Capacity-Building in the Use of Health Data in Low- and Middle-Income Countries

Aurora O. Amoah, PhD, MPP, MPH

Summary

Challenges during the era of the Millennium Development Goals(MDGs) highlighted the need to focus on measurement of proposed development indicators. The post-2015 agenda presents an opportunity to address the measurement challenges, so as to accurately track the indicators under the Sustainable Development Goals (SDGs). Health systems in LMICs measurement that have are already experiences shortages in human resources, has not been a focal point for capacity building in using health data. We conducted an extensive literature review to determine the extent of capacity building activities in health data use in LMICs. Findings depict a collaboration among several stakeholders including the World Bank, the International Monetary Fund (IMF) and the United Nations (UN) specialized agencies, regional development banks, bilateral aid agencies all engaged in technical assistance. Implementing partner organizations are also engaged in conducting training workshops to improve data use to support programming efforts. In additional there are academic models involved, primarily public health training programs with coursework in epidemiology, research and statistics in several of the LMICs. Ultimately, there is a need to develop a framework for statistical capacity building in target countries, train a cadre of health workers with core competencies and skills in measuring progress in the health system, that could generate a sustainable demand for data use within the health systems of LMICs.

1. Introduction

The future of economic development is hindered by a wide range of health issues in developing countries.[1] Addressing these issues rests on correctly identifying the magnitude of problems and delivering the right solution. However, the ability to measure health in low- and middle-income countries (LMICs) is compromised by poor-quality data, data inconsistency, and lack of skills to use existing data to inform on global health investments.

Challenges encountered during the Millennium Development Goals (MDGs) were instrumental in highlighting the need for better measurement. The MDGs were eight, international, development goals (three of which were health related) on poverty, hunger, maternal and child mortality, communicable disease, education, gender inequality, and environmental damage. These goals were to be achieved between 2000 and 2015, with 21 quantifiable targets and 60 indicators. The challenges centered on the ability to measure and track progress on the selected indicators.[2] Since then, several stakeholders in the global health arena (donor and receiving countries, as well as multi-lateral and funding organizations) have echoed a commitment to improve measurement of indicators for the post-2015 agenda. The sustainable development goals (SDGs) period started in 2016, with expectations to attain the more detailed objectives by 2030. The comprehensive SDGS includes 17 goals, 169 targets and 232 indicators.[3] The biggest challenge will be obtaining quality data to monitor processes and calculate the overwhelming number of indicators for health systems known for weakness in statistical capacity.[4] The post-2015 agenda underlines the need to for accurate data and skilled personnel to use the data to track progress on the health-related goals.

Human resources are lacking in many areas of the health system. The solution has been to train clinical providers, which is a quick return on investment for improved health outcomes, thereby reducing the capability to document, evaluate, and interpret the processes and outcomes in the health systems. Without adequately skilled human resources,[5] many of the LMIC health systems will be unable to meet the challenge of measuring progress within and across the health systems. Decision-making based on poor data, will compromise the ability to make effective, meaningful policies to attain the SDGs goals.

The World Health Organization (WHO) Data Collaborative [6] is an inclusive partnership of international agencies, governments, philanthropies, donors and academics, with the common aim of improving health data. The primary goals are to: *(1) enhance capacity at the national and sub-national levels* and; *(2) identify barriers and practices to promote data usage and improve access to, and understanding of, the data.* The following analysis seeks to determine the role, efforts, and activities of a myriad of organizations that meets the Data Collaborative's goals of improving capacity-building in data use in LMIC health systems.

2. Background

a. Measurement framework and health data

WHO's framework guides the measurement of progress in health systems. The framework consists of six building blocks (service delivery, health workforce, health informatics systems, access to medicines, financing, and leadership and governance) that lead to desired outcomes (improved health, responsiveness, social and financial risk protection, and improved efficiency) in the presence of access and coverage, and under optimal safety and quality. *Health information systems* are one cross-cutting issue that affects all the other building blocks. Assessing the strength of each block within is based on calculating indicators from data generated in the health system.[7] The framework is a simplified version of a complex, inter-related health sector and excludes aspects of behavioral and social determinants of health. In addition, a health sector is inherently intertwined with other issues, such as the environment and agriculture.

Health data is generated both inside and outside the building blocks of the WHO framework. The data originates at different levels of an often pyramid structure, with the community level being the broadest and the initial point of contact with the population. These community levels are grouped under health districts, forming geographical provinces that then report to national-level offices and, subsequently, to global partners.[8] Household surveys are usually targeted and implemented at the community level and require sophisticated statistical expertise to generate a data for analysis that is representative of the national population. This periodic survey undertaking is expensive, and often a collaboration effort between national and

global partners. Some of these surveys are part of the Multiple Cluster Indicator (MIC) survey, and the household level Demographic Health Survey (DHS).[9]

Health facilities are a particularly good source of data (for patient-level and healthcare worker-level information, clinical practices, and quality of care) and can be collected as part of a survey such as the DHS Service Provision Assessment and the WHO SARA tool or the World Banks Service Delivery Assessment survey.

Health facilities also generate a wealth of administrative data from providing routine care. There are also nationally coordinated data collections, such as vital records and surveillance data across different levels of the health system. These statistics systems are particularly essential to measuring health outcomes such as mortality and birth rates. Electronic medical records (EMRs) or District Health Information Systems (DHIS) are used to collect and analyze data at both the facility and district levels. Data research, monitoring and evaluation for specific projects also occur at any level of the health systems, depending on the project objective.

b. Competencies and skills for using health data

Generating and using health data is often a subset of a broader national statistical system. The continuum of effective data processing starts with collection, preparation, analysis, interpretation, and subsequently dissemination. Along this continuum, there is a demand for diverse skills and the use of various tools. Along the continuum of the data process, and within the tiers of the health system and the building blocks, the various skills in the data production process include research, statistics, information technology, health evaluation, operation research, demography, epidemiology and other public-health skills. The quality of data is critically important at the initial stages because the analysis and interpretation reflects the data quality. Poor data leads to inaccurate interpretation and subsequently inadequate policies.

The processes and skills needed across the continuum overlap, especially with the evolution of data-analysis tools built onto data-collection systems, such as the DHIS. The availability of appropriately trained staff, with analytical, numerical and statistical skills, is critical.[10] A review of vital statistics systems in LMICs showed that a majority were not functionally ready to support the recommended SDG indicators. Vital registration systems cannot be established overnight, and the capacity to implement a household survey must be gradually built up. [10] International donors have largely focused the direction of data collection based on their investment needs. This has generated a fragmented, sometimes parallel system of measurement. The gold standard for health data is large-household and facility surveys periodically collected by multi-lateral agencies in collaboration with national statistical programs. These often generate large data sets and follow-up publications that are primarily analyzed by statisticians with relevant skills, mostly in the donor countries.[11] These publications are often not readily available, timely, or relevant to support a system with changing health needs. The focus on survey data excludes administrative and programming data, so there are parallel streams of disease-specific data for programs such as Stop Transmission of Polio (STOP) and U.S. President's Emergency Plan for AIDS Relief (PEPFAR) that established separate surveillance systems.

c. Capacity-building in using health data

It is important to have appropriately trained workers with the skills to implement a data-processing continuum to support analysis that reflects the reality within health systems, estimates the effectiveness of policies, informs new policies and health programming, and tracks progress on goals.

