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Caribbean Centre for Health Systems Research and Development
Better Health Systems...Healthier Lives

Evidence Brief for Policy

Strengthening the primary health care system in Trinidad and Tobago to achieve universal health coverage, with emphasis on human resources for health

MAY 2021

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CARIBBEAN CENTRE FOR HEALTH SYSTEMS RESEARCH AND DEVELOPMENT

EVIDENCE BRIEF FOR POLICY

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The University of the West Indies, Caribbean Centre for Health Systems Research and Development (CCHSRD) is a Research Centre at The University of the West Indies, St. Augustine. The Centre was established to pursue a program of work in Health Policy and Systems Research (HPSR) to address pressing policy and system issues faced by decision-makers in the Caribbean region.

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Conflict of Interest

CCHSRD declares it has no actual or potential conflict of interest in relation to this Evidence Brief for Policy and the stakeholder dialogue.

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Planning and development of Human Resources for Health (HRH) in Trinidad and Tobago (T&T) is constrained by several challenges which hinder the achievement of Universal Health Coverage (UHC). T&T had the lowest proportion of Primary Healthcare (PHC) physicians in 9 Caribbean countries surveyed by the Pan American Health Organization (PAHO) in 2011. There were also shortages of other categories of staff. The effect of this shortfall is amplified by a lack of the appropriate skills and competencies of PHC teams to carry out their work, as well as significant imbalances in the distribution of the health workforce across urban/rural areas and the public/private sectors. The COVID-19 pandemic has reinforced the need for a strong PHC workforce to provide an efficient healthcare response in the face of public health emergencies. Failing to invest in PHC can result in poor outcomes in care, service delivery and consequently, population health. If the status quo is maintained, T&T will not achieve UHC and the broader Sustainable Development Goal 3.

What do we know about elements of an approach to addressing the problem?

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1b) Revision of the curriculum of health training institutions to align with current and emerging population health needs.

1c) Development of the competency of medical sciences faculty to develop and deliver inter-professional education (Interprofessional Faculty Development)

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Mechanisms to improve operational efficiency and HRH planning may include implementing human resources information systems (HRIS).

What implementation considerations need to be kept in mind?

To ensure maximum effectiveness of strengthening human resources for health in T&T, a variety of implementation considerations need to be kept in mind at the level of patients/communities, professionals, institutions, and systems.

Executive Summary

EXECUTIVE SUMMARY

The Problem

Planning and development of Human Resources for Health (HRH) in Trinidad and Tobago (T&T) is constrained by several challenges which hinder the achievement of Universal Health Coverage (UHC) and the broader Sustainable Development Goal 3. In an assessment of 9 Caribbean countries, conducted by the Pan American Health Organization (PAHO), in 2011, T&T had the lowest proportion of Primary Healthcare (PHC) physicians (17% of the regional target) (1). There were also shortages of other categories of staff, for example nutrition educators, psychologists, medical social workers and psychiatric social workers in 2019 (2). The effect of this shortfall is amplified by a lack of the appropriate skills and competencies of PHC teams to carry out their work, as well as significant imbalances in the distribution of the health workforce across urban/rural areas and the public/private sectors. The COVID-19 pandemic has reinforced the need for a strong PHC workforce to provide an efficient healthcare response in the face of public health emergencies. PHC facilities are usually the entry point to the healthcare system for most health-related problems, including mild to moderate COVID-19 cases (3). Specifically, in T&T, several PHC facilities are the designated sites for testing, early diagnosis and treatment, as part of the national health system (4), notwithstanding an overreliance on the secondary services to carry out the same functions.

"Primary health care is the fundamental basis of universal health coverage and can help us mobilize the resources to achieve it. Health workers represent the backbone of universal health coverage."

- Dr Tedros Adhanom Ghebreyesus, Director-General, World Health Organization

Failing to invest in PHC can result in poor outcomes in care, service delivery and consequently, population health. If the status quo is maintained, T&T will not achieve UHC and the broader Sustainable Development Goal 3: “Good Health and Well-being”.

The Magnitude of the Problem

T&T has taken several steps to build its capacity for health workforce planning and development, including the establishment of the Health Sector Human Resource Planning and Development Unit (HSHRPD Unit), the implementation of initiatives such as National Health Workforce Accounts (5), the use of Workload Indicators of Staffing needs (6), and the development of the Manpower Plan for Trinidad and Tobago (7). Despite this, the PHC system still struggles with a shortage of health workers, insufficient skill-mix and competency in the existing staff, and an inequitable urban-rural distribution of health workers. These challenges are further exacerbated by the fact that the country has experienced an epidemiological transition, in which the pattern of mortality in adults has shifted from communicable diseases to non-communicable diseases (NCDs) (8,9). These issues are further explored below:

<u>Insufficiencies in supply, distribution, and quality of PHC workforce</u>

As reported above, the proportion of health workers in PHC was below the regional target. There was also limited availability of key categories of staff needed to deliver community-based

health services. For example, there was an acute shortage of District Health Visitors (DHVs) in the public health system (10) and this is exacerbated by the number who are over the age of 55 years. DHVs are a crucial category of staff functioning at the community level. There were also shortages of other staff categories that play critical roles in health promotion and support action to address the social determinants of health, for example nutrition educators, psychologists, medical social workers and psychiatric social workers. In 2019, vacancies for these categories of staff were 75%, 41%, 31% and 18% respectively (2).

Significant imbalances in the distribution of the health workforce across urban/rural areas and across the public/private sectors in T&T exist. The issues of equity are magnified when one considers that a disproportionate number of patients using PHC services in the public system belong to relatively underserved segments of the population, are more likely to be female, elderly, or unemployed (11,12). It is therefore paramount that if UHC is to be achieved, policymakers must ensure the availability of HRH in PHC settings.

There is a perception of deficiencies in the skill-mix and competencies of the current PHC workforce. While some PHC teams in T&T may have experience, there is a view that they do not always have the appropriate competency levels to carry out their work. An assessment of T&T's progress in achieving PAHO's 20 Regional Goals for HRH, over the period 2012 to 2014, found that the country had remained relatively stagnant, with respect to Goal 3 (*All countries will have developed primary health care teams with a broad range of competencies that systematically include community health workers to improve access, reach out to vulnerable groups, and mobilize community networks*) (13).

Additionally, the development of HRH in T&T is constrained by the fact that there are gaps in national data about the existing supply of workers. This results from HRH data collection systems, including core data sets not being institutionalised across public or private sectors, regulatory agencies, or tertiary education institutions (7). As a consequence, many of the indicators needed to assess the country's progress in achieving regional goals for HRH are unavailable (6,14).

Changing demographic and epidemiological patterns

The changing demographic and epidemiological patterns are contributing to a significant increase in NCDs burden, further emphasising the need for a robust PHC workforce. NCDs are the leading health concerns and account for nearly two-thirds of deaths annually. T&T has the fourth highest suicide rate in the region of the Americas (15). Violence and injuries, including gender-based violence and violence against children are significant health issues that are major contributors to morbidity and mortality. The health workforce must shift its emphasis toward greater health promotion, disease prevention, including the social determinants, and integrated management of chronic conditions, within community-based, culturally appropriate environments. The country's stock of HRH must be fit-for this purpose, competent and effective to address the leading population health challenges.

Underlying Factors

At the *Governance arrangement level*, a national HRH policy that provides strategic guidance about how HRH gaps will be addressed is non-existent and there are inadequate policies or regulations to attract and retain professionals in rural or underserved areas (7) where health disparities in morbidity and mortality are found. There is an apparent disconnect between what should be done and the level of investment required for the strengthening of health systems at the PHC level (7,16). In academia, PHC training is not sufficiently included in the medical and nursing school curricula in T&T (17).

At the *Financial arrangement level*, national investment in human resources for PHC is misaligned with needs, when compared with investment in other types of health professionals, especially at the secondary care level (1,17).

At the *Delivery arrangement level*, there is low motivation and performance of PHC staff because of institutional and system constraints; for example, the absence of available materials and facilities to deliver services of acceptable quality. There are also inadequate policies that direct how Regional Health Authorities should organise PHC teams for efficient service delivery (7). Furthermore, although the way services are organised at the PHC level provides opportunities for interprofessional interaction, in reality, this is limited.

Elements of a comprehensive approach to address the problem

The following four elements form part of a comprehensive approach to address challenges identified within the HRH in the PHC system in T&T.

Element 1: Strengthen education and training to improve the number, skill-mix and competencies of the PHC workforce.

Element 1a) *– Improve policies and programs at health training institutions to achieve greater diversity of students, who are better suited to careers in rural and other underserved communities.*

In the T&T context, given the urban-rural HRH imbalances which place constraints to achieving UHC, we refer to diversity as placing greater emphasis on the inclusion of students originating from rural communities (19). Four systematic reviews found that interventions for achieving greater inclusion of under-represented groups in tertiary health education programs can be effective (20–23). These interventions can be implemented across four phases: early exposure; transitioning; retention; or across the entire educational pipeline (20).

During *early exposure*, interventions seek to introduce students to health careers and academic pathways using outreach methods such as school visits, career counselling, or secondary enrichment programs that provide academic development. During *transitioning*, emphasis is placed on providing application assistance to the targeted group or adjusting admission policies to assist them in achieving entry into tertiary programs. Preferential admission policies could include quotas, points systems, or weighted admission criteria.

The *retention* phase aims to support student success once enrolled in tertiary programmes. Intervention strategies at this stage could include provision of financial assistance, academic advising, tailoring curricula to make them more attractive to the targeted population or providing other types of support. Finally, a mix of interventions could be applied across the entire *pipeline*. Pipeline programs can include additional activities such as ensuring members of the under-represented communities are involved in recruitment (20,21,24).

Element 1b) *– Revise the curriculum of health training institutions to align with current and emerging population health needs.*

Interprofessional education (IPE) is an approach to develop healthcare students to function as future members of interprofessional teams (25,26). Support for IPE is as an effective tool to develop collaborative competencies, that is, student's knowledge and skills toward interdisciplinary teamwork (27–37). Strengthening IPE in curricular reform can therefore bring about the required improvements in multidisciplinary functioning of PHC teams.

There is also good evidence that community placements, including placements in rural areas offer important learning opportunities for students to understand the underlying social determinants of health. These placements can also develop positive intentions to continue working in these community areas post-qualification (22,38–42).

