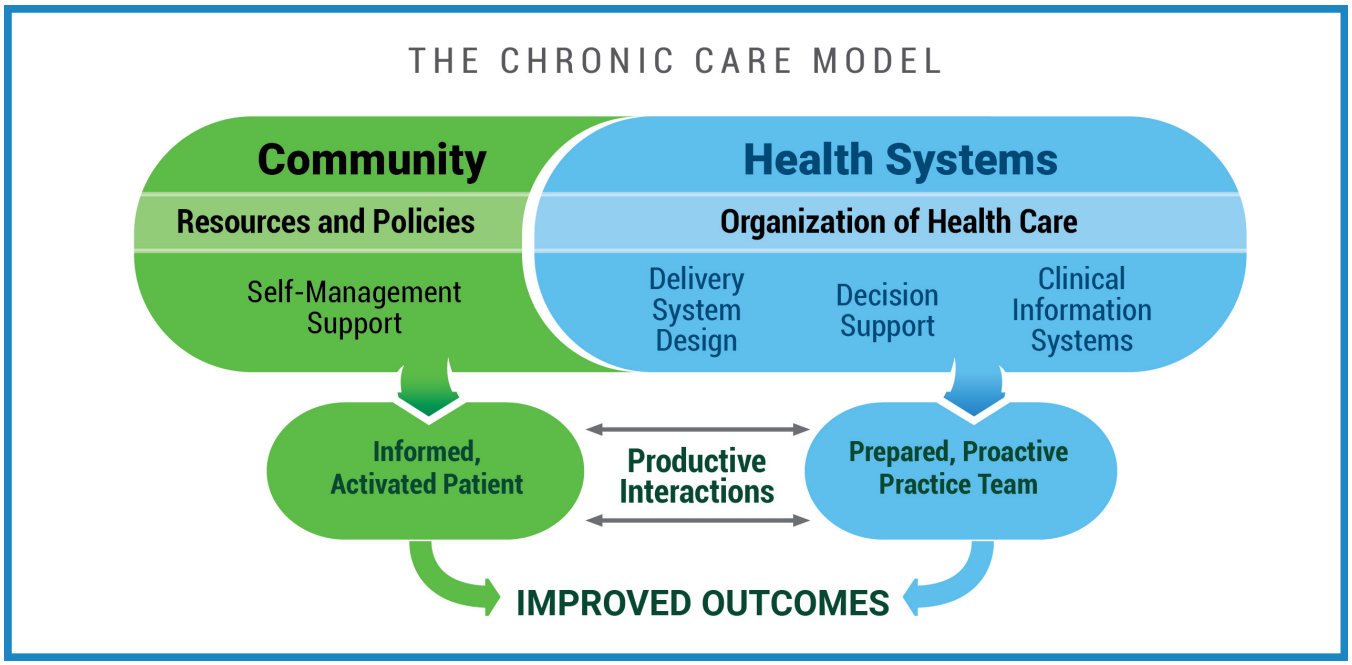
The NCD System Assessment Tool evaluates health systems across two frameworks, the first being the WHO's Operational Framework for Primary Health Care. This framework examines 14 strategic and operational levers within the primary care health system that drive desired results for quality of services and health outcomes (see Figure 1). Strategic levers include strategic plans, policies, universal health coverage and funding, accountability structures, and engagement with the community, which provide high-level stewardship of the health system, and are areas for which a Ministry of Health is typically responsible. Operational levers address the following: the means by which health care is designed and delivered; the infrastructure, supplies and equipment; human resources; and information systems. This framework was adapted to examine how these levers apply specifically to NCDs. For example, it examines whether strategic plans have specific targets for improving NCD care, if universal health coverage includes NCD services, and if drugs and equipment for treating NCDs are available.

Figure 1. WHO Operational Framework for Primary Health Care and Theory of Change



The second framework used by the NCD System Assessment Tool is the Chronic Care Model (CCM). This model, widely used in other countries, is based on extensive research on the critical success factors common to health care provider groups that are able to achieve the best outcomes for patients for chronic diseases,[12] which constitute the large majority of NCDs. The model emphasizes the need for a well-organized approach to delivering services ("delivery system design"), decision supports, clinical information systems, self-management support for patients, and community resources and policies.

Figure 2. Chronic Care Model (CCM)



The NCD System Assessment Tool examines the extent to which health systems have implemented 43 best practices for health system design and delivery, covering each component of the two frameworks. Each best practice has been selected based on being recommended within WHO guidelines, consensus documents, or backed by evidence based meta-analyses, Cochrane reviews, and systematic reviews. A full list of these best practices and a brief description is found in Annex 1.

The mission team conducted site visits, key informant interviews, and a review of NCD-related documents. The team visited five primary health facility sites across a mix of urban and rural regions and the Dominica-China Friendship Hospital (DCFH). They examined patient charting practices, data collection activities, models of care, patient education materials, available equipment, and organization of medical supplies and pharmacies. They interviewed facility managers, doctors, nurses, community health workers, and pharmacists during site visits, as well as multiple directors and senior leadership within the MOHWSS, for a total of 37 interviews. Documents reviewed include the newly drafted National NCD plan, health plan, and practice guidelines. One limitation of the methodology is that patients were not formally interviewed, as the time frame for the rapid assessment was too short to collect a sufficient sample of the population. Future iterations of the NCD System Assessment Tool may consider options for measuring patients' experience, such as focus groups, commissioned surveys, or interviews with patient advocacy groups.

[12] Wagner, E., Austin, BT., and M. von Korff. 1996. "Organizing care for patients with chronic illness." *The Milbank Quarterly 1996*; 75(4); 511-544. https://pubmed.ncbi.nlm.nih.gov/8941260/

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The NCD System Assessment Tool examines health system weaknesses pertaining to NCD management; such general issues as overall level or source of health funding are beyond its scope. Examining the general level of national economic output, financing for health services, and staff salaries is beyond the scope of this tool, which is focused on NCD services. However, the tool does consider such issues as availability of NCD-related equipment, supplies, or drugs, which are common in other countries of a similar income level, or have similar cost-effectiveness to other services provided in the system.

The Access Accelerated Trust Fund, which promotes the advancement of action on NCDs, supports development of this Tool. Founded in 2017 at the World Economic Forum, Access Accelerated is a collective of health science companies working with the World Bank to accelerate investment in NCD prevention, treatment and care, and contribute to the UN Sustainable Development Goals to reduce premature deaths from NCDs by one-third.

III. Results

i POLICIES AND STRATEGIES

There is a solid core of strategies and plans for NCD management, with additional planning documents under development. The Dominica Government's National Health Resilience Development Strategy 2030 calls for compliance with UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being at all ages. The Strategy includes a commitment to reduce premature mortality from NCDs by one-third and increase health financing and the recruitment and retention of the health workforce. It proposes using NCD prevalence as a measure to monitor progress in population health, although this indicator does not capture the extent to which NCDs are managed well once they occur. MOHWSS is also developing a national health plan with assistance from PAHO and has created a draft NCD plan. Five priorities are under consideration: program management; risk factor reduction; screening and treatment; research; and monitoring and evaluation.[13] Strategies are listed for each priority, such as healthy lifestyle policies, national screening programs, activities to ensure adherence to practice guidelines for treatment, and a national health information system. Targets have been set for reductions in unhealthy behaviors, such as decreasing tobacco and alcohol consumption and lessening physical inactivity with accompanying indicators. There is a high-level target for eligible people receiving drug therapy and counseling, but further details on what this indicator entails will be required for it to be impactful.

A well-established system of universal health insurance is in operation. Dominicans benefit from free health services if under age 18, or 65 years and above. Services include free consultations with healthcare providers and having access to most basic drugs and tests. For those aged between 18 to 64 years old, services are heavily subsidized and provided at very low cost (for example, EC$5 per prescription). Services under the plan include most drugs for diabetes (including metformin, glibenclamide, short- and intermediate-acting insulins) and hypertension (diuretics, ACE inhibitors, calcium channel blockers, and beta-blockers) and basic lab tests. A1c, a hallmark blood test for managing diabetes, was previously not covered but has just recently been added to the list. The following are some items not covered, which could be considered in the near future:

- Low-density lipoprotein (LDL) used to monitor if cholesterol has decreased to the desired level.
- Nicotine replacement therapy or other medication for smoking cessation.
- Angiotensin receptor blockers (ARB). ACE inhibitors are an essential medication for many diabetes patients, but 10 percent of the population cannot tolerate them. The modestly more expensive ARB confers the same benefits to these patients and can be reserved as a second choice if the ACE inhibitor is not tolerated.
- Third-line drugs for diabetes (such as thiazolidinediones, DPP-4 inhibitors, and SGLT-2 inhibitors) and basal long-acting insulins (such as glargine) are currently not covered. A majority of patients can be treated with existing medication in the formulary and hence their inclusion may not be a high priority. Nonetheless, if resources permit, consideration could be given to coverage in circumstances when other treatments fail.