Developing capacity-building is essential.[12] The recurring concept among various definitions of *capacity-development* is that it is a process , which enables individuals, communities, organizations, and systems to improve their abilities to attain objectives and maintain ownership of the process. Some definitions include the essential elements of *continuity* and *sustainability*[13] to address new challenges.[14] *Expected outcome* is also added to processes, such as improvement in development [15]or commitment to health improvement in health and other sectors to prolong and multiply health gains.[13] The United National Economic Commission for Africa (UNECA) captures all these aspects in a concise definition: "*[A] process through which individuals, groups and organizations, and societies deploy, adapt, strengthen, and maintain the capabilities to define, plan and achieve their own development objectives on an inclusive, participatory, and sustainable basis.*" Training and technical assistance are the beginnings of capacity-development, but it can extend to creating channels by means of partnerships, policy and leadership, through which this learning can be transferred into sustainable action.[16]

Unfortunately, capacity-building in statistics has not met these working definitions. Capacity-building in the health workforce focused on producing a clinical or health-service provision workforce, with an emphasis on reducing disease incidence and prevalence, or improving health outcomes. This limited health workforce, which is not formally trained in statistical work, research or monitoring and evaluation, stopgaps the statistical human resource in the health system, in addition to their clinical duties. Statisticians trained at the national level in receiving countries also may not have the competence to initiate large surveys, since their role in these activities has been sidelined to assisting statisticians from donor nations. Lessons derived from the inability to attain the MDGs and limitations in procuring the data to calculate the list of

indicators led to a call for capacity-building in regards to measuring process and accountability.[17]

3. Methods

We conducted a comprehensive literature review (peer-reviewed, white papers and grey literature) and website search for documents pertaining to capacity-building on health data targeted to LMICs from 2007 to 2017. Prior capacity-building in statistics/data related work was limited to conventional approaches that focused on human-resource trainings and technical solutions, such as developing portals for reporting donor- and, disease-specific indicators with a strong emphasis on producing data and identifying data gaps, rather than using the data [18]. During this decade long period, the MDGs ended in 2015, with a transition to the SDGs, and a call for additional capacity-development of national statistical workforces. Publications were included if they had the minimum of training and technical assistance. The search was broken up into two phases:

a. Mapping global organizations, universities, partnerships and workshops

We conducted a parallel search of online databases on capacity-building on data use in LMICs health systems using the keywords (*Capacity building* or *training*) *and* (*data use* or *data analysis* or *statistics* or *research* or *evaluation* or *epidemiology*) *in global health*. Pubmed, the NIH database for peer-reviewed journals, was used to pull the literature. We also searched Google Scholar, a database that archives white papers, grey literature and peer-reviewed literature because several capacity-building activities were also likely to be included in project reports. Finally, a wider Google search was conducted to find organizational websites, blogs, and brochures.

b. Academic models with a focus on teaching practical data analysis

To search for academic models or programs, we amended the prior search and conducted a parallel search across the same databases. The keywords for the parallel search for the academic models were: (*Capacity building* or *training*) and (*data use* or *data analysis* or *statistics* or *research* or *evaluation* or *epidemiology*) and (*public health training* or *academic*) *in global health.*

After a quick review of the initial literature, we eliminated those that did not meet the criteria of capacity building in the LMICs. From the remaining literature, we also looked for additional projects/activities mentioned in the citations, notes, and references.

4. Results

a. Capacity-building in data use across organizations

From the literature review, we found 55 organizations involved in capacity building in data use in LMICs. Several multilateral organizations, including the World Bank, the International Monetary Fund (IMF) and the United Nations (UN) agencies, are engaged in technical assistance, capacity-building in data use, and funding from some bilateral aid agencies. Some programs in the World Bank specifically focus on building capacity in statistics, including the Development Grant Facility[19, 20], the Trust Fund for Statistical Capacity-Building[17, 21-23], the Technical Assistance in Statistics (TAS) from the Development Data Group (DECDG) [20], the Center for Development Data (C4D2)-Living Standard Measurement Studies)[24], and the IMF's General Data Dissemination System (GDDS), targeted to LMICs[25].

The UN's specialized agencies, including WHO[21, 26, 27], UNICEF[17, 21, 28], UN-STAT[21, 29], UNAIDS[30], UNFPA[20, 31-33], and UN Global Pulse Lbs [34] are all involved with statistical capacity-building in health, as well as technical assistance for member countries.

The UN regional Economic and Social Commissions (UNECA[20, 35], UNSCAP[20, 36], UNSCAP-SIAP[20], UNELAC[20, 21, 37], and UN ESCWA[20, 38]) also provide technical assistance via workshops to member states in their geographic regions. Like the economic and social commissions, the regional banks (AFDB[20, 39-41], ADB[20, 41], IADB[41]) also support statistical capacity by funding or providing technical assistance to the regional members, in partnership with other organizations. There are also bilateral initiatives in statistical capacity-building through the international development agencies of some donor countries, including Sweden [12], Norway[12], Canada, France, Germany, Japan, and the UK[20]. Concurrently, the UK is the largest funder for the World Bank Trust Fund for Statistical Capacity Building[23]. The EU and the US government also sponsor specific programs in LMICs to support program monitoring and evaluation. Eurostat provides direct technical assistance to the African Union and the Association of Southeast Asian Nations[42]. The US initiatives include the President's Initiative for AIDs Relief (PEPFAR)[43], which encourages accountability through program monitoring and evaluation. Other entities include the US Census Bureau[20], the Centers for Disease Control & Prevention (CDC), which sponsors the Field Epidemiology Program (FETP)[44, 45] and STOP Polio, in collaboration with WHO, UNICEF, and national Ministries of Health[46]. Other regional initiatives include the LATIN-MH, funded by the NIH.[47] The NHLBI-UnitedHealth Global Health Centers of Excellence Program [48] is funded by the NHLBI to develop early-stage investigators. The Latin American and Caribbean region also has regional partnerships, such as CARICOM [20, 33] and MECOVI[20, 21], engaged in statistical capacity-building in the Latin American region as part of their wider developmental agenda.

Multi-lateral partnerships like Partnership in Statistics for Development in the 21st Century (Paris21)[20, 29] and the Health Data Collaborative[27] have similar interests in

aligning measurement to support international development goals in the LMICs. Whereas Paris21 champions improvement in the general, national statistical framework, the Health Data Collaborative emphasizes health under the leadership of the WHO. Private funding organizations also directly fund projects emphasizing data use in the health system. These include the Bloomberg Foundation's Data for Development [49] and the Africa Health Initiative by the Doris Duke Foundation.[50-53] The Hewlett Foundation and the Wellcome Trust, with others, fund the In-depth Network [54], which organizes workshops and seminars to improve routine use of health data. Universities also partner with other organizations to implement programs with strong monitoring and evaluation components. These include MEASURE, led by the University of North Carolina [55-70], and the University of Oslo's Health Information System Programme (HISP) [71, 72]. Measure Evaluation includes various implementation partners, such as John Snow Inc, Palladium, Management Sciences for Health, and ICF, under which MACRO International has been funded to implement the Demographic Health Survey in more than 90 countries. [9] The Better Immunization Data (BID) Program, under PATH [73, 74] and funded by the Bill and Melinda Gates Foundation, is working to improve data use across health systems in LMICs.

b. Academic models engaged in capacity-building in data use

The academic models and programs are shown in Table 2 by region, starting with Africa and the Middle East, East Asia and the Pacific, South Asia, and then Latin America and the Caribbean. There are two key, regional, educational models – the Field Epidemiology Program (FETP) and the In-depth Network – which also present in the various countries, and are also grouped with the organization capacity-building programs shown in Table 1.