Being able to adapt and respond to public health emergencies is another crucial component of a responsive health training curriculum. The PHC workforce needs to develop competency in this area, to reduce the burden of emergencies, such as the COVID-19 pandemic, on the healthcare system and population health.

Finally, values, health beliefs and behaviours often vary across culturally diverse socio-cultural groups. Cultural competence is necessary to effectively communicate with and provide quality care to patients from these various backgrounds (43). Failure to do so, can result in patient dissatisfaction, declines in service utilisation, treatment non-compliance, and generally poorer health outcomes (43–45).

Element 1c) *– Develop the competency of medical sciences faculty to develop and deliver inter-professional education (Interprofessional Faculty Development)*

While no systematic reviews were found which examined the effects of faculty development initiatives specifically for interprofessional education (IPE), evidence from single studies indicate that faculty development interventions have a positive impact on the knowledge, skills, attitudes, teaching behaviours, teaching effectiveness (11–13,46) and leadership capabilities (47) of medical educators, and benefit the institutions in which they work. One review identified the key features of successful faculty development programs: i) use of multiple instructional methods; ii) experiential learning, iii) reflective practice; iv) individual and group projects; v) peer support and the development of communities of practice; vi) mentorship; and institutional support (47).

Element 2: Introduce appropriate mechanisms, to attract and retain health professionals in rural and other underserved areas.

The World Health Organization (WHO) has identified four key strategies to recruit and retain healthcare workforce in rural areas: education, regulation, financial incentives, and personal and professional support (48).

Education:
Two systematic reviews (low- and high-quality) provided evidence suggesting that undergraduate exposure/training or clinical rotations in rural communities increased the likelihood of practising in rural areas (23,38). Another study also found weak evidence for clinical rotations in rural areas and curricula reflecting rural health issues to attract and retain health professionals in rural areas (48).

Regulation:
Regarding regulatory interventions, the WHO found weak evidence supporting the following strategies (48): (i) enhanced scope of practice, including task-shifting and expanding the roles of rural health workers; (ii) utilisation of different categories of personnel, such as community health workers (CHW); and (iii) non-financial incentives including subsidised tuition, additional learning materials, clothing and accommodation (48–51).

One moderate-quality systematic review indicated that task shifting is a viable, cost-effective, and clinically effective model in non-communicable disease management (51). However, though task shifting did increase rates of recruitment of health professionals, the review found that there were issues with staff retention, especially in settings of limited resources (51). The success of this strategy requires changes at the health policy and systems level, to include training programs for CHWs, standardised protocols, and integration of these workers as part of a multi-disciplinary team.

One low-quality systematic review and one study found that coercive measures, such as subsidising education for return of service, and enforcing compulsory post-graduation rural service could address short-term recruitment problems (38,50). However, this is a challenge to enforce, and "may worsen human resource constraints in the long term" (38). This is because such strategies usually target inexperienced physicians who are made to perform duties outside of their scope of practice, risking litigation and thus increasing unwillingness for rural practice (38). There is moderate evidence from two (low- and high-quality) systematic reviews, however, that recruiting foreign doctors and restricting them to rural practice can help alleviate this issue (38,39).

Financial incentives:
Substantial evidence exists for the effectiveness of financial incentives on retention in high-income countries. However, there are no strong, rigorous studies on such strategies in low- and middle-income countries (49,50,52). A study and two low-quality systematic reviews found financial incentives to be successful as a short-term strategy (38,50,53), but three studies reported weak evidence of this, as it is neither sustainable nor cost-effective

(48,54,55). Therefore, using this as a strategy requires planning and government support to ensure sustainability (55).

Two studies and two systematic reviews (moderate- and low-quality) also reported that increased salaries alone are insufficient in attracting and retaining health professionals for rural placements (50,54,56,57). Another low-quality systematic review found no clear evidence that financial incentives significantly impacted the supply of health workers in rural areas (58). It should therefore be integrated with other incentives, especially to counteract the threat of migration.

Personal and professional support:
Two systematic reviews (high- and low-quality) found that opportunities for professional growth including promotions and further education may help retain some health workers to rural or underserved areas (49,55). However, two studies and two high-quality systematic reviews found that evidence in support of such professional development opportunities as a retention strategy was weak or very limited (23,42,48,50).

Two studies and one low-quality systematic review stated that support and appreciation from managers and colleagues, in addition to professional development, stable income and being included in decision-making increased motivation and retention among healthcare workers in rural areas (50,55,57). On the other hand, one low-quality systematic review found that lack of professional development and insufficient supervision could lead to feeling isolated and thus be a barrier to working in rural areas (59). Three low-quality systematic reviews and two studies found that other barriers to recruitment and retention of human resources for health in rural areas include working conditions such as lack of access to water and electricity; poor sanitation, roads and facility infrastructure; and lack of equipment and materials (38,50,52,55,60).

Element 3: Strengthen primary healthcare management systems to enhance quality and responsiveness of care to population needs.

Element 3a) *– Promote interprofessional practice in PHC.*

Interprofessional collaboration is the process by which different health and social professionals work together. Eleven systematic reviews (4 high quality, 1 moderate quality, 4 low quality and 2 unrated) found benefits of interprofessional practice in PHC and other settings. These benefits include improved health outcomes, adherence to recommended practice and guidelines, patient safety, and job satisfaction (36,61–70).

One high quality systematic review noted that service providers in PHC share the view that interdisciplinary teams have potential value and gains for patient care; however, the authors noted that there is evidence of both *buy in* and *resistance* from primary care professionals, across country settings and within different local practice settings. This review also noted that the potential value of sharing care and responsibility of patients with other health professionals is not necessarily clear to some doctors, particularly older ones. The use of champions to stimulate the network and co-ordinate team work, was a key facilitator (70–

72). Physicians were identified as effective champions but, also, the most resistant professional group. Other facilitators include interest in collaboration, mutual respect, positive communication, recognition of roles and expertise/trust regarding division of labour, perceived opportunities to improve care and develop new professional fields (70,73). Team building activities, interprofessional rounds, interprofessional meetings, positive promotion of partnership and co-location of practices are also beneficial (62,65,74). Barriers include challenges of definition and awareness of one another's roles and competences, shared information, confidentiality and responsibility, long-term funding and joint monitoring (73).

Another dimension of interprofessional practice at the PHC level is that between health, social care and other non-medical professionals. With respect to collaboration between doctors and social workers, acknowledgement of colleagues' expertise, recognition and definition of roles, positive communication, and mutual respect were found to facilitate the process of collaboration. Differences in professional perspectives, lack of knowledge, and poor communication were identified as barriers (75).

Element 3b) *– Utilise in-service training and quality improvement mechanisms to enhance skills and competencies of PHC teams.*

PHC teams are valuable to the communities they serve, as they work together to provide a single point of contact between the community and the health system. Interventions such as interprofessional education and in-service training in cultural competency, management, and of community health workers, are aimed at strengthening healthcare providers' skills and competencies. This can result in improved healthcare delivery and better patient outcomes. Having a sufficient supply of well-trained health workers in management and in the field is crucial to achieving universal health coverage.

Element 4: Strengthen human resource information systems to support HRH planning.

To develop evidence-based policies to address the HRH issues raised in this evidence brief and to plan holistically for the future of T&T's health workforce, systems for recording and monitoring HRH must be in place. Data for monitoring HRH can emanate from multiple sources, such as from labour market surveys conducted by the Central Statistical Office or from professional associations and regulatory boards or councils' databases. However, since many of these data sources are not designed for HRH planning, this could serve as a framework for the country to bring the core data elements together to provide a sufficiently detailed picture that could inform future planning.

Systems for generating and monitoring this type of information are known as human resources information systems (HRIS). These types of systems can vary from stand-alone packages, such as those used for payroll, to integrated enterprise planning systems such as hospital information systems. The WHO notes that the strength of an HRIS does not depend on its technological backbone, but on its ability to generate accurate and timely information, and to be adaptable to workforce issues Thus, HRIS, must be capable of providing a continuous record of changes in the health workforce (76). Robust HRIS must

support standardised processes for data capture, management, and data use so that accurate, timely, and comprehensive profiles of workforce size, composition, and deployment can become available (77).

One rapid synthesis identified models used for HRH planning, especially in determining ratios for recruiting staff. Evidence suggests that most high-income countries use a stock-and-flow model (rather than an outcomes-based approach) to simulate supply of HRH personnel (78).

Two systematic reviews provided information about the process and implementation of HRIS. Both concluded that there was insufficient information about the evaluation of HRIS systems to draw conclusions about best practices for data generation and use and their impact on HRH policies and strategies (77,79). One review identified the following facilitators as critical for successful HRIS implementation: project management, governance structure, stakeholder and user involvement, absence of technological barriers, and simplification of existing human resource processes.

Implementation Considerations

At the *Patient/Community level*, patients are reluctant to access care in some areas due to healthcare providers' lack of cultural competence (80). This can be addressed by developing and evaluating the effectiveness of cultural competence and social accountability in training programs.

At the *Professional level*, physicians and medical associations are not in support of task shifting and the employment of CHWs (81). This can be addressed by implementing changes at the health policy and systems level, to include training programs for CHWs, standardised protocols, and integration of these workers as part of a multi-disciplinary team (81). Secondly, healthcare workforce faces high workload and lack of resources in rural health settings (82). Task shifting can be used to reduce burden on physicians; improve infrastructure and working conditions for rural healthcare workers (81,82). Thirdly, healthcare workforce is emigrating due to higher salaries and better opportunities and/or working conditions in high-income countries (50). Strategies to counteract this include offering cost-effective and sustainable financial and non-financial incentives (52); and recruiting foreign doctors and restrict them to rural practice, to fill the gaps of emigrated or unwilling professionals (38,42).

At the *Organisational level*, existing medical education curricula are limited in preparing students to practice in rural and other underserved areas (83). As such, there is a need to strengthen rural-context-based medical training to inspire students to practice in rural areas (60,83) thereby encouraging social accountability. Medical students are inclined toward few clinical specialty areas, contributing to shortages of professionals in other specialty areas (83). This can be addressed by diversifying clinical rotation settings to encourage placements to ensure interprofessional collaboration and skill-mix (83).