[13] Abbreviated titles.

Progress has been made in adopting WHO-recommended policies on taxation, labeling, and limits to marketing tobacco, alcohol, and unhealthy foods. The 2015 Excise Tax (Amendment), SRO 28 outlines taxes for tobacco, alcohol, and some sugar-sweetened beverages. Alcohol taxes are partially scaled to alcohol content, with taxes on hard liquor about 9 to 10 times higher than for beer and wine. Tobacco is taxed at $24.20 / kg and includes cigarettes, cigars and extracts, or essences (such as vaping). In Dominica's most recent report to the WHO's Framework Convention on Tobacco Control dated 2023,[14] smoking bans in public places, advertising bans, and plain package labeling with graphic warnings had not yet been implemented. The Attorney General is currently developing legislation to address these points, which is in its advanced stages. There are no regulations regarding salt or trans-fat content at present.

A clear chain of managerial accountability exists within the system. Accountability mechanisms are important for setting expectations for what health facilities or providers should achieve, monitoring progress, surveillance mechanisms to monitor if these expectations are met, and consequences for not achieving desired results. Such consequences may vary from country to country but may include increased scrutiny, requests for an action plan or provision of support to meet expectations or incentives for good performance. In the case of Dominica, there is a clear chain of managerial accountability, as described in the three lines of reporting for doctors, nursing, and other staff and health facilities:

- District Medical Officers »» Chief Medical Officer »» Permanent Secretary »» Minister
- Senior Nurse »» District Nursing Officers »» Chief Nursing Officer
- Health Facility Manager »» District Manager

District managers visit facilities at least quarterly and offer supportive supervision to facilities. Supervisors generally examine issues such as state of the building, equipment, drugs and supplies, or human resource challenges. However, there is no formal, standardized checklist or evaluation template to guide these discussions, and no specific expectations regarding quality of services.

An intersectoral planning committee for NCDs is currently being developed. Intersectoral planning brings together representatives of different sectors, governments, and ministries other than those in the health sector to discuss approaches to reduce the burden of NCD disease. Other countries have attempted policies or programs, such as the following: education about NCDs in schools; improved urban paths and lighting to encourage physical activity; public transportation; environmental regulations to improve air quality and respiratory diseases; employment assistance as economic instability may lead to mental health problems; poor diet; and decreased attention paid to one's disease. Previously, an NCD Commission was established in 2016, which was a forum for intersectoral collaboration, but this has since become defunct. There are now plans to re-constitute this group as part of the Ministry's upcoming NCD strategy, as well as to engage the country's National Youth Council to get young people engaged in NCD prevention.

Dominica has robust healthy lifestyle campaigns using multiple means of communication. Health promotion staff at the national and local level engage in a wide variety of activities, such as outreach visits to communities at churches, health facilities, and community centers for NCD screening and education on healthy lifestyle. Communication to the public is done through radio, television, print media, and social media campaigns. Figure 3 below illustrates some examples of advertising for different outreach activities, posted on the Ministry's social media page.

[14] WHO FCTC. 2022. "WHO FCTC core questionnaire 2023." https://fctc.who.int/publications/m/item/who-fctc-core-questionnaire-2023.

Figure 3. Examples of Health Promotion Activities in Dominica. Source: Ministry of Health Facebook Page.

ii DELIVERY OF CARE

The majority of NCD care is provided appropriately at the primary-care level. The primary healthcare (PHC) system is delivered through 52 health centers staffed by a multidisciplinary team that includes District Medical Officers (DMOs), Family Nurse Practitioners, District Nurses, Community Health Nurses, Midwives, and Community Health Aides. The patient typically receives care from the same team in the same facility over time. DMOs function as primary-care physicians and are always present at larger sites and visit on certain days in smaller centers. DMOs have the latitude to diagnose and treat NCDs and adjust NCD medications, including insulin. Family Nurse Practitioners can also issue prescriptions, but physicians usually begin initial treatment of newly diagnosed NCDs. However, some interviewees at the hospital level noted that some primary-care providers may be hesitant to make rapid adjustments to NCD treatment in order to achieve adequate disease control, which contributes to the problem of patients arriving at the hospital with major complications. Lastly, some interviewees noted the lack of trained personnel to provide foot care services for diabetes patients and that this critical service could reduce diabetic foot amputations.

There is access to specialists through a referral system, and a specialist outreach model for diabetes allows for some shared care modeling. In-patient and specialty care is provided at the DCFH in Roseau. There is a gatekeeper system, whereby a patient can only see specialists through a referral by the DMO. In most cases, patients must travel to see a specialist based in Roseau at the DCFH. At present, there is a small-scale specialist outreach program for diabetes where an endocrinologist visits PHC health centers on a rotation to reach each of the seven districts periodically. The endocrinologist sees referrals during these visits and provides informal mentorship to physicians on management of specific cases. Previously, there was a specialist outreach program for psychiatry when Dominica had two psychiatrists with several community nurses trained in mental health. At present, there is only one psychiatrist, the mental health nurses are concentrated at the hospital psychiatry unit, and there is insufficient staffing to offer such a program. There is also a visiting diabetic retinopathy screening service where a mobile retinal camera is sent periodically to each district.

Screening activities for hypertension and diabetes occur, but there is no clear standard for when and how to screen. Interviewees reported doing screening at outreach activities in the community for hypertension and diabetes using blood pressure cuffs and typically a random blood sugar glucometer check. There is also opportunistic screening for hypertension and diabetes, as each adult patient visiting a PHC facility for any reason has a blood pressure check, and some individuals may be offered a glucometer check. However, the absence of clear practice guidelines in the past has resulted in lack of clarity on the following: which patients should be targeted for screening, the frequency of screening, and appropriate methods. For example, there is no clear guidance on whether diabetes screening requires a random glucometer check (usually not accepted in most international guidelines), a fasting blood glucose, an A1c test (representing average blood sugar over the last three months), or a screening questionnaire, such as the Finnish Diabetes Risk Score (FINDRISC) diabetes risk instrument (recommended by the Caribbean Public Health Agency [CARPHA] to rule out diabetes in low-risk patients without need for a blood test).

Similarly, there are major gaps in ensuring all eligible patients receive cancer screening. There is no formal national screening program. Hospital interviewees reported seeing too many patients presenting for cancer care in advanced cancer stages with high tumor burden. Fecal occult blood tests for colon cancer screening within high-risk age groups were available at the central laboratory, but none of the primary healthcare sites visited routinely use this test. Mammography is available for breast cancer screening, and Pap tests are used for cervical cancer. The current practice of providing Pap tests once a year is actually more frequent than required, as the WHO recommends screening every five to ten years, if the more accurate HPV test is used, or every three years if a Pap smear is used.[15] Although these services are available, there is no systematic tracking of women who have not received screening and ensuring they are contacted in a timely manner.

An appointment scheduling system is not used for most patients, which leads to long wait times to be seen and some inefficiencies in use of staff time. It is possible to request an advance appointment at a particular time, and patients can request the next appointment at the end of a visit or may call to set one up. However, in practice, most patients tend to arrive in the morning without a specific appointment time and may wait for hours to be seen. Interviewees at site visits noted that such a system has become the cultural norm, particularly for the older generation, and can be driven by such factors as availability of transportation. Many patients appear to not mind this system, and some sites take advantage of the crowded waiting room to do health teaching. However, long waits in the morning may discourage some patients from seeking care who cannot afford that time away from work or have personal or caregiving responsibilities. The imbalanced workload during the day may create both staff stress and time pressure to keep assessment time with patients short. In contrast, afternoon schedules tend to be light, creating the potential for workload to be spread out more evenly during the day to avoid these problems.