Africa and Middle East Region

There were 56 universities and research institutions across 23 countries in Africa, primarily focusing on graduate-level education. Of these, 10 institutions are located in Egypt, nine in Nigeria, six in South Africa, and four in the Sudan. The FETP programs (Advanced, Intermediate, Frontline) are in 47 Sub-Saharan African countries, as well as North Africa (Morocco, Egypt) and the Middle East (Oman, Iraq, Jordan, Yemen, and Saudi Arabia). The institutions partner with national governments (particularly ministries of health), bilateral aid organizations (USAID, SIDA, and DAAD), foreign academic institutions (Tulane University, Indiana University, the University of Bruxelles, the University of Lovain, and the Antwerp Institute of Tropical Medicine), and UNDP WHO. Uganda's Makere University also has an intra-continental partnership with the universities of Ghana, Cape Town, and Addis Ababa. Measurements of success for the educational programs include: Number of graduates, number of enrolled students, research projects undertaken, and publications in peer-reviewed journals. Given that these are primarily academic institutions, the educational curriculum includes several health areas. Epidemiology, research, and primary-care are key areas of data-related activities. Several universities were established starting in the 1950s, with more recent institutions established in 2013. Although some institutions were established prior to the 1950s, such as Cairo University in 1908, public health programs did not start until much later. Similarly, the FETP program started in Zimbabwe in 1993.

South Asia

The geographic distribution in South Asia is limited to five countries, but 33 institutions. The majority are in Bangladesh (14) and India (nine), with fewer in Pakistan (five), Bhutan (three) and Sri Lanka (two). Like in Africa, these are mostly educational institutions in partnership with Harvard University School of Public Health and the Johns Hopkins School of Public Health. In

addition to the two research centers, there is also a regional center of excellence – the International Center for Diarrheal Diseases. Partners include regional LMICs or donor-country universities (University of Sydney, Johns Hopkins University, University of Oslo, Yale University) and aid organizations (Australia AID, UK AID), as well as national ministries of health, and UN organizations (UN FAO, UNICEF). Funding is primarily from donor countries, including universities, such as Johns Hopkins, and the CDC. FETP has also been established in most of the countries in the region.

East Asia and the Pacific

There are 34 programs across 12 countries. The FETP is multi-country, and the Loma Linda University has programs in both Cambodia and Laos. UCLA, Loma Linda, Johns Hopkins .and Sydney University are all institutions with programs in the region. Like the other regions, there are regional partnerships, as well as partnerships and funding from both private and donor-country governments (JICA). Some key health as areas include HIV/AIDS, maternal-child health, malaria, and health research capacity-building, including hospital-based research.

Latin America and the Caribbean

The CDC is collaborating to implement FETP programs in Latin America and the Caribbean. The NHLBI United Global Health Center of Excellence has been established in Argentina, Peru, Mexico, Panama, and Guatemala. There are other programs sponsored by health organizations, based on specific focal areas such as diabetes (Latin America Diabetes Association), Funders include the Spanish government, US agencies (CDC, USAID, and the NLHBLI), the University of St. Louis, the WHO and PAHO.

5. Discussion

There are several programs supporting statistical capacity-building in LMICs. These include UN agencies, regional economic commissions and banks, multi-lateral institutions and partnerships, bilateral support agencies, and specific programs targeted to specific health concerns in the region. Institutions in LMICs also partnered with regional and foreign institutions to implement training programs. There were numerous institutions in Africa, but few in Latin America. Bangladesh and Pakistan had the most programs within South Asia. The comparatively number of institutions in Africa and Bangladesh could be responding to a pressing need, based on comparatively weak health systems and poor health outcomes.[75]

Several national and local institutions are partnered with donor-country governments and institutions, with funding primarily coming from donor countries. The partnerships and collaborations are numerous, and similar programs are often funded through bilateral or multi-lateral government initiatives. With both technical assistance and funding primarily coming from donor countries, the content and approach to capacity-development can be greatly influenced and shaped by the needs of the donor countries.[11]

At the donor-government, multi-national level, there are several funds promising assistance for statistical systems. The dedicated funds are hard to trace, as they are part of the larger capacity-building and technical assistance effort. It is not possible to trace funding or how much emphasis is placed on health statistics. The PARIS21 partnership tracks statistical capacity-building, but their efforts does not break down the funding by sector for either receiving or donor countries. [11]

Capacity-building in statistics occurs in different formats. The improvement of national statistical systems and the support for large surveys, such as the DHS[9] and follow-up reporting, mostly occur at national level, but using donor-country statisticians. The production and use of

health data, however, occurs at different levels of the health systems.[8] Public health training, particularly on the job training programs and workshops, are an important aspect of the capacity-building in using health data use at all levels. These are primarily conducted by implementation partners to improve the use of health-facility data, such as the Better Immunization Data Initiative[74] and the District Health Information Systems (DHIS).[71, 72] FETPs emphasize use of epidemiological data to address outbreaks and surveillance needs.[44, 45] The need for different types of data at different levels of the health system pyramid creates an opportunity for different approaches to training (short-term workshops, ongoing training, and periodic training on both software and hardware used to collect and analyze data).

Measurements for success of the education programs are based on the number of students graduating, where they currently work, and the number of publications. These indicators help assess the size and scope of activities, and indicate how well students retain or apply the knowledge in their jobs to better understand or use data to support program efforts. Workshop trainings also measure immediate change in knowledge before and after, but continuity, as in consistent training, is limited with a majority of these programs. When trainings are short-term (one to four weeks) with limited follow up, skills are often not fully developed, and newly trained professionals are underequipped to apply their new skills in the work setting[76]. Monitoring and Evaluation and research capacity-building programs also tend to place a greater focus on developing and managing M&E systems and research studies, with little or no pedagogic emphasis on interpreting data and using it in decision-making.

There is a high probability that capacity-building in any form will be influenced by donor-country policies at all levels. Programs that are disease-specific, such as PEPFAR[43], UNAIDs, and STOP[46] are a part of these policies. As policy changes, budgets will be

redirected. An entire cadre of health workers must then be retrained to address another disease of interest to the policy makers.

6. Limitations

Capacity-building in data use occurs within a complex partnership model and at different levels of the health system. It can either be part of a general statistical capacity-building process, or be disease- or issue-specific. The programs listed are those that met the criteria to provide some aspect of capacity-building in the use of health data. The list also included primary partners, keeping in mind that there are many other partners involved in different aspects of program implementation, especially for multi-country projects. Budgetary amounts are not included for project activities in capacity-building in data use, as it is difficult to track amounts for capacity-building in the health sector targeted specifically to improve data use. We therefore assume that national-level programs engaged in statistical capacity-building are inherently developing statistical capacity to measure and track SDG health indicators.

7. Conclusion and recommendations

The ability to use data effectively should inform the trainee on how to analyze, critically review, and interpret data and understand which data they need and when they need it. [76] Core competencies or skills to use the data must exist at all levels of the health system to create a sustainable demand for data use.[57]

PARIS21 currently partners with all the key organizations, governments, and implementing partners and funders to engage in statistical capacity-building. Partnership between the Health Data Collaborative and Paris21 emphasize the importance of statistical capacity-building in the health sector, while concurrently clarifying progress in capacity-

building. It is a starting point in eliciting the gaps and determining the need for improving data use.

Partnerships are complicated and duplicated across health systems in regard to global health.[77] Recognizing the distinct dynamics of change at the individual, organizational, and institutional levels of capacity-development enables donors and partners to combine efforts.[12] Coordinating partnerships in capacity-building in data use is extremely important if the receiving countries are to sustain the knowledge processes and implement their own training programs in response to the needs of their health system.