Additionally, healthcare students are not sufficiently equipped to function as members of multidisciplinary teams (25,26). Interprofessional education can be strengthened through

curricular reform, to equip students to work as members of PHC teams to address gaps in community health care (27).

To counteract the lack of diversity in student enrolment in health programs, i.e. from under-represented groups such as lower socioeconomic status and rural backgrounds (84), selection criteria and quota-based approaches can be expanded for students of rural and other underserved backgrounds (20,85).

Lastly, there is a lack of evidence on human resource information systems (HRIS) and their capabilities. This limits understanding of the information that can be used to support HRH strategies and investments (79,86). This can be addressed by conducting interdisciplinary research on HRIS implementation processes, in support of sustainable and effective health systems (79,86).

At the *System level*, the following barriers exist: Governments paying low salaries to Primary Care physicians in rural practice (60); and the lack of up-to-date and relevant HRH data to determine HRH alignment to national priorities (78). To counteract these, a comprehensive plan can be designed to sustain financial and other incentives in the long term (38); and a human resources information systems (HRIS) policy implemented to record HRH data and monitor changes in accordance with population needs (78).

Main Report

MAIN REPORT

The Problem

Investing in Primary Healthcare (PHC) is considered the most practical, efficient, and effective first step towards achieving Universal Health Coverage (UHC). Despite efforts to improve it, the PHC system in Trinidad and Tobago (T&T) struggles with a shortage of health workers, insufficient skill-mix and competency in the existing staff, and an inequitable urban-rural distribution of health workers. In 2016, the highest vacancy rate (41%) among doctors was found for primary care physicians, inclusive of specialists (7). Regional Health Authorities also consistently had an average vacancy rate of around 30% for nursing personnel (7). Other staff categories such as nutrition educators, psychologists, medical social workers and psychiatric social workers had significant vacancies of 75%, 41%, 31% and 18% respectively (2). This situation is further exacerbated by the country's epidemiological transition with an aging population, and a heavy burden of NCDs which account for two-thirds of deaths annually, putting additional significant strain on an already stretched health system (8,9).

Suboptimal supply, quality, and distribution of PHC workforce affect the quality, accessibility and efficiency of healthcare services and have a direct and distressing bearing on health outcomes. In an assessment of UHC in 111 countries, T&T stood out as one of the weaker high-income countries on the UHC index (87,88). Moreover, T&T was behind other Caribbean countries including Antigua, Dominica and Jamaica, in their progress toward UHC; the latter (among others) were either "designing and implementing" or "expanding and improving" their efforts, while T&T was categorised in 2018 as "committed to UHC" (89).

In 2017, T&T reported 78% alignment to Sustainable Development Goal (SDG) 3 i.e. the health SDG; lower than 11 of the other 16 SDGs (90). Furthermore, the Government of T&T did not select Target 3.8 of SDG 3 – which seeks to achieve UHC, including access to quality essential healthcare services – for inclusion in its 2020 Voluntary National Review (91). The related indicators (coverage of essential

Box 1: BACKGROUND TO THE EVIDENCE BRIEF FOR POLICY

CCHSRD's evidence briefs bring together both global and local research evidence about a problem, options for addressing the problem, and key implementation considerations. Whenever possible, the evidence is drawn from systematic reviews of the literature. A systematic review is a summary of research studies addressing a clearly formulated question. Systematic reviews use explicit methods to identify, select, appraise, and synthesise findings from research papers. CCHSRD's evidence briefs do not include recommendations, as these would require the authors of the brief to make judgments based on their values and preferences. Recommendations should emanate from deliberations among stakeholders after considering the evidence provided in the brief.

The preparation of the evidence brief involved six main steps:

1) Convening a Working Group comprising key stakeholders;
2) Developing and refining an outline framing of the problem and viable options for addressing it;
3) Conducting consultation with the Working Group and several other key informants and reviewing the outline based on feedback;
4) Identifying and synthesizing relevant research evidence about the problem, options to address it and implementation considerations;
5) Drafting the evidence brief in such a way as to present, in plain language, the evidence found;
6) Finalising the evidence brief based on the input of several merit reviewers.

This evidence brief was prepared to inform a stakeholder dialogue at which research evidence is one of many considerations. Participants' views and experiences and the tacit knowledge they bring to the issues at hand are also important inputs to the dialogue.

services and the proportion of the population with large household health expenditures) are therefore unavailable.

However, Target 3.c – which includes increasing health financing, recruitment, training and retention of the health workforce – *was* included, with T&T reporting 35.4 nurses and midwives per 100,000 in 2015, and 38.7 physicians per 100,000 in 2020 (91). These indicators are, however, far below the SDG composite index threshold of 4.45 skilled health professionals per 1,000 (i.e. 445 per 100,000) (92).

Box 2: SDG Composite Index Threshold

The SDG composite index threshold consists of "the estimated number of skilled health workers needed to reach the minimum proportion of achievement of high coverage (defined as 80% or above) for 12 selected health indicators linked to the health SDG" (91). This index – **4.45 doctors, nurses and midwives per 1,000 population** – refers to a broader range of considerations than the previous WHO minimum of 2.3 per 1,000, as it relates to the SDG agenda.

Additionally, the COVID-19 pandemic has reinforced the need for a strong PHC workforce to provide an efficient healthcare response in the face of public health emergencies. PHC facilities are usually the entry point to the healthcare system for most mild to moderate COVID-19 cases (3). Specifically, in Trinidad and Tobago, several PHC facilities are designated sites for testing, diagnosis and treatment (4), notwithstanding the dependence on secondary care services to provide similar functions. The Government has itself admitted that the pandemic has "tested the healthcare system's ability to scale up its service in response to emergencies" (93). Caribbean health systems are especially vulnerable to the risks of disease outbreaks, natural disasters and economic crises. Therefore, robust, responsive and resilient health systems are key in T&T's move toward universal health coverage (94).

" A focus on PHC is essential, since although health expenditure is growing in all countries, those that focus on PHC observe lower increases. WHO estimates that waste in health spending is 20-40 percent, and the focus on PHC raises the efficiency of the health system as a whole.

- Healthy Caribbean Coalition, 2019

Failing to invest in PHC can result in poor outcomes in care, service delivery and consequently, population health.

The Magnitude of the Problem

Insufficiencies in supply, distribution, and quality of PHC workforce

PHC focuses on providing comprehensive integrated people-oriented care (95–97). Strengthening the PHC system is a recognised cornerstone for achieving UHC and has been the over-arching approach for public health care delivery in T&T, especially for the management of NCDs and their risk factors. Strategic Priority Area 1 of PAHO/WHO's 2017-2021 Country Cooperation Strategy includes focus on equitable access to services; information systems for health; sustainable health financing; and an "emphasis on Primary Care ensuring equitable access and coverage… with adequate and appropriate human resources support" (94). The PHC strategy is the fundamental principle upon which the Manpower Plan for Trinidad and Tobago (7) as well as the National Strategic Plan for the Prevention and Control of NCDs (9) are hinged. Despite this, the country's PHC workforce is not at an optimal level. There are significant inadequacies with respect to an effective and competent PHC workforce to address the population's health needs.

Box 3: Universal Health Coverage

The Government of Trinidad and Tobago has clearly articulated its commitment to achieving universal health coverage (UHC) as a national development goal. UHC is defined as a situation in which all citizens can enjoy the essential health promotion, prevention, treatment, rehabilitation, and palliative services they need, without incurring financial hardships. Three inter-related health system conditions must be met to achieve UHC:

i) The country's health service delivery system must be sufficiently robust to provide the full spectrum of quality essential health services;

ii) There must be equity of access to these services, thus any geographical, economic, cultural, or other barriers must be eliminated; and

iii) A sustainable mechanism for providing financial-risk protection must be in place.

Understanding and responding to the health needs of the population are therefore central to advancing the goal of UHC.

There are gaps in the availability of HRH in PHC.

Firstly, the ratio of health workers in PHC to the total health workforce is quite low. The regional goal established by the Pan American Health Organization (PAHO) is that the proportion of PHC physicians should exceed 40% of the medical workforce. In 2011, T&T recorded the lowest proportion of PHC physicians among 9 Caribbean countries assessed by the PAHO, reaching just about 17% of the goal (1). This percentage may have changed due to a surplus of doctors in recent years, but an assessment by the Ministry of Health (MoH), T&T in 2019 still found a high vacancy rate of 41% for primary care physicians.

Secondly, there is limited availability of key categories of staff needed to deliver community-based health services. District Health Visitors (DHVs) are a crucial category of staff functioning at the community level. These community nurses provide care and support to young families, offering advice and guidance from pregnancy to primary school. They advise parents on breastfeeding, weaning, potty training, teething, common childhood health problems and various other issues that new parents might face. They also play a role in addressing issues such as death, postnatal depression and violence within families. DHVs are trained to identify risk factors or signs that

children may be suffering from abuse or neglect. DHVs are intended to work closely with other health professionals to ensure that the communities' health and social needs and requirements are met (98). In 2019 the MoH found an acute shortage of DHVs in the public health system; 62% of positions were vacant and of the positions that were filled, half of them were by persons aged 55 years and over and thus due to retire in the next few years (10). There are also shortages of other staff categories that play critical roles in health promotion and support action to address the social determinants of health, as previously indicated (2).

Imbalances in the distribution of HRH in PHC settings exist.

Providing the population with equitable access to health services is necessary to attain UHC. However, significant imbalances in the distribution of the health workforce across urban/rural areas and across the public/private sectors in T&T exist. For example, the ratio of private sector ophthalmologists per 50,000 population in 2016 was 0.93, while the ratio of public sector ophthalmologists per 50,000 population was 0.26 (99). Likewise, there were approximately 400 registered dentists in the country, but more than 90% of them worked mainly in private practice (100). This meant that a large proportion of the population faced out-of-pocket payments for healthcare services, which is an impediment to universal access to care. Additionally, private providers tend to operate mainly in urban areas, thus rural communities may be without access to some key services, including rehabilitation services and community care (7). The issues of equity are magnified when one considers that a disproportionate number of patients using PHC services in the public system belong to relatively underserved segments of the population, and are more likely to be female, elderly, or unemployed (101,102). Achieving UHC will ensure that all citizens can comfortably access the essential healthcare services they need (95). The availability of HRH in PHC settings is therefore paramount to UHC.