Although PHC staff in Dominica attempt to call no-show patients to remind them to return, there is no systematic method to ensure that follow-up occurs. Ensuring NCD patients return for routine follow-up is a universal challenge in all countries. For many chronic diseases, such as diabetes and hypertension, regular follow-up is essential to ensure that disease control is maintained and to adjust medications or lifestyle otherwise. For cancer, screenings are done at certain time intervals depending on the type (for example, every two years for mammography, and every three to five years for cervical cancer, depending on risk factors and the guidelines and method used). Site visit interviewees stated that after regular follow-up visits, patients are usually given the following appointment time to return (either a specific date and hour, or just the date), which is recorded on an appointment register. If the patient does not show up on the expected date, then a staff member, such as a community health nurse, will take the initiative to call the patient. While this system is helpful, many interviewees admit that they cannot keep track of all the patients overdue for, having missed, or need follow-up appointments. No master list of patients with overdue visits or for cancer screening was found during site visits.

Although staff are knowledgeable about NCD management and special clinic days are reserved for NCDs, there is no standard protocol and no documentation method to ensure all essential activities are carried out. PHC facilities generally reserve certain mornings or days for NCD care when patients can return for routine follow-up. If patients show up on a day for general consultations, they can still receive NCD follow-up care. However, clinical notes are written in freehand style without structured documentation, and there is no checklist or flowsheet to remind providers of each task that should be carried out. Essential tasks for NCD care include documenting blood pressure and weight, doing repeat blood work (such as hemoglobin A1c for diabetes every three to six months), periodic foot and eye exams, and updating the latest information on health behaviors, such as smoking, alcohol use, and exercise. The combination of pressures from patients in the waiting room, managing a high volume of patients, and unstructured medical records increase the risk that some of these key care tasks will be missed. Research in other countries show that in the absence of a standardized approach, best practice adoption rates are approximately 50 percent.[16]

[15] WHO. 2021. *WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention.* Second edition. Geneva: WHO. https://www.ncbi.nlm.nih.gov/books/NBK572317/

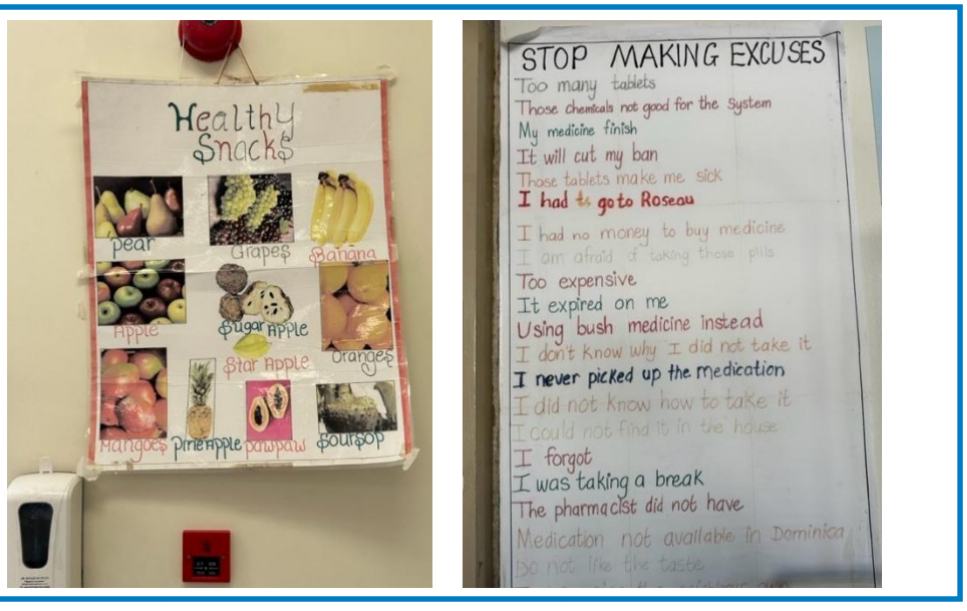
[16] McGlynn, EA, Asch, SM, Adams, J, Keesey, J, Hicks, J, DeCristofaro, A, and EA Kerr. 2003. "The Quality of Health Care Delivered to Adults in the United States." *The New England Journal of Medicine*. (Jun 26);348(26):2635-45. doi: 10.1056/NEJMsa022615. PMID: 12826639. https://www.nejm.org/doi/full/10.1056/NEJMsa022615

Patients with poor control of their chronic condition require more intensive follow-up; at present, this situation is done on an ad hoc basis and there is no mechanism to ensure this happens consistently. Patients with very high blood pressure or blood sugar are at the greatest risk of developing a major complication, such as stroke, heart attack, or death. Ensuring these patients receive more intensive or frequent follow-up is critical to achieving better disease control in a timely manner. Some interviewees noted that staff, particularly community health nurses, know their high-risk patients well and can make sure they are more closely monitored. Other interviewees were not confident they were able to keep track of their high-risk patients. However, all agreed that there was no standardized approach to identifying and managing these patients. No criteria exist for defining poor control or high risk. Furthermore, there is no list of patients meeting such criteria, nor any guideline, protocol, or pathway on how frequently such patients should be managed. Other countries employ such strategies as doing interdisciplinary case conferences, assigning a case worker, or creating a protocol (such as monthly follow-up, if blood pressure is above a certain level). The team found no examples of such strategies.

There is a very strong system of regular visits to households for both prevention and treatment of NCDs and other conditions. Community health aides (CHAs) visit patients unable to leave their home ("shut-ins") once a month and other individuals who have mobility issues or special needs requiring home visits. CHAs can check vitals, review complaints, and check if patients have an adequate stock of medications. Physicians also do home visits about every four to five months or more frequently, if needed. Furthermore, all households in the country receive a visit approximately once a year to check home sanitation, environmental, and socioeconomic conditions, along with identifying persons at risk (such as infants, pregnant mothers, or elderly members with disabilities). In the case of an emergency, community health teams know precisely who would need assistance in evacuation.

PHC facilities conduct a wide range of patient education activities on health behaviors and NCDs. Both individual counseling and group education on diet, exercise, smoking, alcohol, and living with chronic diseases, such as hypertension and diabetes. are frequent. One health center even offered educational sessions on home gardening for healthy foods. PHC facilities use a combination of homemade teaching materials (see Figure 4) and resources provided centrally by the Ministry. Some facilities organize teaching sessions in the mornings for those waiting to be seen by the doctor. One weakness cited by interviewees was that there was no standard curriculum for what patients with diabetes or hypertension should be taught.

Figure 4. Examples of Homemade Teaching Materials at Health Centers



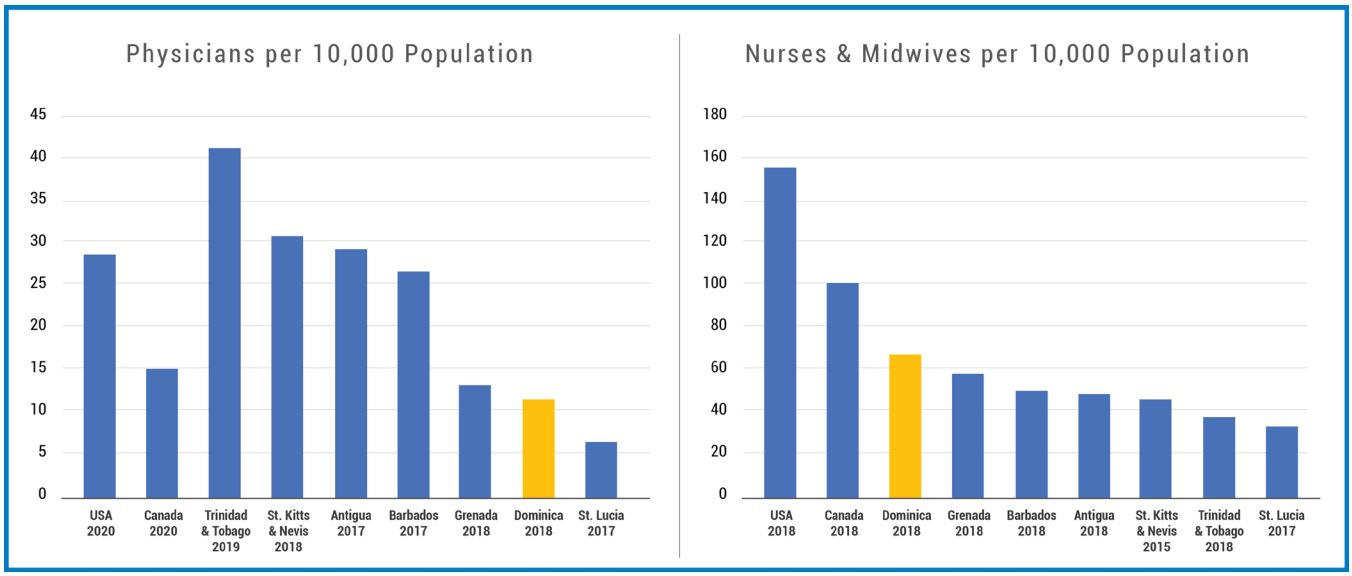
Some individuals are trained in patient self-management support, but the numbers are insufficient for deployment of this service across the country. Patient self-management is the systematic provision of education and supportive interventions by health care staff to increase patients' skills and confidence in managing their health problems, including regular assessment of progress and problems, goal setting, and problem-solving support.[17] Two staff in the public system are certified as "master trainers" using the Stanford self-management program and are capable of teaching the program. However, during site visits, interviewees were not aware that such a service was available. One method of reinforcing patient self-management is to develop a peer-support program, where the patient is paired with a lay person or volunteer who has experience living with the same condition to provide encouragement, moral support, and help monitor and support self-management activities, such as goal setting. At present, no such program exists.