A joint development framework for measurement in target countries is helpful to implement long-term, sustainable solutions for building a cadre of health workers with the necessary skills for effectively using data to inform improvement in health systems. Consistent, continuous training is important in sustaining measurement, and training that emphasizes the data-production process can support accurate indicators to track changes over time. [8, 78]

Despite funding from the donor countries, it is important to understand how new policies affect health systems of the receiving countries in the long term. This will require a concerted effort to shift the paradigm from capacity-building to capacity-development. [79]

It is possible to engage receiving countries in long-term efforts to improve use of data in health systems, while subsequently channeling the training to attain short-term goals or donor-specific interests.[12] Building capacity in using health data must be continuous, and health worker performance should be monitored and evaluated over time, with consistent training or recommended trainings to sustain the knowledge. The implementation of any new health projects should fit into the overall measure framework for the target country and subsequently meet the

needs of the funding entity, while emphasizing sustainability and retention of trained health workers.

Health workers must recognize the need for data that can effectively support health system interventions and accurately measure progress toward both national and international health goals. The ability to measure health goals are dependent on the availability of accurate, reliable and quality data sets from different sources including survey, administrative data from both public and private actors.[80] Strong Health Information Systems (HIS) are a critical challenge to reaching development goals because health system performance cannot be adequately assessed or monitored when HIS data is incomplete, inaccurate, or untimely.[81] To improve the use of data, capacity-building and development are essential for current health workers and new analysts through academic programs. The competencies needed for data can be built into standard M&E or basic research training.[57]

8. References

1. Heller, R.F., et al., *Capacity-building for public health: http://peoples-uni. org.* Bulletin of the World Health Organization, 2007. **85**(12): p. 930-934.
2. Carr-Hill, R., *Missing millions and measuring development progress.* World Development, 2013. **46**(2): p. 30-44.
3. Statistics, U.N. *SDG Indicators*. [cited 2017 December 21]; Available from: https://unstats.un.org/sdgs/indicators/indicators-list/.
4. Organization, W.H., *Health in 2015: From MDGs, millennium development goals to SDGs, sustainable development goals*. 2015: World Health Organization.
5. Guilbert, J., *The World Health Report 2006: working together for health.* Education for health (Abingdon, England), 2006. **19**(3): p. 385-387.
6. Collaborative, H.D.; Available from: https://www.healthdatacollaborative.org/.
7. Organization, W.H., *Monitoring the Building Blocks of Health Systems: A handbook of Indicators and their Measurement Strategies*. 2010: Geneva, Swizterland.
8. AbouZahr, C. and T. Boerma, *Health information systems: the foundations of public health.* Bulletin of the World Health Organization, 2005. **83**(8): p. 578-583.
9. Macro, I., *ICF International Wins $189 Million Contract with U.S. Agency for International Development*. 2013: Fairfax, VA.
10. Ministry of Foriegn Affairs of Denmark-DANIDA, *Monitoring and Indicators in the Health Sector.* 2006.
11. Loup, J., *The state of human development data and statistical capacity building in developing countries*. 2000, Human Development Report Office (HDRO), United Nations Development Programme (UNDP).
12. Sida Joint Evaluation, *Joint Scandanavian Evaluation Support to Capacity Development*. 2016.
13. Hawe, P., et al., *Indicators to help with capacity building in health promotion*. 2000: Australian Centre for Health Promotion.
14. Health, W.C.o.S.D.o. and W.H. Organization, *Closing the gap in a generation: health equity through action on the social determinants of health: Commission on Social Determinants of Health final report*. 2008: World Health Organization.
15. Programme, U.N.D., *UNDP Strategic Plan 2008-2011.* 2008.
16. Loureiro, M.I. 2017; Available from: http://www.oxfordbibliographies.com/view/document/obo-9780199756797/obo-9780199756797-0051.xml.
17. SDSN, O.D.W., The World Bank, PARIS21, CIESIN, Simon Fraser University, UNICEF,The One Campaign,, *A Needs Assessment for SDG Monitoring and Statistical Capacity Development.* 2015.
18. United Nations Economic Development for Africa, *Capcity Development Strategy.* 2014.
19. The World Bank *Development Grant Facility FY1 Report*. 2001.
20. The World Bank, *TECHNICAL ASSISTANCE IN STATISTICAL CAPACITY BUILDING*, T.A.T.i.D.D. Group, Editor. 1999.
21. The World Bank, *Building Statistical Capacity to Monitor Development Progress*, D.R. Group, Editor. 2002: Washington, DC.
22. Fu, H., *Supporting data for development: Applications open for a new innovation fund*, in *World Bank Blog* 2017.

23. DFID UKAID. *World Bank Trust Fund for Statistical Capacity Building [GB-1-113710]*. Available from: https://devtracker.dfid.gov.uk/projects/GB-1-113710/documents.
24. The World Bank. *Living Standards Measurement Study C4D2*. [cited 2017 December 29]; Available from: http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTLSMS/0,,contentMDK:23506656~pagePK:64168445~piPK:64168309~theSitePK:3358997,00.html.
25. International Monetary Fund (IMF), *IMF Standards for Data Dissemination.* 2017.
26. Newman Owiredu, M., et al., *Building Health System Capacity Through Implementation Research: Experience of INSPIRE-A Multi-country PMTCT Implementation Research Project.* J Acquir Immune Defic Syndr, 2017. **75 Suppl 2**: p. S240-s247.
27. World Health Organization. *More than numbers: how better data is changing health systems*. 2016; Available from: http://www.who.int/features/2016/health-data-collaborative/en/.
28. UNICEF *Approach to Health Systems Streghthening: A resource paper fo rthe UNICEF Strategy for Heatlh 2016-2030*. 2016.
29. The Patnership in Statistics for the 2I Century (PARIS21) *Review of Support to Statistical Capacity Building in Sub-Saharan Arica; From Reporting to Collaboration*. 2006.
30. UNAIDS. 2017 [cited 2017 December 21]; Available from: http://www.unaids.org/en/whoweare/about.
31. UNFPA , P., *UNFPA Support in Building National Capacities....* unknown.
32. C, M.B., *UNFPA's support in building national capacities for the production and use of population and related data/statistics in Sub-Sahara African countries: an overview* in *The PARIS21 Workshop for West Africa on 'The Use of Statistics in Development and Poverty Reduction Policies*, U.C.T.S. Team, Editor. 2003: Abuja, Nigeria.
33. Community, C., *Statistical Capacity Building for the Production of Key Statistics in the Carribean Community*
34. UN Global Pulse. *Engaging to build data innovation capacity in Africa*. 2016; Available from: https://www.unglobalpulse.org/news/engaging-build-data-innovation-capacity-africa.
35. (UNECA), U.N.E.C.f.A. *Demographic and Social Statistics*. 2017 [cited 2017 December 21].
36. ESCAP, S.; Available from: http://www.unsiap.or.jp/programmes/ms_materials/ms13.html.
37. (ECLAC), E.C.f.L.A.a.t.C. *Regional Capacity Building Workshops on Analysis and Dissemination of National Population and Housing Census Data*.
38. United Nations Economic and Social Commission for Western Asia (UNESCWA) *The Capacity-building Workshop on Information Society Measurement: Core Indicators, Statistics, and Data Collection*. 2006.
39. Fund, A.D. *Statistical Capacity Building Program for Managing Development Resutls-Second Annual Workplan*. 2015.
40. Bank, A.D. *Statistical Capcacity Building*. 2017. **2017**.
41. Nations, U. *Memorandum of Understanding on Cooperation of Statistical Activities*. 2013.