Deficiencies in the mix of skills and competencies of the current PHC workforce.

PHC programmes cover a wide range of specialities including maternal and child health, smoking cessation, dermatology, tuberculosis management, ophthalmology, and chronic disease management. Those who work in the community need to have broad competencies for a holistic approach to health and primary care. Given the significant ethnic diversity in the population, and the more recent influx of migrants, inter-cultural skills especially focusing on language barriers are becoming increasingly important.

Addressing the social determinants of health is a key line of action to advance the goal of UHC (97). Therefore, PHC teams need strong skills and competencies to function in multidisciplinary environments and to interact with vulnerable groups within their communities (103). These include communication abilities, behaviour change techniques, patient education, and counselling skills (104). There is a perception that PHC teams in T&T do not always have these appropriate competency levels to carry out their work. An assessment of T&T's progress in achieving the 20 Regional Goals for HRH, over the period 2012 to 2014, found that the country had remained relatively stagnant, with respect to Goal 3 (*All countries will have developed PHC teams with a broad range of competencies that systematically include community health workers to improve access, reach out to vulnerable groups, and mobilize community networks*) (17). Moreover, the

need for community empowerment, intercultural and interdisciplinary skills among primary health professionals had been stressed (17,105–107).

The COVID-19 pandemic highlighted the deficiencies in some PHC staffing categories and temporary measures were taken to address these, including invitation of retired health professionals to express their interest and availability to be contracted should there be a surge of COVID-19 cases (4).

Challenge in effectively planning HRH to meet the future needs of the population.

The Ministry of Health (MoH), T&T has taken many steps to build its capacity for health workforce planning and development. These include the establishment of the Health Sector Human Resource Planning and Development Unit (HSHRPD Unit) and the implementation of initiatives such as National Health Workforce Accounts (5) and use of Workload Indicators of Staffing needs (6). However, planning the development of HRH in T&T is constrained by the fact that there are gaps in national data about the existing supply of workers. HRH data collection systems, including core data sets are not institutionalised across public or private sectors, regulatory agencies or tertiary education institutions (7). There are also challenges in measuring the impact of changes to HRH capacity, due to fragmented data that fail to link HRH with health planning information. This fragmentation can limit policy development (108).

Data to report on many of the indicators needed to assess the country's progress in achieving regional goals for HRH were unavailable (6,14). The MoH is heavily reliant on regulatory bodies, such as the Medical Board and Nursing Council for information to provide a national picture. Regulatory agencies can provide information about the number of persons that are registered with them, however, essential disaggregated data, such as by age and skill profile and the numbers with specialist training are lacking. In addition, the collection of HRH data from the private sector is generally outside the remit of the MoH. A Data Collection and Management tool for the Regulatory Bodies, Regional Health Authorities and Education Institutions (7,109) has recently been introduced by the MoH. Buy-in and compliance with this initiative are essential. Engagement of all sectors including education, finance, and health is needed to plan and produce the country's health manpower requirements to efficiently address population needs.

Changing demographic and epidemiological patterns are contributing to significant increase in non-communicable diseases burden, further necessitating the demand for a robust primary healthcare.

T&T has experienced an epidemiological transition, in which the pattern of mortality in adults has shifted from communicable diseases to NCDs (8). NCDs are the leading health concerns and account for nearly two-thirds of deaths annually. The four leading causes of death in 2015 were cardiovascular disease (25%), diabetes (14%), cancers (13%), and cerebrovascular disease (10%). From 2015 to 2019, the NCD mortality rate in T&T increased from 525.0 to 768.9 per 100,000 persons (93). An ageing population and increased urbanisation with associated population lifestyle changes such as physical inactivity and unhealthy diets, have contributed to this situation (9). The prevalence of risk factors for NCDs, that is, high blood pressure, high cholesterol, elevated blood sugar and obesity, in the population is high. In 2012, a representative

sample of 3,020 adults between 15 and 64 years found that 26.3% had high blood pressure or were on high-blood pressure medication; 23.5% had high cholesterol or were on medication to address the condition and 20.5% had high blood sugar or were taking medication for elevated blood glucose, while 55.7% were overweight or obese (109). Overweight and obesity among children are increasing dramatically. The prevalence of obesity among children aged 5-18 years, increased by 400% over the period 1999 – 2009 (9). Despite significant efforts by the Government and private sector stakeholders, T&T's obesity rate increased from 25.7% in 2015 to 27.4% in 2019 (93). The onset of NCDs is also more frequently being observed in younger (under 45 years) age groups (110).

Mental health challenges are increasingly being observed. T&T has the fourth highest suicide rate in the region of the Americas. In 2017, T&T reported a suicide mortality rate of 13.6 per 100,000. The only countries in the region with higher rates were Cuba (16.27), Guyana (16.04) and Suriname (14.79) (15). Violence and injuries, including gender-based violence and violence against children are significant health issues that are major contributors to morbidity and mortality (111).

A wide range of social and environmental factors contribute to the country's epidemiological profile. The quality of the health workforce influences citizens' willingness to utilise health care services and determines the scope and quality of services that are available to the population. With an aging population, a heavy burden of NCDs, including mental illness, injuries, and violence, to advance the goal of UHC, the health workforce must shift its emphasis towards greater health promotion, disease prevention, including the social determinants, and integrated management of chronic conditions, within community-based culturally appropriate environments. The country's stock of HRH must be fit-for this purpose, competent and effective to address the leading population health challenges.

Underlying Factors

The following section focuses on the underlying factors at the governance, financial and delivery arrangement levels of the health system.

At the **Governance arrangement level**, a national HRH policy that provides strategic guidance about how HRH gaps would be addressed is non-existent and there are inadequate policies or regulations to attract and retain professionals in rural or underserved areas (7), Also, there is no long-term strategy to identify and respond to the population's healthcare needs, including need for care at the primary level (7,16). In academia, PHC training is not sufficiently included in the medical and nursing school curricula in T&T (17). It is also important to note that while intercultural competencies are part of the curriculum for certain categories of PHC staff, such as DHVs and District Nurses, these competencies are not included as part of the respective job descriptions (17) and are not included in performance assessments.

A lack of collaboration in systematic planning between the private and public health sectors, educational institutions and regulatory agencies results in significant gaps in national datasets that are needed to adequately inform HRH production, training, assessment and development (16,112). Furthermore, the Ministry of Health faces capacity challenges in the areas of workforce strategic planning, management and monitoring and evaluation (108).

At the **Financial arrangement** level, national investment in human resources for PHC is misaligned, when compared with investment in other types of health professionals (1,17). Also, while expanding PHC services may reduce long-term costs associated with tertiary services, there are often undesirable add-on costs short-term (108).

At the **Delivery arrangement** level, there is low motivation and performance of PHC staff because of institutional and system constraints; for example, the absence of available materials and facilities to deliver services of acceptable quality. Larger health centres with more equipment have been found to provide better quality care (113,114). Similarly, the private sector attracts and retains health care workers by offering more attractive hours, wages and benefits (108).

There are also inadequate policies that direct how Regional Health Authorities should organise PHC teams for efficient service delivery (7).The way services are organised at the PHC level provides limited opportunities for interprofessional interaction. Currently, services at the public sector PHC clinics (health centres) are headed by doctors. However, to appropriately address the needs of the population, especially with respect to health promotion and disease prevention, models of care that include other categories of staff in a team-based approach should be pursued. A survey of health professionals identified insufficient provider education as a barrier to delivery of optimal diabetes care. This study also noted that nurses should have a more active role in team-based care, for example with respect to prevention of cardiovascular disease and diabetes through leading patient education efforts, screening patients for complications, coordinating care efforts and educating family members (105).

Training for health professionals in T&T as well as the service delivery arrangements at the PHC level do not adequately support interprofessional work. Although education of health professionals is offered within a health or medical sciences discipline/faculty, generally the delivery of content is done in silos and there is absence of a broad-based strategic approach towards incorporation of interprofessional education (115).

Policy Elements to Address the Problem

Below, we propose elements of a comprehensive approach to strengthen the PHC HRH in T&T, to achieve UHC.

Element 1 - Strengthen education and training to improve the number, skill-mix and competencies of the PHC workforce.

Institutions that train health professionals in T&T are critical to making UHC a reality as they bear responsibility for producing health workers who are optimally suited to deliver PHC services that meet the needs of communities. These institutions are tasked with ensuring the correct numbers of people are trained and have the competencies to carry out required functions. To achieve a well-balanced workforce, the WHO recommends, in addition to adequate training infrastructure and material, three other areas within the education sector that must be addressed: a) student selection and enrolment to reflect diversities; b) relevant and responsive curricula; and c) faculty development (teaching staff) (116–118). Elements 1a), 1b) and 1c) respond to these areas.

> **Element 1a) – Improve policies and programs at health training institutions to achieve greater diversity of students, who are better suited to careers in rural and other underserved communities.**

Diversity in education means ensuring under-represented groups in society are included in health training programs. Diversity is a multi-dimensional, heterogeneous concept that has different meanings in different environments and can include characteristics such as ethnicity, geography, gender, or socio-economic status. In the T&T context, given the previously cited urban-rural HRH imbalances which place constraints to achieving UHC, we refer to diversity as placing greater emphasis on the inclusion of students originating from rural communities (19).

There is evidence that originating from a rural area is strongly associated with health professionals choosing rural practice (38,39). One moderate- and four low-quality systematic reviews and two studies found moderate to strong evidence that being of rural origin influences the decision to practice in a rural community (38,48,50,56,58–60). Similarly, having family or a spouse of rural origin also increased the likelihood of working in rural areas (38,53,59). A high-quality systematic review found moderate evidence for the conditional recommendation of increasing enrolment of students from rural backgrounds (23). Additionally, one study and two systematic reviews (one moderate- and one low-quality) reported that graduates of rural origin are more likely to return to work in rural areas if trained in medical schools that are also in rural areas, using curricula that address rural health needs (50,53,56). However, one study found this association to be limited and weak (48). Two low-quality systematic reviews and one study provided weak to moderate evidence that targeting students from rural backgrounds increases the number of graduates who return to rural communities to practise (38,50,53).

Several types of interventions are used globally, to achieve diversity in student enrolment in health programs, or to recruit specifically targeted groups. These interventions are initiated across four phases: early exposure; transitioning; retention; or across the entire educational pipeline (20).