iii HUMAN RESOURCES

The PHC system has a well-designed multidisciplinary team structure with a particularly strong model of outreach via home visits. The typical primary care team includes physicians, family nurse practitioners, midwives, primary care nurses, nursing aides, CHAs, and pharmacists. CHAs provide home visits to patients unable to travel and other providers also attend home visits, as needed. There has been a recent move to integrate visiting endocrinologist service to primary care with joint management of difficult cases. Providers are generally well-trained and there is a strong Caribbean-wide process for ensuring competency at time of licensure.

Interviewees expressed widespread concerns about lower than desired staffing levels in all professions. WHO data show a relatively lower supply of doctors compared to neighboring countries, but relatively higher nursing supply. Almost all interviewees expressed concern about staffing levels, citing a brain drain of talent to neighboring countries that offer better salaries. Data from the WHO's Global Observatory show that the doctor to 10,000 population ratio is second lowest among neighboring English-speaking countries (see Figure 5). Nursing and midwife supply, however, is relatively high within this group. Thus, it appears that Dominica relies more heavily on its nursing staff for delivery of services, including primary care, compared to other countries.

Figure 5. Supply of Doctors, Nurse and Midwives in Southern Caribbean Countries and North America Source: WHO observatory website.



[17] Adams K, Greiner AC, and JM Corrigan, editors. 2004. *Institute of Medicine (US) Committee on the Crossing the Quality Chasm: Next Steps Toward a New Health Care System; The 1st Annual Crossing the Quality Chasm Summit: A Focus on Communities.* Washington, DC: National Academies Press (US). Chapter 5, Patient Self-Management Support. https://www.ncbi.nlm.nih.gov/books/NBK215507/

There are some activities for continuing education, such as weekly videoconference rounds, but no advanced learning methods for NCDs that focus on problem solving and implementation of best practices. Every Friday morning, teaching rounds are held on different topics, broadcast by videoconference from DCFH, and staff at all PHC sites are invited to attend. Within each district, monthly team meetings include a learning session where one team member researches a topic and presents it to the group. Doctors and nurses are required to complete a certain number of credits per year to maintain licensure. While these activities are of value, some learning modalities help providers improve their adoption of best practices, not just by ensuring they understand the guidelines, but to connect with them over multiple time points to discuss and brainstorm about barriers to delivering care and solutions. The team did not identify examples of this type of training during interviews and site visits.

iv INFRASTRUCTURE

A good network of geographically accessible PHC facilities exists, and those facilities with structural issues are being slated for refurbishment. PHC facilities have been deliberately located no more than 10 km apart and are accessible by public transit for the convenience of residents. Some facilities visited were new or recently renovated, while others had structural issues, such as leaking roofs. Funds are available through the World Bank-OECS Regional Health Project for refurbishment of such facilities.

PHC facilities had access to basic equipment, with some gaps that are currently being addressed. All facilities had manual blood pressure (BP) cuffs, and some had automatic BP monitors, but in others they were absent or broken and needed to be purchased by staff members at their own personal expense. A current PAHO initiative aims to ensure all facilities receive standardized automatic monitors. Computers and internet services were available in all facilities, but they were used mainly for administrative tasks and not patient care. Lab services are available but mainly at the central hospital. There is a blood draw day once a week within each district where samples are collected and sent to the central lab for processing. Results are then returned by courier to each facility. However, venipuncture service is not directly available at some health centers, even though staff were capable of providing the service. The lack of this service results in extra travel and can pose barriers for patients. At present, the World Bank-OECS Regional Health Project is being used to decentralize lab services to districts and offer some point-of-care testing.

Supply chain management has some problems with stock-outs of medication and supplies, due in part to manual paper-based methods for tracking inventory and demand. Staff reported periodic shortages of certain medications and the A1c lab test for diabetes is often unavailable because of lack of reagents. Dominica participates in a multicountry OECS drug procurement process to enable bulk purchasing and drive down costs but experienced some shortages from suppliers, particularly during the Covid pandemic. Another contributing factor is that inventory is tracked using inefficient manual paper-based records. The manual system makes it difficult for the central medical stores to make accurate predictions of demand, which can result in inadequate budgeting for certain drugs and subsequent shortages. The lack of timely inventory data has also led to such problems as avoidable waste of expired drugs.

v HEALTH INFORMATION

Patient charting is paper-based using free-text notes, with the chart residing with the patient and not the clinic, thereby making it practically impossible to audit or monitor quality of care. Patients carry their clinical notes, laboratory results, and prescribed medications in personal exercise books brought to each health visit. Staff cannot access patient information without the patient and exercise book being present. PHC providers and NCD specialists communicate referrals and plans through writing in the patient exercise book. When patients lose their exercise book, they lose their medical records. Lastly, charting by physicians is in the form of free text notes; there are no fields for structured data documentation on such key variables as blood pressure, blood sugar, weight, or health behaviors.

PHC staff members collect data on utilization and maintain a list of patients with diabetes and hypertension, but these activities are paper-based, time-consuming, and yield little practical information for improving quality. The staff members maintain paper logs of patient visits and submit data, such as counts of visits, but there is no information on the actual quality of care. Staff members also keep a paper-based registry of patients with hypertension and diabetes, but this is equally cumbersome to maintain (see Figure 6). For example, they manually write the names of all patients in a given year in a book and then copy this information in a subsequent year into a new book when they run out of space. The registry requires considerable effort, but only yields information about diabetes incidence and prevalence and not quality of care. Pharmacies also file patients' prescribed medication information through paper-based record books, which is cumbersome for determining a patient's current medication list and to trace dispensing history (see Figure 7).