42. Eurostat. *SUPPORT TO REGIONAL CAPACITY BUILDING PROGRAMMES*. [cited 2017 December 28]; Available from: http://ec.europa.eu/eurostat/web/international-statistical-cooperation/support-to-regional-capacity-building-programmes.
43. The United States President's Emergency Plan for AIDs Relief, *The Power of Partnerships: Third Annual Report to Congress on PEPFAR (2007)*. 2007.
44. Jones, D.S., et al., *Building global epidemiology and response capacity with Field Epidemiology Training Programs.* Emerging infectious diseases, 2017. **23**(Suppl 1): p. S158.
45. Lopez, A. and V.M. Caceres, *Central America Field Epidemiology Training Program (CA FETP): a pathway to sustainable public health capacity development.* Hum Resour Health, 2008. **6**: p. 27.
46. Kerr, Y., et al., *Lessons Learned and Legacy of the Stop Transmission of Polio Program.* J Infect Dis, 2017. **216**(suppl_1): p. S316-s323.
47. Bonini, B.B., et al., *LATIN-MH: a model for building research capacity within Latin America.* Glob Ment Health (Camb), 2017. **4**: p. e2.
48. Bloomfield, G.S., et al., *Training and Capacity Building in LMIC for Research in Heart and Lung Diseases: The NHLBI-UnitedHealth Global Health Centers of Excellence Program.* Glob Heart, 2016. **11**(1): p. 17-25.
49. Bloomberg Philanthropies; Data for Health Initiative *Bloomberg Philanthropies' Data for Health Initiative is Closing Gaps in Health Data in 19 Countries*. 2017.
50. Mutale, W., et al., *Improving health information systems for decision making across five sub-Saharan African countries: Implementation strategies from the African Health Initiative.* BMC Health Serv Res, 2013. **13 Suppl 2**: p. S9.
51. Hirschhorn, L.R., et al., *Approaches to ensuring and improving quality in the context of health system strengthening: a cross-site analysis of the five African Health Initiative Partnership programs.* BMC Health Serv Res, 2013. **13 Suppl 2**: p. S8.
52. Thomson, D.R., et al., *Applied statistical training to strengthen analysis and health research capacity in Rwanda.* Health Res Policy Syst, 2016. **14**(1): p. 73.
53. Gimbel, S., et al., *An assessment of routine primary care health information system data quality in Sofala Province, Mozambique.* Popul Health Metr, 2011. **9**(1): p. 12.
54. Indepth Network. [cited 2017 December 29]; Available from: http://www.indepth-network.org/about-us/what-we-do-network.
55. Nutley, T. and H. Reynolds, *Improving the use of health data for health system strengthening.* Global health action, 2013. **6**(1): p. 20001.
56. Nutley, T., S. McNabb, and S. Salentine, *Impact of a decision-support tool on decision making at the district level in Kenya.* Health Research Policy and Systems, 2013. **11**(1): p. 34.
57. Nutley, T., *Improving data use in decision making. An intervention to strengthen health systems.* 2012.
58. Measure Evaluation (Li M, M.A., Nutley T), *Applying User-Centered Design to Data Use Challenges: What We Learned*. 2017.
59. MEASURE Evaluation PIMA, *Understanding Data Demand and Use in Kenya – Successes and Challenges in Kakamega, Kilifi, and Kisumu Counties.* 2017.
60. Measure Evaluation *Data Visualization That Works - Facilitating HIV Program Targeting: Case Examples and Considerations*. 2016.

61. Measure Evaluation *Strengthening Orphan and Vulnerable Children Programs with Data: Creating a Culture of Data Demand and Use*. 2014.
62. Measure Evaluation *Improving Demand for and Use of DataStrengthens HIV/AIDS Programs in Rwanda*. 2012.
63. Measure Evaluation *Data Demand and Information Use in the Health Sector: Case Study Series*. 2008.
64. Measure Evaluation *Strengthening Family Planning Programs with Data: Creating a Culture of Data Demand and Use*. 2014.
65. Ikamari L, A.A., Akinlo A *Decision Maker Perceptions in Kenya and Nigeria: an Assessment of Data Use Constraints*. 2007.
66. Brodsky I, N.I. *Data Use in the Democratic Republic of the Congo's Malaria Program: National and Provincial Results*. 2017.
67. Foreit, K., S. Moreland, and A. LaFond, *Data demand and information use in the health sector: conceptual framework.* Chapel Hill, NC: MEASURE Evaluation, Carolina Population Center, 2006: p. 1-17.
68. Harrison, T. and T. Nutley, *A review of constraints to using data for decision making. Recommendations to inform the design of interventions.* 2010.
69. Fapohunda B, *Using Health Facility Assessment Data to Address Programmatic Questions: Illustrative Examples for Program Managers.* 2012.
70. Moreland, S., et al., *Data use in the Indian health sector.* 2010.
71. Braa, J., A. Heywood, and S. Sahay, *Improving quality and use of data through data-use workshops: Zanzibar, United Republic of Tanzania.* Bulletin of the World Health Organization, 2012. **90**(5): p. 379-384.
72. Ledikwe, J.H., et al., *Establishing a health information workforce: innovation for low- and middle-income countries.* Hum Resour Health, 2013. **11**: p. 35.
73. Initiative, B.I.D. *Annual Reprort April 2015 to March 2016:*. 2016.
74. Better Immunization Data Initiative *Data Use*. 2017.
75. Organization, W.H., *The world health report 2000: health systems: improving performance*. 2000: World Health Organization.
76. Clotteau, G., et al., *Building Capacities for Results-Based National M&E Systems.* Influencing Change, 2011: p. 171.
77. Ruger, J.P. and D. Yach, *The Global Role of the World Health Organization.* Glob Health Gov, 2009. **2**(2): p. 1-11.
78. AbouZahr, C., et al., *The way forward.* Lancet, 2007. **370**(9601): p. 1791-9.
79. Jütting, J. *Capacity Development: a changing framework*. First UN Data Forum; Available from: https://undataforum.org/WorldDataForum/capacity-building-yes-but-how-to-do-it/.
80. Attaran, A., *An immeasurable crisis? A criticism of the Millennium Development Goals and why they cannot be measured.* PLoS medicine, 2005. **2**(10): p. e318.
81. Mutale, W., et al., *Improving health information systems for decision making across five sub-Saharan African countries: implementation strategies from the African Health Initiative.* BMC health services research, 2013. **13**(2): p. S9.
82. Vital Wave *Case study: Improving Data Use in Sub-Saharan Africa*. 2015.
83. Mpofu, M., et al., *Strengthening monitoring and evaluation (M&E) and building sustainable health information systems in resource limited countries: lessons learned*

from an M&E task-shifting initiative in Botswana. BMC Public Health, 2014. **14**: p. 1032.