During early exposure, interventions seek to introduce students to health careers and academic pathways using outreach methods such as school visits, career counselling, or secondary enrichment programs that support academic development. During transitioning, emphasis is placed on providing application assistance to the targeted group or adjusting admission policies to assist them in achieving entry into tertiary programs. Preferential admission policies could include quotas, points systems, or weighted admission criteria. The retention phase aims to support student success once enrolled in tertiary programmes. Intervention strategies at this stage could include provision of financial assistance, academic advising, tailoring curricula to make them more attractive to the targeted population or providing other types of support. Finally, a mix of interventions could be applied across the entire pipeline. Pipeline programs can include additional activities such as ensuring members of the under-represented communities are involved in recruitment (20,21,24).

Table 1a provides a summary of the evidence related to these interventions.

Table 1a: Key Findings from systematic reviews

Category of finding	**Improve policies and programs at health training institutions to achieve greater diversity of students, who are better suited to careers in rural and other underserved communities.**
Benefits	Four systematic reviews proved that interventions for achieving greater inclusion of under-represented groups in tertiary health education programs can be effective (20–23). <u>Transition stage</u> Four systematic reviews found evidence that preferential selection processes for students from rural communities (22), or under-represented minority groups were effective in assisting these students to gain entry into tertiary health programs (20,21,23). One systematic review identified the key features of successful preferential selection programs. These were: application assistance; admissions studies points systems; altered weighting of admissions criteria; holistic selection (i.e., evaluation, via interview, candidates' academic, and non-academic attributes and personal qualities); standardised admission tests; and graduate entry programs. The points system was found to have the greatest impact on achieving diversity (21). Academic application and exam preparation support were the key characteristics of successful enrichment programs, to increase candidates' likelihood of achieving admission and performing successfully (21).

Category of finding	Improve policies and programs at health training institutions to achieve greater diversity of students, who are better suited to careers in rural and other underserved communities.
	Retention stage Another high-quality review provided evidence that providing a comprehensive package of support services (social, financial, academic support including career guidance and mentorship), at the retention phase, was effective at keeping students from minority groups in programs to successful completion (23). Educational Pipeline One low-quality systematic review (20) concluded that comprehensive pipeline programs could improve the possibility of recruiting under-represented groups, to health programs. Comprehensive pipeline programs generally included i) recruitment activities across secondary and tertiary education sectors; ii) early exposure activities that provide opportunities for students to visit tertiary institutions and health settings; iii) transitioning activities (admission quota policies); and iv) retention activities (i.e., provision of tertiary financial support).
Potential harms	None identified
Cost and/ or cost effectiveness in relation to the status quo	No relevant economic evaluations or costing studies were identified that could provide information about costs or cost-effectiveness of this option in relation to the status quo. However, the cost of faculty time to invest in secondary school pre-admission programs, application process, support and mentorship, as well as the cost of financial and other support for completion of academic programmes must be considered and weighed against the potential benefits.
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	All the reviews referred to under-represented minority populations (URM) and in one instance the findings related specifically to an ethnic group—an indigenous population. Students from rural communities in T&T, such as those from the remote catchment areas of the Eastern or South West Regional Health Authorities, cannot strictly be classified as URMs. Development of special curricula, within the retention phase, for these sub-populations will not be relevant in the T&T context. There are uncertainties regarding the extent to which the impact of these interventions may vary from one Region to another. Uncertainties exist because all of the primary studies included in three of the systematic reviews (20,21,23) were conducted in Organisation for Economic Co-operation and Development (OECD) countries (with the exception of one study which was conducted in South Africa).

Element 1b) – Revise the curriculum of health training institutions to align with current and emerging population health needs.

The WHO recommends education and training institutions adapt their curricula to respond to the evolving needs of their communities and the demands emerging from health systems (116,118). With respect to achieving UHC, in T&T, the following competencies can be strengthened: Competencies to: i) function in multidisciplinary environments; ii) interact with vulnerable groups and community networks; iii) respond to public health emergencies; and iv) cultural competence (103). Health training institutions in T&T should therefore place emphasis on adjusting the content as well as the process for delivering their training program, to build these competencies in future health professionals.

Interprofessional education (IPE) is an approach to develop healthcare students to function as future members of interprofessional teams (25,26). Strengthening IPE in curricular reform can therefore bring about the required improvements in multidisciplinary functioning of PHC teams. There is also good evidence that community placements, including placements in rural areas offer important learning opportunities for students to understand the underlying social determinants of health issues. These placements can also develop positive intentions to continue working in these community areas (22,38–42). Being able to adapt and respond to public health emergencies is another crucial component of a responsive health training curriculum. The PHC workforce needs to develop capacity in this area to reduce the burden of emergencies, such as the COVID-19 pandemic, on the healthcare system and population health. Finally, values, health beliefs and behaviours often vary across culturally diverse socio-cultural groups. Cultural competence is the ability of health workers to effectively communicate with, and provide quality care to patients from these various backgrounds (43). Failure to do so, can result in patient dissatisfaction, declines in service utilisation, treatment non-compliance, and generally poorer health outcomes (43–45).

Table 1b summarises what is known from systematic reviews of the literature about the content and learning methods of curricula for each of the three areas discussed above – interprofessional education, community or rural exposure and cultural competence.

Table 1b: Key Findings from systematic reviews

Category of finding	Revise the curriculum of health training institutions to align with population health needs
Benefits	<u>Interprofessional education</u> Eleven systematic reviews (27–37) provided support for IPE as an effective tool to develop collaborative competencies, that is, student's knowledge and skills toward interdisciplinary teamwork. Two of the reviews, however, found mixed evidence surrounding the ability of IPE to change attitudes or actual collaborative practices (32,36).

Category of finding	Revise the curriculum of health training institutions to align with population health needs

The common features of university-based IPE curricular globally were:

- Mostly offered at the undergraduate level (30,34,36,119).
- Use of delivery formats that included theory-based, practical elements in the clinical curricula, or combined (28,30,33,34,36,119,120).
- Active learning methods and processes, such as reflective discourse, feedback, simulations, and practice-based sessions were used. Didactic methods were also used (28–30,33,34,36,119).
- For medical trainees, clinical placements for multidisciplinary learning were in either hospitals or community-based setting (34,119).
- For medical trainees, multidisciplinary learning teams typically comprised nurses, social workers, physical/ occupational therapists, administrators, and pharmacists (29).

One review also identified interprofessional shadowing, and patient reviews, as two promising IPE interventions to support learners' understanding of collaborative practice (37).

One review found that online IPE facilitation was a feasible approach to supplement core IPE training activities, as it supported discussion and dialogue among teams (121).

One review provided mixed results about the use of Social Media to support IPE learning activities (122).

Community and rural exposure

One systematic review found that including community-engaged placements, in underserved areas, in the medical curriculum, positively influenced the attitudes of students, towards the respective communities, and competencies in dealing with these communities (22). Community-engaged placements mean the community is involved in a fundamental way in supporting alignment of learning objectives and activities with the communities' health care needs, and motivates student to practice in the specific setting (123).

Two reviews (22,40) determined that adjusting the conventional curricular of medical trainees, to include a longitudinal rural placement, had a beneficial effect on medical student's learning and attitudes towards serving local communities. The effectiveness of these placements was enhanced if a service-learning component was included in the curricular. With service-learning, students were required to provide community service and their curricula included specific objectives to learn about the context in which their services were being provided (22).

Category of finding	Revise the curriculum of health training institutions to align with population health needs
	There is also some evidence that having most undergraduate training in community health units rather than on campus and in teaching hospitals can produce graduates who were generally more competent (22). Emergency response training One moderate-quality systematic review found that investing in specialised training in emergency care would complement efforts to strengthen primary care in LMICs. Trauma resuscitation training, for example, was effective in high-income settings, and must be adapted to LMICs and critically assessed (124). Additionally, training in routine data collection in healthcare delivery settings would help ensure the effectiveness of emergency response training and interventions (124). According to two moderate-quality systematic reviews, additional training for paramedics to become "critical care paramedics" (CCPs) – to deliver care to critically ill and injured patients – resulted in CCPs being able to provide superior care with fewer errors than paramedics and nurses without additional training and competencies (125,126). One moderate-quality systematic review found that improving training for health providers in public-private mix strategies is essential to improve delivery of care and physicians' awareness, knowledge, and technical capacity (127). Specifically, monthly training of private practitioners helped update their skills in dealing with tuberculosis (127). One high-quality systematic review found that training in telephone consultation and triage by healthcare professionals decreased the number of immediate doctors' visits and did not appear to increase emergency department visits (128). One low-quality systematic review found that training in reverse triage could be an effective response to crowding in emergency departments, by prioritising patients and thus freeing a percentage of beds for those with urgent needs (129). Cultural competence education Five reviews provided support for cultural competency training to improve the health workforce's knowledge, skills and attitudes towards culturally diverse populations (45,130–133). One review (132) also found that cultural competency education also improved health professionals' confidence to deliver health care to a specific cultural group (indigenous people). The content, scope, design, and duration of cultural competency education programs varied widely from brief sessions of 60 minutes or less (132) to curricula spanning several years (130).
Potential harms	None identified

Category of finding	Revise the curriculum of health training institutions to align with population health needs
Cost and/ or cost effectiveness in relation to the status quo	One single study conducted in Australia (134) estimated that an interprofessional student clinic costed an additional AUD $289, per student day of clinical education (constant 2011 prices). Compared with conventional hospital-based placements, the interprofessional clinic costed society an additional AUD $175 per student day of clinical education[1]. Another single study, also conducted in Australia, concluded that the benefits derived from an IPE program, involving clinical placements at an elderly care facility, justified the financial costs of the program. Benefits accrued mainly to students in terms of increased education and skill, and to residents in terms of health outcomes and quality of life. (135). One low-quality systematic review found that training healthcare professionals in reverse triage could result in premature patient discharge and even readmission (129).
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	There are uncertainties regarding the impact of interventions in the T&T context, because no systematic reviews included studies from T&T or a similar population.