Figure 6. Example of Hypertension and Diabetes Registry at Health Center

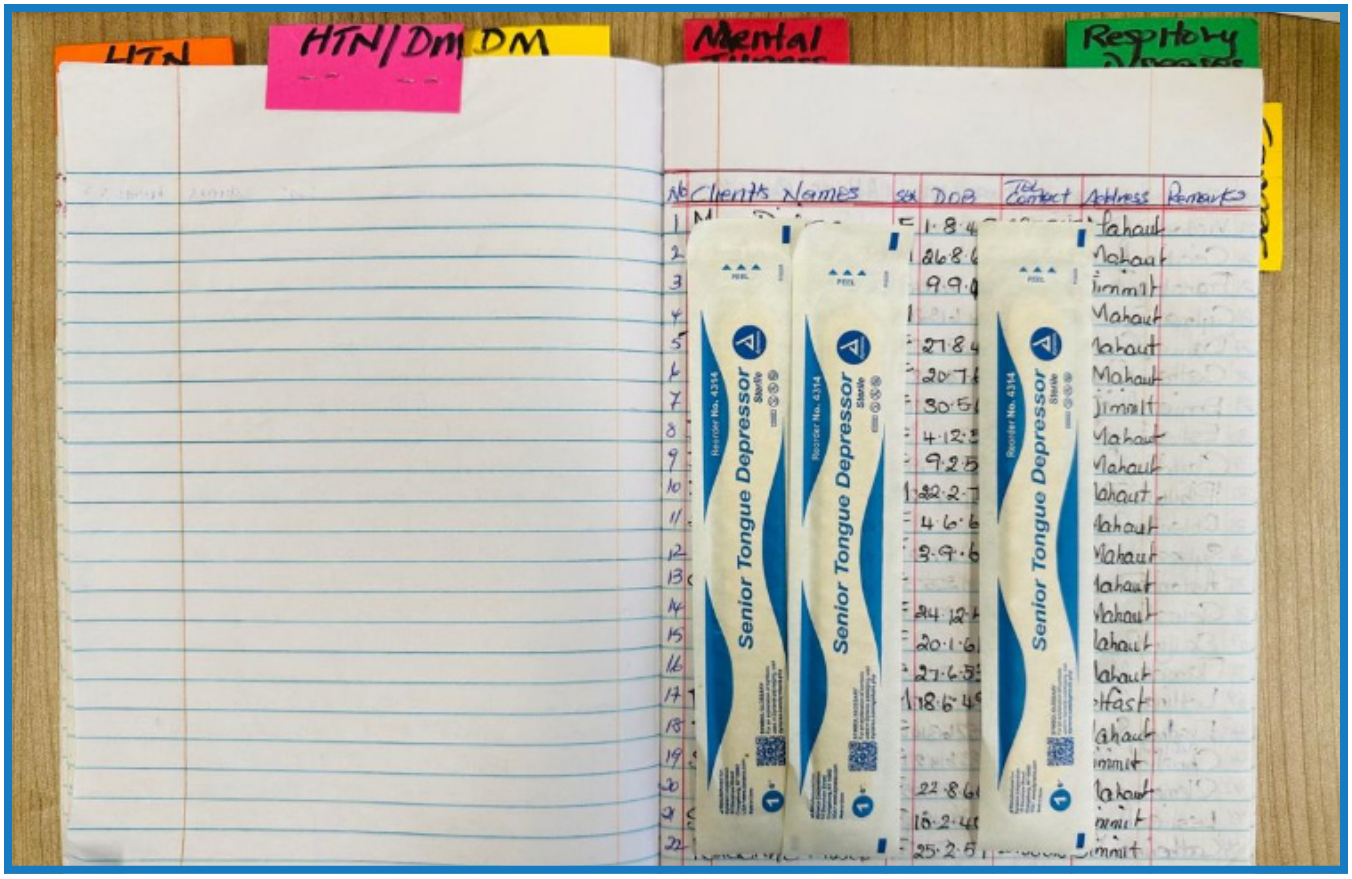
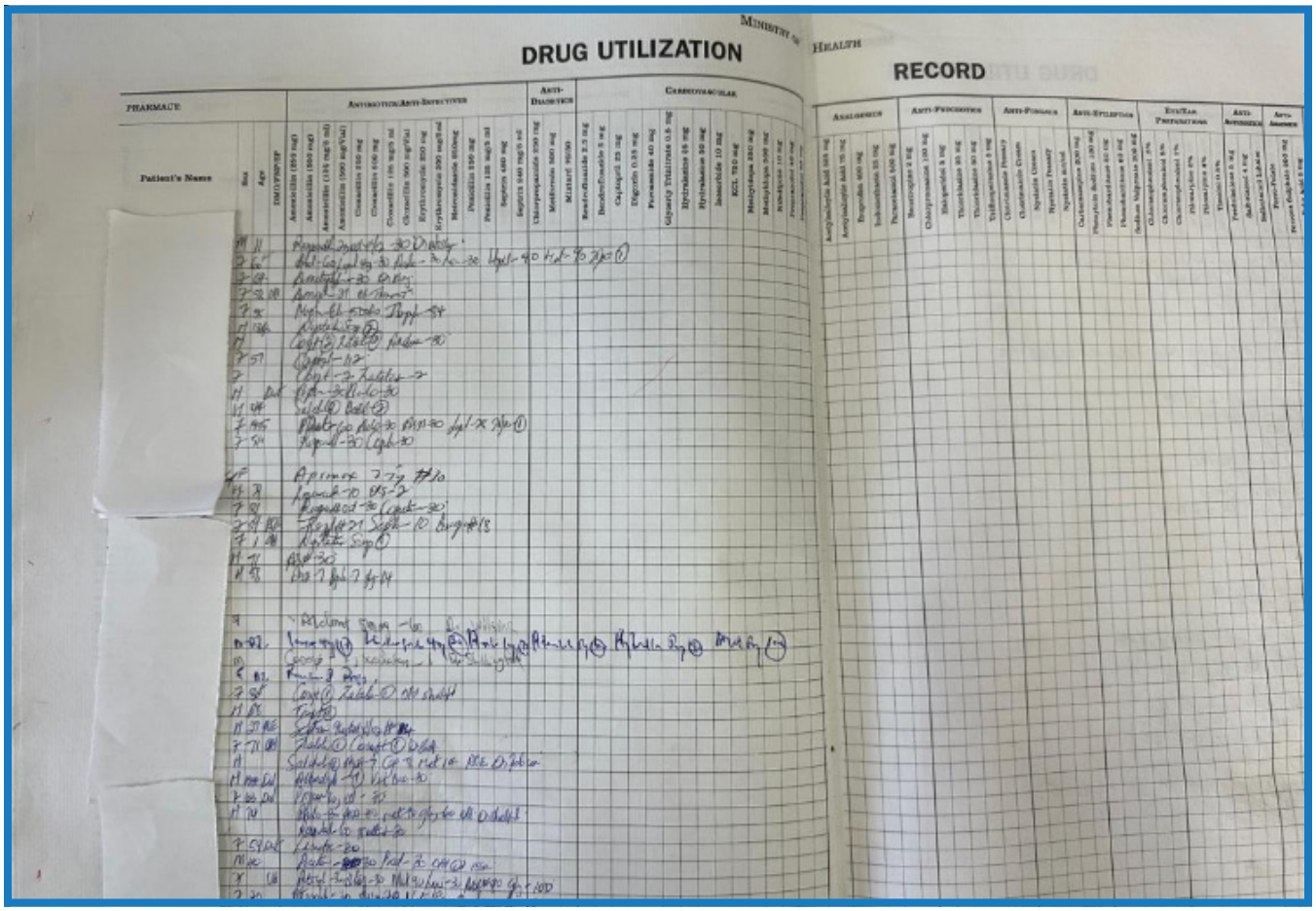


Figure 7. Paper-based Records that Pharmacies Use for Dispensing Patient Medication



There is no list of quality indicators for NCD management. As noted, data are collected on incidence, prevalence, and utilization, but there is no information available on such indicators as percent of eligible patients screened for NCDs, percent of patients with diabetes or hypertension with adequate blood pressure or blood sugar control, or percent of patients with a particular NCD who received the appropriate drugs, follow-up visits, tests, counseling, or other recommended services.

vi QUALITY IMPROVEMENT

National clinical practice guidelines for many NCDs are under discussion but are not yet in place. Finalization and dissemination of these guidelines will be necessary to establish a standard of care. The development of national clinical guidelines for diabetes, cancer, and respiratory diseases is in progress. For hypertension and cardiovascular disease, Dominica has joined the WHO Hearts initiative, which includes clinical treatment protocols,[18] but many providers interviewed were not aware that they had been adopted.

[18] PAHO/ WHO. 2022. "Dominica launches HEARTS in the Americas." https://www.paho.org/en/news/25-5-2022-dominica-launches-hearts-americas

There was no evidence of organized quality improvement activities. Primary care units do not have staff with dedicated responsibilities for quality or formal quality improvement teams. The team did not find evidence of use of quality improvement tools, such as process mapping, root cause analysis, quality improvement plans, and use of Plan-Do-Study-Act (PDSA) cycles to test ideas for improvement in rapid succession.

The team found no evidence of decision-support tools. Such tools as flowsheets, algorithms, electronic reminders, clinical pathways, or standardized hospital admission orders are commonly used in other health systems to remind providers of what recommended activities are in different clinical situations. The team did not uncover these tools during site visits or interviews.

vii SUMMARY OF FINDINGS

Dominica has a sound model for offering NCD services at the PHC level, with some infrastructure gaps that remain to be filled. There is a solid staffing structure for handling NCDs, with a multidisciplinary primary care team, home-based services for home-bound patients, and outreach services for health promotion and screening. PHC is clearly the milieu where most NCD care is delivered. Universal health coverage provides most services free of charge for the elderly or those under 18 years old, with a few gaps in essential NCD medications and tests. There are some gaps in equipment, infrastructure, and supply chain management, and these are currently being addressed in other projects.