9. Appendix/Tables

Table 1-ORGANIZATIONAL INITIATIVES

	Organization	Specific Program	Partnership	Funder	Location	Geographic Coverage	Focal area and/objectives	Projects/activities	Data area
1	World Bank[19, 20]	Development Grant Facility	Multilateral, bilateral agencies, foundations, other private sector entities	Multilateral, bilateral agencies, foundations, other private sector entities	Washington, Country offices	Global	The Development Grant Facility (DGF) is the Bank's instrument for financing global programs and partnerships (GPPs), to promote collective action, addressing regional development challenges. Increasingly significant, GPPs engaged in fostering difficult health problems such as AIDS and malaria, in building networks to spread innovative ideas in education, in funding agricultural research, and promoting environmental sustainability, and, in improving the climate for trade, finance, and investment	Supports many statistical capacity-building initiatives and activities; workshops, TA, training, data activities. Support for designing. Statistical master plans, organizing workshops for ICP/PPP improvements, for poverty monitoring and evaluation, and resources for training institutes.	
2	World Bank [17, 21-23]	Trust Fund for Statistical Capacity-building	Donor countries and Paris 21	United Kingdom's Department for International Development (DFID), the Government of Korea and the Department of Foreign Affairs and Trade of Ireland. DFID is the largest contributor to the TFSCB	USA, country offices	Global	The goal is strengthening the capacity of statistical systems in developing countries	306 projects worldwide. TFSCB pays special attention to improving production and use of gender statistics, advancing the data foundation for measuring sustainable development, experimenting with innovative approaches in gathering, producing and using data; and making government data more accessible	National level indicators to measure SDGs
3	World Bank [20]	Technical Assistance in Statistics (TAS) Team of Development Data Group (DECDG)	Donor countries	These TA programs can be financed through Bank loans and grants as well as Bank administered trust funds.	USA, country offices	Global	Bank administered trust funds are not large enough to support large scale and long-term programs. The Bank has the ability to provide funding via loans, partially or entirely, for TA programs and projects in institutional capacity-building in statistics, which is the distinctive characteristics of the Bank that separates it from other international organizations.	The training module includes, but not limited to, training in international methodology for official statistical surveys; training in statistical software and other topics needed as background knowledge; and specialist training. The training activities will be deepened and diversified to proliferate their efforts and institutionalized by training the trainers for sustainable knowledge.	National level indicators
4	The World Bank's Research Group[24]	The Center for Development Data (C4D2)-Living Standard Measurement Studies	The Center also collaborates closely with academic institutions and research organizations worldwide			Member states	Rome-based hub for fostering methodological innovation and strengthening capacity in household surveys in low- and middle-income countries	Development of survey Instruments and other tools Support for planning and implementation Supply of manuals Help with preparation of abstracts and dissemination of results. continues to support the setting up and management of these surveys for measuring and understanding poverty	Sociodemographic data/SDGs
5	IMF[25]	General Data Dissemination System (GDDS)	Regional agencies, multilateral and bilateral institutions AFRISTAT PARIS21 World Bank Japan UK.		Washington, DC		improvement of data and statistical practices among members-to encourage member countries to improve data quality; to provide a framework for evaluating needs for data improvement and setting priorities in this respect; and to guide member countries in the dissemination of comprehensive, timely, accessible, and reliable economic, financial, and socio-demographic statistics.	Short-term technical assistance is supported with placement of long-term statistical consultants/advisors. in some cases, regional statistical advisors to provide ongoing technical assistance in specific areas. Efforts are reinforced by training courses and seminars offered to national statisticians on statistical methodologies and their applications. Course offered at the IMF Institute at headquarters and at the Joint Vienna Institute	National level Indicators
6	World Health Organization[21, 26, 27]	NA	Health data collaborative Paris21, UN	Member states	Geneva, regional and country offices	Global	The objective of WHO is the attainment by all peoples of the highest possible level of health. Health, as defined in the WHO	Supports member government management of health statistics. Managing information by assessing trends and comparing performance; setting the agenda for,	Health data

			regional organizations and banks Universities, Private foundations, Member states				Constitution, is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.	and stimulating research and development. Supply of software and TA for managing health surveys, immunization coverage, epidemiological data, surveillance systems	
7	UNICEF[17, 21, 28]	Multiple Indicator Cluster Survey (MICS) Programme		UN 67 Member nations	New York, Regional and country offices	Global	Improving the collection, analysis and use of data and information by strengthening the national health management, information, civil registration and vital statistics systems, and building on global tools and innovative technologies, including during health emergencies.	Through its MICS Programme, UNICEF provides in-country technical assistance and leadership to local researchers and organizations, conducts regional workshops on specialized topics in conjunction with government counterparts to enhance their capacity to understand, interpret, analyze, disseminate and use statistics.	Women and children, vital statistics systems, malaria, maternal mortality etc.
8	United Nations Statistics Division (UNSD)/ UN STATS[21, 29]			UN	New York, Regional and country offices	Global	UN stats works on the advancement of the global statistical system. Compile and dissemination statistical information, develop standards and norms for statistical activities, and support strengthening of national statistical systems	In addition to standard setting and dissemination, the UN has been hosting or co-hosting workshops on improving technical co-operation in statistics, and providing training for the national statistical systems of member countries.	National level Indicators
9	UNAIDS[30]	N/A	Ministries of Health	Donor countries, donations	Switzerland/Country offices	Global	Under a mandate from the United Nations General Assembly, UNAIDS works with all countries to collect and analyze data on their AIDS responses and to help build the capacity to generate and use strategic information. UNAIDS data have been trusted and used by countries and organizations around the world to guide and monitor their responses to HIV	Working with Ministries of health, providing guidance and tools to the National AIDS programs	HIV/AIDS
10	UNFPA[20, 31-33]	NA	CARICOM IADB	Member states	New York, country offices	Global-150 countries	UNFPA is the lead UN agency for delivering a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled. Provides reproductive health care for women and youth in more 150 countries	Supports social statistics capacity: population, demographic, and health indicators, priority to poorest countries where capacity is weakest. TA for countries' first censuses: technical elements, cartography, data processing, analysis and dissemination, including census-based poverty mapping; support with post conflict censuses.	Population and reproductive health
11	United Nations[34]	Global Pulse Labs	Executive Office of the United Nations Secretary-General	Member states	New York, Global Labs	Global	Global Pulse is mission is to accelerate discovery, development and scaled adoption of big data innovation for sustainable development and humanitarian action. Global Pulse used big data to inform polices on range of issues, primarily in the SDG agenda. Health projects includes: Advocacy monitoring through social data, impacts of the financial crisis on health and poverty in three countries and understanding immunization awareness and sentiments through analysis of social media data.	Pulse Labs bring together government experts, UN agencies, academia and the private sector to pioneer new methods and frameworks for using Big Data to support development goals. Pulse Labs tap into local knowledge and innovation, establish key partnerships, test and pilot real-time monitoring approaches at the country level, and support the adoption of proven approaches.	Big data applied to development
12	UNECA[20, 35]	Demographic and Social Statistics	Addis Ababa Plan of Action	Member states	Addis Ababa, Ethiopia	All African countries including	Supports statistical development: designing	Workshops on statistical organization, management,	National level statistical