Element 1c) – Develop the competency of medical sciences faculty to develop and deliver inter-professional education (Interprofessional Faculty Development)

While no systematic reviews were found which examined the effects of faculty development initiatives specifically for interprofessional education (IPE), evidence from single studies indicate that faculty development interventions have a positive impact on the knowledge, skills, attitudes, teaching behaviours, teaching effectiveness (11–13,46) and leadership capabilities (47) of medical educators, and benefits the institutions in which they work. One review identified the key features of successful faculty development programs in general as: i) use of multiple instructional methods; ii) experiential learning, iii) reflective practice; iv) individual and group projects; v) peer support and the development of communities of practice; vi) mentorship; and institutional support (47).

[1] At today's exchange rate (2020-03-16), 1AUD = USD 0.78

Element 2 – Introduce appropriate mechanisms, to attract and retain health professionals in rural areas.

The maldistribution of the healthcare workforce poses a challenge to equitable delivery of healthcare. This is an issue in both developed and developing countries, where geographically skewed distributions of healthcare professionals favour urban communities. Hart's "inverse care law" sums up this inequity: "those with the greatest health needs usually have the worst access to healthcare services" (38). Strengthening health systems toward achieving universal health coverage, therefore, requires that strategies be introduced to attract and retain healthcare professionals in these areas (49). National and institutional policies and regulations can support retention by promoting job security, providing pathways for professional growth and supportive supervision, improving living conditions, promoting work-life balance, and providing appropriate remuneration and incentives.

Implementing strategies in low- and middle-income countries is especially important due to the attraction of higher salaries and better opportunities and working conditions in high-income countries, resulting in migration (50). This pattern is mirrored in rural-to-urban migration, the effects of which can be greater felt within low- and middle-income countries.

The World Health Organization (WHO) has identified four key strategies to recruit and retain healthcare workforce in rural areas: education, regulation, financial incentives, and personal and professional support (48). Additionally, reviews and single studies have identified the role of individuals' selection in working in remote areas.

Education

Two systematic reviews (low- and high-quality) provided weak evidence that pre-graduate exposure/training or clinical rotations in rural communities increased the likelihood of practising in rural areas (23,38). Another high-quality systematic review showed there is a lack of rigorous studies evaluating pre-licensing interventions to increase supply (81). A study also found weak evidence for clinical rotations in rural areas and curricula reflecting rural health issues (48).

However, a study emphasised the importance of involving medical students in community health problems and rural work (53), as current curricula favouring urban settings can impact their selection of secondary or tertiary facilities post-graduation (50,53).

Regulation

Regarding regulatory interventions, the WHO (48) included weak evidence for the following strategies: (i) enhanced scope of practice, including task-shifting and expanding the roles of rural health workers; (ii) utilisation of different categories of personnel, such as community health workers (CHW); and (iii) non-financial incentives including subsidised tuition, additional learning materials, clothing and accommodation. (48–51).

One moderate-quality systematic review indicated that task shifting is a viable, cost-effective and clinically-effective model in non-communicable disease management (51). For example, CHWs are typically community members who are trained to perform specific tasks to support health professionals (81,136). However, though task shifting did increase rates of recruitment of health

professionals, the review found that there were issues with staff retention, especially in settings of limited resources (81). The success of this strategy requires changes at the health policy and systems level, to include training programs for CHWs, standardised protocols, and integration of these workers as part of a multi-disciplinary team. This would require “support from physicians, and consultation with regulatory bodies such as the medical and nursing councils” (51,82). Additionally, one moderate-quality systematic review reported that factors such as high workload, unclear roles, and lack of resources are barriers to CHWs’ job satisfaction and must therefore be considered if using task-shifting as a retention strategy (137).

As found in one study, there can be collaboration with communities and groups to determine their local needs and resources and reach agreement on strategies that better match health professionals to their rural communities (138). In communities with Indigenous peoples, two systematic reviews (moderate- and high-quality) discussed social and cultural barriers to healthcare and the need for culturally specific strategies for an Indigenous health workforce (42,132). Evidence was insufficient, however, to determine the effectiveness of cultural competence training programs for healthcare workers in these communities (132).

One low-quality systematic review and one study found that coercive measures, such as subsidising education for return of service, and enforcing compulsory post-graduation rural service could address short-term recruitment problems (38,50). However, according to the review, this is a challenge to enforce, and “may worsen human resource constraints in the long term” (38). This is because such strategies usually target inexperienced physicians who are made to perform duties outside of their scope of practice, risking litigation and thus increasing unwillingness for rural practice (38). There is, therefore, weak evidence that requiring local doctors to practise in rural areas would reduce the shortage of health professionals. There is moderate evidence from two (low- and high-quality) systematic reviews, however, that recruiting foreign doctors and restricting them to rural practice can help alleviate this issue (38,39).

Financial Incentives

Substantial evidence exists for the effectiveness of financial incentives on retention in high-income countries. However, there are no strong, rigorous studies on such strategies in low- and middle-income countries (49,50,52). A study and two low-quality systematic reviews found financial incentives to be successful as a short-term strategy (38,50,53), but three studies reported weak evidence of this, as it is neither sustainable nor cost-effective (48,54,55). Therefore, using this as a strategy requires planning and government support to ensure sustainability (55).

Two studies and two systematic reviews (moderate- and low-quality) also reported that increased salaries alone are insufficient in attracting and retaining health professionals for rural placements (50,54,56,57). Another low-quality systematic review found no clear evidence that financial incentives significantly impacted the supply of health workers in rural areas (58). It should therefore be integrated with other incentives, especially to counteract the threat of migration. For example, one study found superior housing (defined as having multiple bedrooms, electricity, piped running water, master bedroom and security) had the strongest influence on working in rural areas (139). In the case of CHWs, a study found that financial incentives were a divisive factor that can undermine their commitment to their work and their community relationships (54)

and should therefore be implemented with careful planning. One study also found that parallel employment, i.e. allowing healthcare workers to hold positions in both public and private health services, enabled higher incomes and thus increased retention in rural areas (57). However, this created a conflict of interest, “where health workers, either intentionally or not, diverted clients from public services to their private clinics” (57).

Personal and Professional Support

Two systematic reviews (high- and low-quality) found that opportunities for professional growth including promotions and further education may help retain some health workers to rural or underserved areas (49,55). However, two studies and two high-quality systematic reviews found that evidence in support of such professional development opportunities as a retention strategy was weak or very limited (23,42,48,50).

Two studies and one low-quality systematic review stated that support and appreciation from managers and colleagues, in addition to professional development, stable income and being included in decision-making increased motivation and retention among healthcare workers in rural areas (50,55,57). In addition, one low-quality systematic review found that lack of professional development and insufficient supervision could lead to feeling isolated and thus be a barrier to working in rural areas (59).

Three low-quality systematic reviews and two studies found that other barriers to recruitment and retention of human resources for health in rural areas include working conditions such as lack of access to water and electricity; poor sanitation, roads and facility infrastructure; and lack of equipment and materials (38,50,52,55,60). However, one of the studies reported a lack of evidence that improving working conditions improved retention (50).

To reduce the high turnover among healthcare workers in rural areas, one high-quality systematic review focused on the use of exit interviews of staff. However, the review reported no evidence, so the effectiveness of this strategy remains unclear (139).

According to a study and a moderate-quality systematic review, improving the attraction and retention of health professionals in rural areas requires a comprehensive approach (50,136). This approach refers to the use of multiple interventions, and includes – but is not limited to – addressing the needs of health workers to make work environments conducive to efficiency and productivity; providing regulated financial incentives and other benefits which keep workers motivated; and improving rural training to attract workers from and to rural settings, while increasing access to services in such areas (50).

Table 2 summarises the evidence extracted from systematic reviews and single studies.

Table 2: Key Findings from systematic reviews and single studies

Category of finding	Introduce appropriate mechanisms, to attract and retain health professionals in rural areas.
Benefits	Two low-quality systematic reviews and one study found that targeting students from rural backgrounds may increase the number of graduates who return to rural communities to practise (38,50,60). One study found that involving medical students in community health problems and rural work can impact their selection of secondary or tertiary facilities post-graduation (60). One moderate-quality systematic review found that task shifting is a viable, cost-effective and clinically-effective model for recruiting health workers (81). One study and two low-quality systematic reviews found financial incentives to be successful as a short-term strategy (38,50,60). One study found superior housing had the strongest influence on working in rural areas (52). Two systematic reviews (high- and low-quality) found that opportunities for professional growth may help retain some health workers (49,55). Three low-quality systematic reviews and one study found that improving working conditions increased recruitment and retention of human resources for health in rural areas include (38,52,55,60). One study and one moderate-quality systematic review found that a comprehensive approach that includes addressing the needs of health workers, providing regulated financial incentives and other benefits, and improving rural training, improves recruitment and retention (50,136).
Potential harms	One low-quality systematic review and one study found that subsidising education for return of service, and enforcing compulsory post-graduation rural service could address short-term recruitment problems (38,50). However, in the long term, this may add to HRH challenges because such strategies usually target inexperienced physicians who are made to perform duties outside of their scope of practice and risk litigation (38). One study found that parallel employment created a conflict of interest where health workers diverted clients from public services to their private practices (57).
Cost and/ or cost effectiveness in relation to the status quo	Three studies found that financial incentives are not sustainable or cost-effective in the long-term (48,52,54). One study found that financial incentives were a divisive factor that can influence CHWs' commitment to their work and their community relationships (54).

Category of finding	Introduce appropriate mechanisms, to attract and retain health professionals in rural areas.
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	There are uncertainties regarding the impact of interventions in the T&T context, because only one low-quality systematic review included participants from T&T, and only in considering determinants for career choice (60).

Element 3 – Strengthen primary healthcare management systems to enhance quality and responsiveness of care to population needs

Element 3a) – Promote interprofessional practice in PHC.

Interprofessional collaboration is the process by which different health and social professionals work together. There is strong evidence that interprofessional care delivered in PHC and in other settings can improve health outcomes (36,61–70). Other benefits include improved job satisfaction, improved adherence to recommended practice and guidelines, healthcare cost control/reduction and improved patient safety (62,63,67,69,70).