The work processes within primary care have room for improvements to ensure that patients consistently receive all NCD screening and treatment services required. While engaged and committed staff members deliver NCD care, there is no standardized protocol for most screening activities and activities to carry out during follow-up visits. At present, there are no practice guidelines that are widely recognized by PHC staff, and there is confusion in the field on whether the WHO HEARTS guidelines should apply. There are informal, ad hoc mechanisms to ensure patients return for follow-up and that patients with poor control receive more attention, but patients can fall through the cracks. Similarly, there is no systematic method to ensure all eligible individuals receive cancer screening at the recommended time intervals and to contact them, if they are overdue. Charts are paper-based, unstructured, and reside with the patient, which makes it difficult to monitor whether all recommended services are being provided consistently.

There are excellent examples of health promotion and patient education activities, but there are further opportunities to help patients manage their disease. There is a wide range of community outreach activities for screening and lifestyle modification, with many examples of patient education activities at an individual and group level. However, there are no standards for what NCD patients should learn about their disease. Some healthcare professionals can provide patient self-management support, but this service is not widely available across the country. There is untapped potential to use community volunteers who are successfully managing their NCD to provide peer support to others struggling with the same condition.

Current paper-based data collection mechanisms are time-consuming, cumbersome, and ultimately do not yield information about quality of NCD services. The data that PHC staff collect focus on counting services. This information can be used for estimating NCD incidence and prevalence and for determining resource planning. However, there is no list of quality indicators for NCD management. Hence, PHC facilities do not receive reports that advise them on where to improve.

Table 1 contains a detailed description of observations.

Table 1. Summary of Observations from NCD System Assessment Tool

BEST PRACTICE	STATUS	ASSESSMENT
Government plan for NCD management	In progress	• National health plan being drafted. • NCD draft plan exists.
Universal health coverage	Well established; minor room for improvement	• Drugs, tests are free or subsidized. • Consider coverage for: lipid profile; statins, nicotine replacement therapy, angiotensin receptor blockers; third-line oral diabetes medications; basal insulin.
Policies towards unhealthy behaviors	Partly established; room to improve	• Taxes exist on tobacco, and some sugar-sweetened beverages. • No regulations on salt, trans fats. • Warning labels, marketing bans, bans on smoking in public places yet to be fully implemented.
Accountability mechanism	Well established	• Clear hierarchy of supervision from Ministry to district to health facilities.
Intersectoral planning	In progress	• Plans to reconstitute NCD Commission for intersectoral coordination.
Screening process	Room to improve	• No clear definitions for screening diabetes, or hypertension. • No consistent approach to screening for colon, breast, and cervical cancer. • No screening for mental health and substance use disorders.
Specialty care	Some room to improve	• Most NCD care is provided appropriately at primary care level. • Well-established gatekeeper system; a physician must refer to specialist for patient to be seen. • Use of specialist to visit clinics on diabetes is useful; model could be expanded.
Protocols for delivery of care	Room to improve	• No checklist or flowsheet to document that all best practices have been implemented at each visit. • Some concerns that adjustment of medications is not occurring frequently enough.
Patient journey	Improvements under consideration	• Venipuncture is available in most sites. Local labs are planned. Some progress on providing local specialist services. • Inconvenience for mental health services: centralized at hospital.
Recall process	Room to improve	• Relies on calling no-shows; some may slip through cracks.
Identification and engagement of high-risk patients	Room to improve	• Done on an ad hoc basis.
Home visits	Exceptional	• Census, with deep understanding of the socioeconomic and environmental risk factors for families.
Home monitoring	Room to improve	• Increase home BP monitor & glucometers, video calls.
Outreach programs, health promotion	Well-established	• Outreach programs in schools, workplaces, places of worship. • Communication to the public using all types of media.
PHC facilities distribution, basic amenities, facilities	Well-established minor room for improvement	• Well distributed throughout the country. • Some require refurbishment (in progress). • Automatic BP cuffs currently being distributed.

Table 1. Summary of Observations from NCD System Assessment Tool (Cont'd)

BEST PRACTICE	STATUS	ASSESSMENT
Human resources	Well-established	• Interdisciplinary team with doctors, family nurse practitioner, nurse, midwife, and community health aide.
Training, licensure, supply, team structure	Some room to improve	• Good licensing, training. • Concerns expressed regarding staffing levels. • Lack of staff trained in foot exams. • Weekly education rounds exist; newer approaches not yet adopted (case-based learning, group problem solving, repeat learning sessions on same topic).
Supply chain management	Room to improve	• Periodic stock-outs for some drugs in some facilities. • Switch from paper to electronic-based inventory tracking underway.
Quality improvement infrastructure	Almost nonexistent	• No official quality improvement (QI) teams, leaders, nor trained facilitators. • No examples of successful QI projects
Decision supports	Nonexistent	• No examples of NCD flowsheets, algorithms, clinical pathways or standard order sets for admissions.
Patient charting	Very large room to improve	• Information is kept in the patient's exercise book. • No patient chart in the facility. • Previous attempt at EMR failed.
Disease registry	Large room for improvement	• Paper-based only; limited usefulness. • Electronic immunization registry can be a model for future disease registry.
Quality indicators list	Nonexistent	• Some data on utilization, prevalence, incidence for disease surveillance; no true quality indicators.
Reports and feedback on quality	Nonexistent	• Impossible without quality indicators list (above).
Electronic reminders	Nonexistent	• Impossible without EMR.

Colors represent different sections: policy and planning; service delivery model; physical and human resources; quality improvement activities; and quality measurement.

IV. OPTIONS FOR INVESTMENT

The following provides recommendations for improving NCD care, which should be considered as options for implementation, as it is impossible to adopt all of them at once. Table 2 summarizes these recommendations, along with a qualitative estimate of the time frame, level of effort, and the number of resources required for implementation. Time frames are divided into short-term (less than six months), medium-term (six months to one year) and long-term (two or more years). The Ministry can use this information to decide on priorities for activities and future investments.

i. Establishing Standards Of Care

1. Formalize clinical practice guidelines, with clarity on the following:
   - Criteria for screening, definition of acceptable methods of screening, the target population and time intervals for diabetes, hypertension, and major cancers (breast, cervix, colon, and prostate).
   - In particular, consider lengthening the time interval between cervical cancer screening to align with most international guidelines (three to five years) and formally introduce national cancer screening programs for breast, cervical, and colon cancer.
   - Activities to be carried out during routine follow-up of diabetes and hypertension (such as lifestyle changes, lab tests [such as A1c and lipid panel], foot, and eye examinations) and time interval between activities. Over time, practice guidelines should be developed for all other NCDs, including respiratory conditions and mental health.

ii. Reform Work Processes Within PHC iSites

2. Establish a protocol for conducting and documenting follow-up visits using a paper-based flowsheet for diabetes, hypertension, and adult health screening and prevention. This is one of the most impactful, short-term, low-cost options available.

3. Establish a standard process for ensuring follow-up of patients (that is, phone call, text message, email, or home visit). In the short term, the focus should be on patients with hypertension or diabetes.

4. Establish a protocol, clinical pathway service delivery model for managing high-risk patients with very poor control of blood pressure or blood sugar.

5. Establish a standard process for expanded opportunistic screening beyond hypertension (that is, for diabetes, cancers, or mental health). This process targets all individuals coming to a health facility for any reason. The process either provides screening on the spot or arranges a follow-up screening visit or test.

6. Establish a national screening program for cancer. In addition to opportunistic screening already mentioned, the program should monitor which patients have not had or are overdue for screening and reach out to these individuals using a variety of methods (such as mail, electronic messaging, phone call, or home visit).

7. Implement decision-support tools (such as algorithms, clinical pathways, or standard hospital order sets) to remind providers of what steps to take in different clinical situations. These tools could be used for the following:
    a. Selecting and titrating medications.
    b. Ordering tests or investigations required to make a diagnosis.
    c. Helping patients manage their own conditions or know when to seek care.

8. Consider offering venipuncture service at all PHC facilities to minimize patient travel and barriers to care.

9. If staffing levels permit, expand the visiting specialist service to other specialties (such as cardiology or psychiatry).

10. Establish quality improvement (QI) teams in health facilities and districts and provide these staff with training in QI methods.