			for Statistical Development in Africa (AAPA); Advisory Board on Statistics in Africa (ABSA); Forum of ABSA members DFID, PARIS21 World Bank			North Africa	statistical master plans and integrated information systems; implementing the SNA93 and improvement and development of basic economic statistics.	household sector accounts, international economic and social classifications, statistical database development and data dissemination strategies.	indicators
13	Economic and Social Commission for Asia and the Pacific[20, 36]				Thailand, country offices	53 Member states	Made up of 53 Member States and 9 Associate Members. ESCAP promotes rigorous analysis and peer learning in our core areas of work; translates these findings into policy dialogues and recommendations; and provides good development practices, knowledge sharing and technical assistance to member States in the implementation of these recommendations.	Substantive and other services to the Committee on Statistics, TA. including advisory, services and seminars, technical material workshops and training in statistics and information technology, especially with the statistical training programs of SIAP; review and coordination of revision of statistical standards collection, compilation and dissemination of statistical information on the region, and statistical support for analytical work, close collaboration and cooperation with regional, sub regional and other TA providers	National level statistical indicators
14	UNSCAP[20]	Statistical Institute for Asia and the Pacific (UN-SIAP)	Government of Japan -Japan International Co-operation Agency (JICA). UN-ESCAP UNDP			9 countries: Australia, China, Fiji, India, Japan, Malaysia, Republic of Korea, Singapore and Thailand	A subsidiary of the UN-ESCAP, UN-SIAP's mission is to provide professional training to statisticians on official statistics, and to help build training capability in ESCAP region.	Support for strengthened capacity for collection, analysis and dissemination of timely and high-quality support for training development; advice and on the- job training; preparation of training materials fellowships for general and advanced courses and workshops.	National level statistical indicators
15	UN ECLAC Economic Commission of Latin America and the Caribbean[20, 21, 37]		UNFPA US Census Bureau Caribbean Development Bank (CDB) Statistical Institute of Jamaica (STATIN)		Santiago, Chile with Sub regional offices in Mexico City and Port of Spain.	45 Member states, Latin America and the Caribbean	one of the five regional commissions of the United Nations. It was founded with the purpose of contributing to the economic development of Latin America, coordinating actions directed towards this end, and reinforcing economic ties among countries and with other nations of the world. The promotion of the region's social development was later included among its primary objectives.	Workshops on technical knowledge, methodologies and international standards; support for national institutional frameworks; translation and distribution of handbooks and newsletters on statistics, economic classifications, organization and good practice	National level statistical indicators
16	UN ESCWA Economic and Social Commission of Western Asia[20, 38]				Beirut, Lebanon	Member states	Assists member states develop capacity in poverty measurement, social and development indicators, national accounts, industrial statistics, ICP data; collects, assesses and compiles statistics, develops databases and disseminates statistics; promotes international standards, classifications, programs and systems for member states.	Training, workshops, expert group meetings, and technical manuals, analytical studies; research, surveys; conferences, expert group meetings, training workshops; symposia and seminars; support for development assistance activities dissemination information about activities to government and NGO agencies and the public.	National level statistical indicators
17	African Development	The African Development	WB IMF		Abidjan, Côte d'Ivoire	80-member countries	The overarching objective of the African Development Bank (AfDB) Group is to spur	TA for national accounts and poverty surveys through SDA programs and PRSP process; training, equipment	National level statistical

	Bank[20, 39-41]	Bank, the African Development Fund and the Nigeria Trust Fund	UN Regional Development Banks ICP-Africa Paris21				sustainable economic development and social progress in its regional member countries (RMCs), thus contributing to poverty reduction. Supports many activities aimed at developing and strengthening statistical systems and institutions in member countries; manages ICP Africa.	and funding of operations and incentives for local staff.	indicators
18	Asian Development Bank[20, 41]		WB IMF UN Regional Development Banks Paris 21	Member states	Manila Philippines	67 countries including several small Pacific Island countries.		TA for statistical legislation, organization and management of systems, infrastructure, training and apprenticeship; data collection, dissemination; especially for measuring and monitoring poverty and Goals; small countries adapting national accounts to international standards.	National level statistical indicators
19	Inter-American Development Bank[41]		WB UN-ECLAC for MECOVI; ASDI DFID for revamping Honduras national statistical System	Member states	Washington, DC	IDB is owned by 48-member states, of which 26 are borrowing members in Latin America and the Caribbean	Sponsors the MECOVI Program (for the Improvement of the Surveys and the Measurement of Living Conditions) in Latin America and the Caribbean, and other initiatives to improve quality, opportunity, relevance and accessibility of household survey data, and to disseminate and exchange best practices, improve foreign trade statistics, and census management.	TA to statistical institutes, on trade and census execution; regional workshops and training courses.	National level statistical indicators
20	Canada	CIDA	UNESCO Institute of Statistics Statistics Canada			Lithuania; Poland, Slovakia, Slovenia, Bulgaria, Uganda, Tanzania and Kenya, Mozambique			
21	Denmark[12]		EU German Statistical Office Norway Sweden East African Secretariat.			Lithuania; Poland, Slovakia, Slovenia, Bulgaria, Uganda, Tanzania and Kenya, Mozambique	Statistics Denmark supports statistical capacity-building to assist countries applying for membership of the EU to adjust their statistical production to the requirements of the EU, and to assist with developing countries' poverty measurement.	TA and training programs for development of a statistical business register, transport statistics, national accounts, analysis and dissemination of statistics, institution building, district based statistics, IT strategy.	
22	Finland					Brazil, Gaza	Includes statistical capacity components in some projects.	TA for Amazon Forest: Criteria and indicators for sustainability of the Amazon forest; and the Gaza land management project: "Improved land registration system" to form a basis for land ownership and land taxation.	
23	France		PARIS 21 Partner AFRISTAT CSLP Fonds de			Africa, Latin America, and Eastern Europe	Supports PARIS 21 and other statistical capacity efforts; particularly in Sub-Saharan Africa.	Support for creation and development of Afristat; development of tools such as ERETES (national accountancy software) and methods of collection and statistical analysis suitable for developing countries; statistics schools in Africa.	

			solidarité prioritaire (Priority Solidarity Fund)						
24	Germany		European Union German Ministry for Economic Development and Cooperation			Candidate countries of the EU, the CIS countries and Mongolia, China, and plans to work with other newly industrialized countries of East and South East Asian regions.	The Federal Statistical Office supports technical cooperation especially for countries in transition to market oriented systems.	Support for all official statistics, reorganization of statistical offices, methodological assistance for programs of advanced training, public relations; project planning, expert missions, workshops and seminars, study visits and expert evaluations	
25	Japan	JICA	Statistical Institution for Asia and the Pacific (UNSIAP) World Bank's PHRD grants, IMF's GDDS projects			ASEAN members	Japan International Cooperation Agency (JICA), supports technical cooperation for statistical capacity-building around the world, but mainly in Asia and the Pacific region.	Training courses, technical cooperation, study programs and expertise in administrative management; collection, compilation, dissemination and analysis of official statistics; application of IT to statistical processes; agricultural industrial, labor, population and agricultural statistics.	
26	Norway [12]	Statistics Norway and NORAD	Eurostat Efta's Statistical Office Statistics Sweden a new Scandinavian cooperation and other bilateral agencies World Bank UNDP PARIS21				support institutional cooperation to ensure sustainable statistical capacity-building.	Support for all statistical work: analysis, national accounts resident advisors, short term consultants, study visits, joint papers, quality control and follow up.	
27	Sweden .[12]	Statistics Sweden SIDA	UNDP PARIS21 Joint venture with Denmark and Norway for assistance project in Mozambique			Sub-Saharan Africa: Mozambique, Namibia, Tanzania, SADC; Laos, Vietnam, Honduras	provides technical cooperation for capacity-building	Training of statisticians / users: monitoring and evaluation of poverty reduction strategies.	
28	Switzerland	Swiss Federal Statistical Office .				Uganda, Malawi, Nepal, Pakistan, Georgia, Anguilla and the Ukraine	provides co-operation and TA based on collaboration and regional interests	Advocacy for building statistical capacity support for development and implementation of national statistical strategies execution and analysis of household surveys and population censuses development of administrative systems and poverty monitoring strategies organizational and	