One high quality systematic review noted that service providers in PHC share the view that interdisciplinary teams have potential value and gains for patient care; however, the authors noted that there is evidence of both *buy in* and *resistance* from primary care professionals, across country settings and within different local practice settings. This review also noted that the potential value of sharing care and responsibility of patients with other health professionals is not necessarily clear to some doctors, particularly older ones. The use of champions to stimulate the network and co-ordinate team work, was a key facilitator (70–72). Physicians were identified as effective champions but, also, the most resistant professional group. Other facilitators include interest in collaboration, mutual respect, positive communication, recognition of roles and expertise/trust regarding division of labour, perceived opportunities to improve care and develop new professional fields (70,73). Team building activities, interprofessional rounds, interprofessional meetings, positive promotion of partnership and co-location of practices are also beneficial (62,65,74). Barriers include challenges of definition and awareness of one another's roles and competences, shared information, confidentiality and responsibility, long-term funding and joint monitoring (73).

Medical and Non-Medical Professionals

Another dimension of interprofessional practice at the PHC level is that between health, social care and other non-medical professionals. With respect to collaboration between doctors and social workers, acknowledgement of colleagues' expertise, recognition and definition of roles, positive communication, and mutual respect were found to facilitate the process of collaboration. Differences in professional perspectives, lack of knowledge, and poor communication were identified as barriers (75).

Table 3a provides a synthesis of the evidence extracted from systematic reviews.

Table 3a: Key Findings from systematic reviews

Category of finding	Improve Interprofessional practice at the PHC
Benefits	Eleven systematic reviews (4 high quality, 1 moderate quality and 4 low quality) found benefits of interprofessional practice in primary health care and other settings. These benefits include improved health outcomes, adherence to recommended practice and guidelines, patient safety, and job satisfaction (36,61–70).

Category of finding	Improve Interprofessional practice at the PHC
	One high quality systematic review found that externally facilitated interprofessional activities, interprofessional rounds, interprofessional meetings, and interprofessional checklists may slightly improve patient functional status and health care professionals' adherence to recommended practices and may slightly improve use of healthcare resources (62). One high quality systematic review found that service providers valued interdisciplinary teamwork and had a shared view that it can have potential value and gains for patient care. This review also noted that available evaluations, both formal and informal, indicate high satisfaction with interdisciplinary teamwork (70). One moderate quality systematic review noted that the outcomes of interdisciplinary collaboration in clinical nursing were improved care, doctors and nurses' satisfaction, controlling costs, reducing clinical errors and patient's safety (63). Three systematic reviews (including one high and one moderate quality) found that the use of champions to stimulate the network and co-ordinate teamwork, was a key facilitator. Physicians were identified as effective champions but, also, the most resistant professional group (70–72). Two systematic reviews found that mutual respect, positive communication, recognition of roles and expertise/trust regarding division of labour were identified as key facilitators (70,75). One moderate quality systematic review noted that a common interest in collaboration, perceiving opportunities to improve quality of care and to develop new professional fields were facilitators for different actors in primary health care, other than nurses. Barriers include challenges of definition and awareness of one another's roles and competences, shared information, confidentiality and responsibility, long-term funding and joint monitoring (73).
Potential Harms	None identified
Cost and cost effectiveness in relation to the status quo	One high quality systematic review found that mixed funding models are problematic because they can undermine the trust health professionals have in each other's roles (protecting professional territory) or motivations for decisions about patient care (the best treatment versus one with a commercial benefit) (70). One high quality systematic review noted that externally facilitated interprofessional activities may slightly improve the use of healthcare resources (62). One moderate quality systematic review concluded that the outcomes of collaboration include controlling cost (63).

Category of finding	Improve Interprofessional practice at the PHC
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	One high quality systematic review found that uncertainties exist as to whether the interprofessional collaboration strategies improved patient-assessed quality of care, continuity of care, or collaborative working (62). One high quality systematic review that evaluated multi-professional team work interventions in stroke units, noted that in 10 of the 12 studies assessed, the interventions' impact on patient outcomes was associated with great uncertainty due to several alternative explanations of the findings (140). There are uncertainties regarding the impact of interprofessional collaboration and interprofessional education in the local context.

Element 3b) – Utilise in-service training and quality improvement mechanisms to enhance skills and competencies of PHC teams

PHC teams are valuable to the communities they serve, as they work together to provide a single point of contact between the community and the health system. In-service training in cultural competency, management, and of community health workers, are aimed at strengthening healthcare providers' skills and competencies. Having a sufficient supply of well-trained health workers in management and in the field is crucial to achieving universal health coverage. This, in addition to implementing performance management strategies, can result in improved healthcare delivery and better patient outcomes.

Quality improvement mechanisms to increase primary healthcare workers' competency and thus enhance quality of care include audit and feedback, supervision, and accreditation. One moderate-quality systematic review found that care coordination strategies including the use of multidisciplinary teams, disease management and care management, had positive effects on health outcomes across various clinical topics (141). In some studies, such interventions resulted in improvements in service continuity, and reductions in hospital admissions, re-hospitalisation rates, and mortality (141).

<u>Audit and Feedback</u>

Audit and feedback in healthcare is often combined with other quality improvement interventions, with the aim of improving professional practice. Two high- and two moderate-quality systematic reviews found that audit and feedback may be effective, but the effects are generally small to moderate, and inconsistent, i.e. vary depending on context (142–145). Two of these reviews found feedback to be more effective when: baseline performance or initial adherence to guidelines or desired practice is low; it is conducted by a supervisor or colleague; it is done repeatedly and in different formats; it includes explicit targets and an action plan; implementation costs are low; and small to moderate improvements in quality would be worthwhile (142,144). Further research into audit and feedback mechanisms is required before it can become a routine part of improving patient satisfaction in primary care.

Supervision

Supportive supervision as a management approach is generally recommended to increase job satisfaction and health worker motivation, by supporting isolated primary healthcare workers and ensuring the quality of the health services they provide. However, two high- and two moderate-quality systematic reviews found mixed results regarding the effects of supervision on competency and professional practice (146–149). All four reviews reported inconsistent findings, as supervision had a small positive effect on health worker practices and knowledge in some studies, yet no benefit or inconclusive results in others. These inconsistencies may be due to limitations in research design and the complexity of evaluating such interventions (149).

One moderate-quality review reported that qualitative research across a number of settings in multi-country studies found supervision is associated with improved healthcare worker knowledge and perception of their work and professional satisfaction and motivation (150). Additionally, lack of or poor-quality supervision was associated with poor performance, reduced adherence to guidelines and protocols, and poor patient outcomes (150).

In the case of CHWs, one high- and one moderate-quality systematic review found that interventions for CHWs, such as on-the-job supervision and continuous training, can improve skills and competencies (51,82). Similarly, two systematic reviews (low- and moderate-quality) stated basic training and continuing education increase motivation in CHWs and have the potential to improve patient care, especially in underserved communities (151,152).

High quality evidence to make conclusive decisions on implementing any particular form of supervision in primary health care is limited. In fact, evidence from one high-quality review suggests that more frequent and intensive supervision is not necessarily more beneficial (148). Therefore, supervision should be combined with other activities (such as audit and feedback) to evaluate its effects and associated costs (148,150).

Accreditation

Typically, achieving accreditation demonstrates an institution's commitment to providing high-quality, safe, and effective patient care. However, one moderate-quality systematic review found limited research on the impact of accreditation on patient care outcomes (153). Two studies included in the review found accreditation improved care, with accredited health centres having better infection control, risk management, environmental safety, auditing and quality improvement mechanisms, and more reviewed providers and trained staff. Other studies concluded it was difficult to determine if accreditation improved patient outcomes and may not effectively control or improve quality of care. Also in this review (153), administrators reported "greater collaboration, improved culture, fostered implementation of quality improvement, and greater understanding of their organization" due to accreditation. Providers also viewed accreditation as a mechanism to improve care and to demonstrate commitment to improving quality of care and patient safety. Similarly, a high-quality review found that accreditation and other governance mechanisms increased empowerment, confidence, and job satisfaction among primary healthcare workers (154).

Table 3b summarises what is known from systematic reviews of the literature about common quality improvement mechanisms used in healthcare.

Table 3b: Key Findings from systematic reviews

Category of finding	Utilise in-service training and quality improvement mechanisms to enhance skills and competencies of PHC teams
Benefits	Four systematic reviews (high- and moderate-quality) found that audit and feedback may have small to moderate effects on professional competency and practice depending on context (142–145). One moderate-quality review found supervision was associated with improved healthcare worker knowledge and perception of their work and professional satisfaction and motivation (150). One high-quality systematic review reported that in-service training for managers (with ongoing support) increased their knowledge of planning, and developed more active monitoring and evaluation skills (155). Two systematic reviews (high- and moderate-quality) stated that interventions for CHWs, such as on-the-job supervision and continuous training, can improve skills and competencies (51,82). Two systematic reviews (low- and moderate-quality) stated basic training and continuing education increased motivation in CHWs and had the potential to improve patient care, especially in underserved communities (151,152). One moderate-quality review found accreditation improved care, including better infection control, risk management, environmental safety, auditing and quality improvement mechanisms, and more reviewed providers and trained staff (153) One high-quality review found that accreditation and other governance mechanisms increased empowerment, confidence, and job satisfaction among primary healthcare workers (154).
Potential harms	None identified
Cost and/ or cost effectiveness in relation to the status quo	One moderate-quality review indicated accreditation may reduce costs associated with medical errors and system failures. Also, effective performance improvement programs may improve outcomes, allowing accreditation to become more cost-effective. Additionally, primary healthcare accredited organizations were more cost-effective than those who were not (153).
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	There are uncertainties regarding the impact of interventions in the T&T context, because no systematic reviews included studies from T&T.

Element 4 – Strengthen human resource information systems to support HRH planning

Extensive planning is required to address PHC workforce capacity issues that have an impact on quality and access to care. There is a need for up-to-date and relevant HRH data and its relationship to national priorities, for effective workforce planning. To develop evidence-informed policies to address the HRH issues raised in this evidence brief and to plan holistically for the future of T&T's health workforce, systems for recording and monitoring HRH must be in place. Data for monitoring HRH can emanate from multiple sources, such as from labour market surveys conducted by the Central Statistical Office or from professional associations and regulatory boards or councils' databases. The Labour Market Information Unit (LMIU) of the Ministry of Labour is responsible for producing annual reports of the Labour Market of T&T, and industry-specific labour market information reports. However, since many of these data sources are not designed for HRH planning, the country faces the challenge of bringing the core data elements together to provide a sufficiently detailed picture that could inform future planning. For example, data on skills and specialist training should be available as part of HRH profiles, in addition to more readily available measures such as number of personnel registered with regulatory bodies.