11. Consider active learning models for NCDs with regular, repeated sessions; focus on addressing implementation challenges, peer-to-peer learning, and data-driven improvements. These learning models may include QI learning collaboratives where quality teams meet quarterly to share experiences, or the Project Echo model where remote sites working on a common condition (such as diabetes) are connected via videoconference to a central hub to discuss implementation challenges or difficult cases with peers and experts.

iii. Strengthen the Health Information System

12. Develop a set of quality indicators for NCD management. This set should begin with diabetes, hypertension, and cancer screening and progress to other conditions over time.

13. Establish an interim electronic registry that stores clinical data on NCD management at each patient encounter. This registry should be designed so that it is interoperable with the Health Management Information System (HMIS) that is currently being tendered. There are two options for creating such a registry:
    a. A stand-alone tool using commercially available software (that is, Excel or MS-Access).
    b. A web-based tool where staff enter flowsheet data on a web-based interface and data are then stored in a relational database that allows for indicators to be calculated using SQL queries. According to interviews with the Ministry of Public Works, Public Utilities and Digital Economy, such a database is well within the technical capabilities of the Information and Communication Technology Unit, as a similar interface and data structure was recently developed for COVID management. For that reason, this option is preferred. Once the electronic registry is built, then the paper-based registries should be phased out to avoid duplicate documentation.

14. Using the registry, generate a regularly updated "defaulters" list of the following:
    a. Patients overdue for follow-up visits or tests, beginning with hypertension and diabetes.
    b. Patients overdue for cancer screening.
    c. Patients with very poor control of their condition.

15. Using the registry or audit system, generate lists of indicator results (dashboard) for each facility on a regular basis (such as monthly, quarterly, or real-time).

16. In the long-term, establish a standardized, island-wide electronic medical record (EMR) that captures flowsheet data electronically and generates indicator reports. Discussions are already underway regarding the development of a national system for sharing clinical data and notes across PHC and hospitals, appointment scheduling, and sharing of medications dispensed across pharmacies.

iv. Strengthen Patient Engagement in NCD Care

17. Establish a standard curriculum for patient education for all patients with diabetes and hypertension, to ensure that the teaching already done by community health aides and nursing staff is consistent.

18. Expand the existing, small-scale patient self-management support program to provide coverage nationwide.

19. Consider establishing a peer support program, beginning with diabetes. This program involves creating a training program for peers, recruiting and training peers, and matching them with the appropriate patient.

v. Policy Reforms

20. Consider minor adjustments to the essential benefits package for the public national health insurance program, such as inclusion of lipid profile (LDL) and some more expensive drugs in limited circumstances.

21. Continue development of policies on taxation, restrictions on advertising or marketing, and labeling for tobacco, alcohol, and unhealthy foods. Consider policies to reduce salt and trans fats.

vi. Activities Already Underway

The World Bank OECS Regional Health Project is already supporting refurbishment of health facilities, decentralization of lab services, improvement of lab quality management, and strengthening surveillance and emergency management mechanisms.

Table 2. Options for Investment in NCD Services in Dominica

Options for Investment	Time Frame	Effort	Impact
STANDARDS OF CARE			
Formalize practice guidelines first for diabetes, hypertension, and cancer screening.	Short	*	**
At a later stage, include all NCDs.	Med	**	**
REFORM PHC WORK PROCESSES			
Establish standard protocol and flowsheet for follow-up visits, for diabetes, hypertension, and adult health behaviors.	Short	*	***
Establish patient recall system.	Short	*	***
Establish clinical pathways or services for high-risk NCD patients.	Short	**	***
Expand opportunistic screening in health facilities for diabetes and cancers.	Med	**	***
Establish a national cancer screening program.	Long	***	***
Establish decision support tools for clinicians.	Short	*	***
Establish venipuncture services at local PHC facilities.	Med	**	**
Set up specialist outreach services to PHC facilities.	Med	**	**
Establish QI teams in each facility and QI training.	Med	**	**
Establish interactive, continuous learning methods, emphasizing implementation and problem solving.	Med	***	***
HEALTH INFORMATION			
Develop a set of NCD quality indicators, initially for diabetes, hypertension, and cancer screening.	Short		
Expand quality indicator development to other diseases.	Med		
Create interim electronic registry for diabetes, hypertension.	Med	***	***
Provide indicator dashboard reports,	Med	*	***
Provide patient “defaulter” reports for decision support.	Med	*	***
Develop EMR.	Long	***	**
PATIENT ENGAGEMENT IN NCD CARE			
Develop standard patient education curriculum.	Short	*	*
Set up patient self-management support.	Med	***	***
Set up peer support programs, first for diabetes.	Med	***	***
POLICY REFORMS			
Implement minor adjustments to defined benefits package.	Short	*	*
Establish policies on tobacco, alcohol, and unhealthy foods.	Med to Long	***	***

Annex 1: List of Best Practices for NCD Management in PHC

Table 3. Detailed Description of Each Best Practice Used in NCD System Assessment Tool

DOMAIN OF WHO OPERATIONAL FRAMEWORK FOR PHC			BEST PRACTICES FOR NCD MANAGEMENT	BRIEF DESCRIPTION
Strategic Levers	L1. Political Commitment and Leadership	BP1.1	National NCD strategy / plan with targets, activities, timelines.	There is a national strategy or plan for NCDs with time-bound targets, indicators, actions, defined roles, and monitoring of progress.
		BP2.1	Universal health coverage for NCDs.	There is universal health coverage for NCD services in primary and specialty care, with elimination of financial barriers to access.
	L2. Governance and Policy Frameworks	BP2.2	Accountability mechanisms.	Accountability mechanisms exist with expectations for quality and consequences, if not met. Mechanism may be managerial or supervisory, financial (incentives), contractual, and community-based.
		BP2.3	Tobacco policies.	There are tobacco taxes, indoor smoking bans, standardized packaging and/or graphic warnings, and advertising bans.
		BP2.4	Alcohol policies.	There are alcohol excise taxes, advertising or marketing bans, and restrictions on physical availability of alcohol.
		BP2.5	Unhealthy food policies (sugar, salt, trans-fatty acids)	There are policies on unhealthy foods, including taxes, front-of-package labeling, limits or bans on content, and restrictions on unhealthy foods in schools and hospitals.
	L3. Funding, Resource Allocation	BP3.1	Dedicated funding for NCDs.	There are sufficient funds budgeted by the government for NCD-related services. Revenues from taxes on unhealthy substances may be reinvested in health promotion.
	L4. Engagement of Communities and Stakeholders	BP4.1	Multisectoral planning beyond health.	There is a planning body, including sectors outside of health that considers policies and activities to promote NCDs.
		BP4.2	Stakeholder engagement in planning and execution.	Stakeholders, including civil society groups, nongovernmental organizations, professional associations, patient advocacy groups, private sector, and donors have a role in planning and execution of activities to improve NCD management.
		BP4.3	Healthy lifestyle public awareness campaigns.	Communitywide public education and awareness campaign for healthy lifestyle and behavior change, using print, radio, television, social media, community events, and engagement of community organizations.
Operational Levers	L5. Models of Care	BP5.1	NCDs managed at PHC level.	Most NCDs services for screening, treatment, and counseling are provided at the PHC level.
		BP5.2	Referrals and coordination with specialists.	PHC can access specialty NCD services, through referrals, outreach clinics, or shared care models. There is reliable communication between PHC and specialists and specialist gatekeeping.
		BP5.3	Structured NCD screening program.	There is a structured, consistent screening process using a mix of evidence-based interventions (opportunistic, reminder, mail-in, outreach, and incentives).

Table 3. Detailed Description of Each Best Practice Used in NCD System Assessment Tool (Cont'd)

DOMAIN OF WHO OPERATIONAL FRAMEWORK FOR PHC		BEST PRACTICES FOR NCD MANAGEMENT	BRIEF DESCRIPTION
	BP5.4	Appointment scheduling system.	Patient visits are scheduled conveniently for patients with little or no waits and sufficient time reserved for complete NCD follow-up.
	BP5.5	Recall process for patient follow-up.	There is a standard recall system to track patients due or overdue for follow-up and remind them to return.
	BP5.6	Standardized, efficient process for each visit.	Visits for NCD care are carefully planned to ensure all recommended practices are implemented in a convenient manner for patients.
	BP5.7	Intensive management of high-risk patients.	High-risk patients with poor control of their disease are identified and seen more frequently or provided with case management.
	BP5.8	Services delivered to households.	PHC staff visit households to provide NCD services for disabled, marginalized, or remote populations. Patients may also be served with home-monitoring technologies.
	BP5.9	Patient education programs.	Patient education programs on living with NCDs and healthy lifestyle for individuals or groups, using multiple formats, geared for low literacy.
	BP5.10	Patient self-management program.	Patient self-management support programs are offered by certified staff to coach patients to manage their condition and develop confidence to make life changes.
	BP5.11	Peer support programs.	Programs linking patients with nonprofessional peers with experience living with disease to provide ongoing, self-management support, and encouragement.
L6. Primary Healthcare Workforce	BP6.1	Adequate supply and mix of skilled health professionals.	The supply of health professionals is comparable to peer countries; PHC team has staff with varied skills (such as health education, foot care, and mental health); staff are licensed.
	BP6.2	Advanced models for maintaining competence.	Advanced models for maintaining staff skills for NCD management (such as continuing education courses, mandatory recertification, problem-based, or case-based learning).
	BP6.3	Advanced task-shifting.	Advanced task-shifting (such as drug management, foot care, or counseling delegated to nonphysician providers).
L7. Physical Infrastructure	BP7.1	Availability of PHC facilities providing NCD care.	NCD services are provided in facilities that are geographically accessible for all.
	BP7.2	Equipment for NCD services at PHC level available.	PHC facilities have equipment required for managing common NCDs, as recommended in WHO guidelines.
	BP7.3	Equipment for specialty NCD services available.	Hospitals and specialty facilities have equipment for managing complications or complex stages of NCDs, such as heart attacks, strokes, cancer treatment, or kidney failure.
L8. Medicines and Other Health Products	BP8.1	Essential medicines for NCDs available.	Drugs for diabetes, hypertension, and other NCDs are in the defined benefits package of UHC and are in stock.
	BP8.2	Essential diagnostic tests available.	Essential NCD services are available at the primary-care level.

Table 3. Detailed Description of Each Best Practice Used in NCD System Assessment Tool (Cont'd)

DOMAIN OF WHO OPERATIONAL FRAMEWORK FOR PHC		BEST PRACTICES FOR NCD MANAGEMENT	BRIEF DESCRIPTION
	BP8.3	Strong supply chain management.	Measures are in place for effective management of the supply chain for medicines and other health products.
L9. Engagement with Private Sector Providers		See BP 4.2 above on stakeholder engagement.	Engagement with private sector partners is included in BP4.2 on stakeholder engagement.
L10. Purchasing and Payment	BP10.1	Stable, predictable funding to PHC sites.	Clinics and providers receive stable, predictable funding.
L11. Digital Technologies	BP11.1	Basic computer and internet.	Clinics have access to basic technologies, including computers, internet service and personnel with basic computer literacy.
	BP11.2	Electronic medical record (EMR)	Clinics use for documentation, archiving and retrieval of information, accessing results and reports, prescribing, referrals, decision support, shared care.
L12. Systems for Improving the Quality of Care	BP12.1	Practice guidelines for NCDs exist.	Practice guidelines for major NCDs and lifestyle exist, are current, follow international standards on evaluating evidence and are tailored to resources available in the country.
	BP12.2	Standards and inspection for equipment, facilities.	Standards exist for equipment, supplies, infrastructure, and workplace policies, with a basic quality assurance/inspection program to ensure standards are met.
	BP12.3	Decision support tools for NCD.	Decision support tools for NCD management (protocols, flowsheets, algorithms etc.) remind providers of what actions to take and are widely used.
	BP12.4	Quality improvement (QI) teams, QI training, demonstrated improvements.	PHC facilities have quality improvement (QI) teams, quality leader, QI training, mentorship. Some teams have demonstrated improvements, use of QI tools.
L13. PHC-oriented research	BP13.1	Network for NCD research.	NCD researchers are publishing studies on topics of interest to policy makers and providers, and are supported by long-term funding, training, and mentorship.
L14. Monitoring and Evaluation	BP14.1	NCD surveillance data exists (tracking incidence, prevalence, mortality).	Data are available on incidence and prevalence of different NCDs. Cause-specific mortality data are reliable.
	BP14.2	Person-oriented charting within PHC.	A chart for each patient containing all data is kept within PHC sites.
	BP14.3	Centralized NCD registries.	Centralized, standardized, population-based registries exist for key NCDs (such as cancer, diabetes, or hypertension) and contain clinical data at each encounter.
	BP14.4	Reporting on quality indicators.	Quality indicators for NCDs are reported in a timely fashion at multiple levels (facility, regional, and national), over time, by facility. Reports are used widely for decision-making.

Annex 2: Selected Health System and Health Indicators in Four OECS Countries

		DOMINICA	GRENADA	ST. LUCIA	ST. VINCENT & THE GRENADINES	REGIONAL* AVERAGE
GENERAL	Population (2021)1	72,413	124,610	178,652	104,332	–
	Income level	Upper Middle	Upper middle	Upper middle	Upper middle	–
	Public expenditure on health as % of GDP (2019) [1] *PAHO/WHO recommended benchmark: 6%*	3.5	2.1	4.9	3.2	3.9
	Out-of-pocket expenditure as % of total health expenditure (2019) [1]	33.9	54.4	23.9	29.1	32.2
	Life expectancy at birth (2021) [1]	78	2.5	76	72.8	72.2
NCD-RELATED	Prevalence of overweight and obesity among adults (2016) [2]	60.3	51.4	48.1	55.0	62.5
	Prevalence of physical inactivity in adults (2016) [2]	21.6	57.4	79.5	46.1	39.3
	Prevalence of raised fasting blood glucose (2014) [2] **	11.1	11.1	14.5	10.6	8.3
	% with diabetes achieving control	n/a	n/a	12 (2019-20) 4 [4]	n/a	33.1 [5]
	Prevalence of raised blood pressure (2015) [2] **	22.5	24.3	27.1	23.3	17.6
	% with hypertension achieving control	n/a	n/a	12 (2019-20) 4 [4]	15 (2015) [6]	23.6 [7]
	Percentage of deaths from NCDs (2019) [3]	n/a	83	82	79	81.9 [1]
	Total number of NCD deaths (2019) [3]	n/a	840	1,200	740	–
	Probability of premature mortality from NCDs (%, 2019) [3]	n/a	23	18	21	–
	STEPS survey/comprehensive health examination survey every 5 years [3]	✗	✗		✓	–
	National integrated NCD policy/strategy/action plan [3]	✗	✗		✓	–
	Evidence-based national guidelines/protocols/standards for the management of major NCDs [3]	✓	✓		✓	–
	Drug therapy (including glycemic control)/counselling to prevent heart attacks and strokes [3]	✗	✗		✓	–

Note: ✗ = not achieved; ✓ = partially achieved; ✓ = fully achieved; * = data based on countries in the region of the Americas as classified by PAHO/WHO unless cited otherwise; ** = more recent data available for some countries but for comparison, data from the same source is shown.

[1] PAHO/WHO Health in the Americas+. 2021. "Dominica." https://hia.paho.org/en
[2] Pan American Health Organization. 2019. NCDs at a Glance: NCD Mortality and Risk Factor Prevalence in the Americas. Washington, DC: PAHO.
[3] WHO. 2022. *WHO Noncommunicable Diseases Progress Monitor Reports 2022*. Geneva: WHO. https://apps.who.int/iris/bitstream/handle/10665/353048/9789240047761-eng.pdf?sequence=1&isAllowed=y
[4] Based on population level estimates using data from STEP 2019-20 report. *Findings from: Final Report: Assessing the Care Cascade for Diabetes and Hypertension in St. Lucia. Mixed Methods Study Utilizing Qualitative Data from Health Professionals and Service Users and Quantitative Data from The St. Lucia Steps 2019–20 Survey.* World Bank. 2023.
[5] Based on pooled data from selected countries in Latin America and the Caribbean in a 2018 study: Manne-Goehler, Jennifer, et al. "Health Systems Performance for Diabetes in 25 Low-and Middle-Income Countries (LMICs), 2005–2016." Diabetes 67. Supplement_1 (2018).
[6] Based on study sample in most recent STEPS report for St .Vincent and the Grenadines
[7] Based on pooled data from selected countries in Latin America and the Caribbean in a 2019 study: Geldsetzer, Pascal, et al. "The state of hypertension care in 44 low-income and middle-income countries: a cross-sectional study of nationally representative individual-level data from 1· 1 million adults." 2019. The Lancet 394.10199: 652-662. Appendix Table S6. The hypertension care cascade by region when weighting each country proportional to its population size.