Systems for generating and monitoring this type of information are known as human resources information systems (HRIS). These types of systems can vary from stand-alone packages, such as those used for payroll, to integrated enterprise planning systems such as hospital information systems. The WHO notes that the strength of an HRIS does not depend on its technological backbone, but on its ability to generate accurate and timely information, and to be adaptable to workforce issues Thus, HRIS, must be capable of providing a continuous record of changes in the health workforce (76). Robust HRIS must support standardised processes for data capture, management, and data use so that accurate, timely, and comprehensive profiles of workforce size, composition, and deployment can become available (77).

Locally, there have been steps toward establishing HRIS. In 2017, the Occupational Safety and Health Authority and Agency (OSHA) conducted internal training in HRIS for administrative staff. In 2020, the Ministry of Finance published a tender notice for consultancy services to diagnose, assess and optimise HRIS in the public service. Outputs from this consultancy can inform its application to other sectors, especially the Ministry of Health. The MoH would benefit from the development and implementation of an HRIS policy to ensure evidence-informed hiring practices for a more targeted and efficient PHC workforce. Not only is this system important in HRH planning, but also – and in some ways more importantly – to make data available in order to monitor the extent to which the workforce meets the changing needs of the population.

One rapid synthesis identified models used for HRH planning, especially in determining ratios for recruiting staff. Evidence suggests that most high-income countries use a stock-and-flow model (rather than an outcomes-based approach) to simulate supply of HRH personnel (78). This synthesis also highlighted the need to determine whether data estimates actually reflect clinical realities.

Two systematic reviews provided information about the process and implementation of HRIS. Both concluded that there was insufficient information about the evaluation of HRIS systems to

draw conclusions about best practices for data generation and use and their impact on HRH policies and strategies (77,79). One review identified the following facilitators as critical for successful HRIS implementation: project management, governance structure, stakeholder and user involvement, absence of technological barriers, and simplification of existing human resource processes.

Table 4 provides a summary of the evidence related to these interventions.

Table 4: Key Findings from systematic reviews

Category of finding	**Strengthen human resource information systems to support HRH planning**
Benefits	One rapid synthesis found that in several studies, stock-and-flow models provide forecasting to understand how workforce futures can be affected by changes to policy, labour markets etc., and therefore can be a valuable tool in HRH planning (78). One review noted that studies commonly identified changes in strategic orientation and improvements in operational efficiency as benefits derived from implementation of HRIS (79).
Potential harms	One review noted that implementation could result in negative perceptions of HR roles and could increase the workload of supervisors because of implementation of new processes (79).
Cost and/ or cost effectiveness in relation to the status quo	No cost effectiveness studies identified
Uncertainty regarding benefits and potential harms (monitoring and evaluation would be warranted if the element is pursued)	There is uncertainty because standardised processes for data generation and use, in particular how to integrate data from multiple sectors to ensure the timely availability of accurate information to support national HRH planning and development, were not identified.

Implementation Considerations

Barriers to implementation of each element have been identified at the patient, professional, organisational and system levels. Counterstrategies are proposed.

Level	Barriers	Counterstrategies
Patient / Community	Patients are reluctant to access care in some areas due to healthcare providers' lack of cultural competence (80).	Develop and evaluate the effectiveness of cultural competence training programs. Such training can increase healthcare providers' knowledge, awareness and cultural sensitivity, enabling them to provide culturally competent care that can improve patient satisfaction, especially among minority groups (80).
Professional	Physicians and medical associations are not in support of task shifting and the employment of CHWs (81).	Make changes at the health policy and systems level, to include training programs for CHWs, standardised protocols, and integration of these workers as part of a multi-disciplinary team (81).
	Healthcare workforce faces high workload and lack of resources in rural health settings (82).	Use task shifting to reduce burden on physicians; improve infrastructure and working conditions for rural healthcare workers (81,82).
	Healthcare workforce is emigrating due to higher salaries and better opportunities / working conditions in high-income countries (50).	Offer cost-effective and sustainable financial and non-financial incentives as part of a comprehensive strategy for attracting and retaining healthcare workers (52). Recruit foreign doctors and restrict them to rural practice, to fill the gaps of emigrated or unwilling professionals (38,42).
	Participants in financial incentive programs are significantly more likely (than non-obligated health workers) to leave their sites of first practice after completion of their obligation (58).	Formalise contracts with doctors operating in both the public and private systems to prevent conflicts of interest (156). Implement and enforce regulations against diverting patients to private practice (57).

Level	Barriers	Counterstrategies
Organisational	Existing medical education curricula are limited in preparing students to practice in rural areas (83).	Strengthen rural-context-based medical training to inspire students to practice in rural areas (60,83).
	Medical students are inclined toward few clinical specialty areas, contributing to shortages of professionals in other specialty areas (83).	Diversify clinical rotation settings to encourage skill-mix (83).
	Healthcare students are not sufficiently equipped to function as members of multidisciplinary teams (25,26).	Strengthen interprofessional education through curricular reform, to equip students to work as members of primary healthcare teams to address gaps in community health care (27).
	Physicians can be reluctant to participate in interprofessional collaboration (157).	Implement best practice models of interprofessional education to define clear roles and divisions of labour (26).
	Medical schools continue to offer hospital-centred training, which does not expose students to sufficient practice in rural areas (60).	Study the impact of including mandatory clinical rotations in rural areas and include rural health issues in medical school curricula (50,158).
	There is a lack of diversity in student enrolment in health programs, i.e. from under-represented groups such as lower socioeconomic status and rural backgrounds (84).	Expand selection criteria and quota-based approaches for students of rural and other underserved backgrounds (20,85).
	There is a lack of evidence on human resource information systems (HRIS) and their capabilities. This limits understanding of the information that can be used to support HRH strategies and investments (77,79).	Conduct interdisciplinary research on HRIS implementation processes, in support of sustainable and effective health systems (77,79).
System	Governments paying low salaries to Primary Care physicians in rural practice (60).	Design a comprehensive plan to sustain financial incentives in the long term (38).
	There is a lack of up-to-date and relevant HRH data to determine HRH alignment to national priorities (78).	Implement HRIS policy to record HRH data and monitor changes in accordance with population needs (78).

Next Steps

The aim of this evidence brief is to foster dialogue informed by the best available evidence, and thereafter inform policy on strengthening human resources for health in Trinidad and Tobago. The intention is not to advocate specific policy elements or forego discussion. Further actions will follow review of this evidence brief, and will include:

- Deliberation among policymakers and stakeholders regarding the problem, policy elements and implementation considerations described in this policy brief, in the form of a Stakeholder Dialogue.

- Refining elements based on the Dialogue, for example by adding, removing or modifying components.

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Appendix

Search Strategy used to obtain evidence

Database	Search Terms	Filter by:	Hits	No. Relevant*
Health Systems Evidence	(worker OR workers OR professional OR professionals OR doctor OR doctors OR nurse OR nurses OR physician OR physicians OR workforce) AND (planning OR education OR curriculum OR teaching OR training OR recruit OR recruitment OR retention OR retain OR attraction OR deployment OR incentive OR incentives OR reward OR rewarding) AND (primary care OR primary health care OR primary healthcare)	'type' to: overview of systematic reviews; systematic review of effects; systematic review addressing other questions	around 600	
PubMed	((worker[TIAB] OR professional[TIAB] OR personnel[TIAB] OR doctor[TIAB] OR doctors[TIAB] OR nurse[TIAB] OR nurses[TIAB] OR physician[TIAB] OR physicians[TIAB] OR midwife[TIAB] OR midwives[TIAB]) AND (planning[TIAB] OR manage*[TIAB] OR interprofessional*[TIAB] OR quality[TIAB] OR education[TIAB] OR curriculum[TIAB] OR teaching[TIAB] OR training[TIAB] OR supervision[TIAB] OR recruit* [TIAB] OR retention[TIAB] OR retain[TIAB] OR attraction[TIAB] OR deployment[TIAB] OR employment[TIAB] OR incentive [TIAB] OR reward[TIAB]) AND (primary care[TIAB] OR primary health care[TIAB] OR primary healthcare[TIAB])) OR ((midwifery[MeSH Terms] OR physicians[MeSH Terms] OR occupational groups[MeSH Terms] OR nurses[MeSH Terms]) AND (organization and administration[MeSH Terms] OR education[MeSH Terms] OR teaching[MeSH Terms] OR learning[MeSH Terms] OR motivation[MeSH Terms] OR reward[MeSH Terms] OR employment[MeSH Terms]) AND (primary health care[MeSH Terms]))	systematic reviews	around 700	
Health Systems Evidence	(primary healthcare provider AND education and training); (academic program OR programmes AND "primary health care"). Filter: SR of effects; SR addressing other questions. (education AND training AND primary health care AND workers); (cultural competency education training primary care); (health workers AND "primary care" AND supply AND availability); (curricula AND skills AND "primary health care").	SR of effects	184	26
PubMed	systematic[sb] AND ("student admission policy"); systematic[sb] AND ("social accountability"); systematic[sb] AND (medical school curriculum "primary health care" need).		20	3

Database	Search Terms	Filter by:	Hits	No. Relevant*
	Total articles:	*After elimination of duplicates:*		*26*
Health Systems Evidence	(retention health workers primary healthcare); (retention health workers). Filter: Filter: SR of effects; (motivation AND retention).	SR of effects; SR addressing other questions	99	24
	Total articles:	*After elimination of duplicates:*		*23*
PubMed	systematic[sb] AND (medical school curriculum "primary health care" need); systematic[sb] AND (interprofessional team health social).		31	15
Health Systems Evidence	(interprofessional work)	SR	40	13
	Total articles:	*After elimination of duplicates:*		*25*
Health Systems Evidence	("human resources for health" AND planning AND data AND information AND systems); ("human resource information systems")		3	2
Health Systems Evidence	(human resources for health AND "information systems"); (HR AND management system)	SR of effects	27	2
	Total articles:	*After elimination of duplicates:*		*3*

**Number relevant after title and abstract screening*

Evidence Brief for Policy

Strengthening the primary health care system in Trinidad and Tobago to achieve universal health coverage, with emphasis on human resources for health

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