								management advice.	
29	United Kingdom[23]	DFID World Bank Trust Fund for Statistical Capacity-building				Global LMICs	Provides financial and technical support for many statistical capacity-building activities in partner countries to contribute to global and regional statistical capacity-building initiatives and to efforts to increase international awareness of the value of statistics. The Trust Fund for Statistical Capacity Building (TFSCB) has been established to strengthen the capacity of statistical systems in developing countries. It is a multi-donor fund, administered by the World Bank, which provides grants at national, regional and global level. The Trust Fund supports improvement in the collection, processing, analysis, storage, dissemination and use of timely, good quality statistics to support poverty reduction and economic and social development. The United Kingdom's Department for International Development (DFID is the largest contributor to the TFSCB	Advocacy for building statistical capacity support for development and implementation of national statistical strategies execution and analysis of household surveys and population censuses development of administrative systems and poverty monitoring strategies organizational and management advice.	
30	EUROSTAT[42]	Pan African Statistics Programme	African Union	European Union		African Union	Establishes regional projects to help strengthens national statistical offices' work, and special initiatives such as the MEDSTAT program for agricultural and social statistics.	Assistance with: implementing overall statistical programs; training in statistical techniques, management, computer tools; consolidating institutions (preparing master plans, laws on statistics, etc.).	National level statistical indicators
31	EUROSTAT[42]	EU-ASEAN Capacity Building Project for Monitoring the Integration Process and Statistics (COMPASS)	ASEAN	European Union		ASEAN	Eurostat supports this regional statistical capacity-building program for the ASEAN region. The program helps ASEAN integration through the availability and utilization of more timely, comparable and relevant information. The program is funded under the EU's Development Cooperation Instrument (DCI) with a budget of €845 million for the period 2014-2020.	Assistance with: implementing overall statistical programs; training in statistical techniques, management, computer tools; consolidating institutions (preparing master plans, laws on statistics, etc.).	National level statistical indicators
32	The President's Emergency Plan For AIDS Relief (PEPFAR/Emergency Plan)[43]	State Department Office of the Global AIDS Coordinator	Implementing agencies are: Department of State, USAID, HHS, CDC, Department of Defense (DoD) Department of Commerce (DoC) Department of Labor (DoL), Department of	USA government	USA	Global (Focus on HIV prevalent nations, mostly in Africa)	United States governmental initiative to address the global HIV/AIDS epidemic and help save the lives of those suffering from the disease, primarily in Africa.	To support a single national monitoring and evaluation (M&E) system. Coordination with international partners is central to PEPFAR's strategic information efforts. Initiative from 2006 include expanding use of results reports, expanding use of data to improve HIV service provision, scaling up HMIS infrastructures to accommodate service provision sale up.	HIV/AIDS and related health issues

			the Treasury, Peace Corps						
33	Latin America Treatment and Innovation Network in Mental Health (LATIN-MH)[47]	NA	Latin America regional collaboration with Brazil and Peru	National Institute of Mental Health (NIMH) of the National Institutes of Health (NIH)			LATIN-MH is a model for building research capacity within Latin America. Young professionals are enrolled in a fellowship to help them receive specific training in mental health research.		Mental Health Research
34	The NHLBI-UnitedHealth Global Health Centers of Excellence Program[48]	NA	Duke Global Health Institute St John's Medical College, India; Center for Health Research, Canada; Center for Chronic Disease Control, India; Chronic Disease Prevention Research Center, Tunisia; Department of International Health, JHSPH; AMPATH Moi teaching	United States National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services.	USA, Centers of Excellence	Global-11 centers in Tunisia Kenya South Africa Argentina Peru Mexico Panama Guatemala Bangladesh India China	NHLBI-UnitedHealth Collaborating Centers of Excellence was created to increase capacity in research in Neglected Tropical Diseases	A Training Subcommittee coordinated and developed an intensive, mentored health-related research experience for a number of early stage investigators from the 11 Centers of Excellence around the world.	Neglected Tropical Diseases
35	US Bureau of Census			US government		Global	The U.S. Census Bureau provides both short- and long-term technical assistance on a wide variety of topics related to censuses, surveys, and information systems. Over the past six decades, the Census Bureau has worked in over 100 countries. Supports establishment of official statistical offices in a number of countries; development of processes, staff, and skills, to help donor coordination and the setting of statistical priorities reside in the hands of the host country.	software for censuses, surveys, and information systems; designs for data collection, analysis, and dissemination; statistical publications and information exchange.	Survey, census data
36	Centers for Disease Control and Prevention[44, 45]	Field Epidemiology Training Program (FETP) & Epidemic Intelligence Service (EIS)	Ministries of health are our main partners in building and sustaining FETPs. FETP programs around the world are linked through networks that	US Government, country offices	USA	Global	We work closely with partner countries to establish FETPs across the globe. Our training programs create a cadre of well-trained disease detectives with the skills to gather critical data and turn it into action. Training focuses on "learning by doing"	Hand on training of recruited staff. Across 70 countries, with 10,000 trained	Epidemiological data

			share information and support one another. The largest of these networks is TEPHINET, which reaches more than 100 countries.						
37	The Stop Transmission of Polio (STOP) [46]	The Stop Transmission of Polio Data Management (STOP DM)	CDC, WHO, UNICEF, MOHs			Global	The STOP was initiated in 1999 to eradicate Polio. STOP data management (DM) assignment was created in 2002 as a mechanism to provide capacity development in the area of data management	The STOP Data Management training emphasizes a systems-focused approach to improving immunization and VPD surveillance data quality to develop system and human resource capacity for data utilization and strengthening information systems. STOP DMs are usually placed in the Expanded Program on Immunization (EPI) at the national level, and have played a critical role in developing system and human resource capacity to strengthen EPI immunization information and VPD surveillance systems	Polio Surveillance, immunization
38	The President's Emergency Plan For AIDS Relief (PEPFAR/Emergency Plan)[43]	State Department Office of the Global AIDS Coordinator	Implementing agencies are: Department of State, USAID, HHS, CDC, Department of Defense (DoD) Department of Commerce (DoC) Department of Labor (DoL), Department of the Treasury, Peace Corps	USA government	USA	Global (Focus on HIV prevalent nations, mostly in Africa)	United States governmental initiative to address the global HIV/AIDS epidemic and help save the lives of those suffering from the disease, primarily in Africa.	To support a single national monitoring and evaluation (M&E) system. Coordination with international partners is central to PEPFAR's strategic information efforts. Initiative from 2006 include expanding use of results reports, expanding use of data to improve HIV service provision, scaling up HMIS infrastructures to accommodate service provision sale up.	HIV/ AIDS and related health issues
39	Latin America Treatment and Innovation Network in Mental Health (LATIN-MH)[47]	NA	Latin America regional collaboration with Brazil and Peru	National Institute of Mental Health (NIMH) of the National Institutes of Health (NIH)			LATIN-MH is a model for building research capacity within Latin America. Young professionals are enrolled in a fellowship to help them receive specific training in mental health research.		Mental Health Research
40	The NHLBI-UnitedHealth Global Health Centers of Excellence Program[48]	NA	Duke Global Health Institute St John's Medical College, India; Center for Health Research, Canada; Center for Chronic Disease	United States National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services.	USA, Centers of Excellence	Global	NHLBI-UnitedHealth Collaborating Centers of Excellence was created to increase capacity in research in Neglected Tropical Diseases	A Training Subcommittee coordinated and developed an intensive, mentored health-related research experience for a number of early stage investigators from the 11 Centers of Excellence around the world.	Neglected Tropical Diseases

			Control, India; Chronic Disease Prevention Research Center, Tunisia; Department of International Health, JHSPH; AMPATH Moi teaching						
41	Health Data Collaborative[27]			UN organizations, Universities, Private foundations		Global with focus on LMICs	Partnership of international agencies, governments, philanthropies, donors and academics, with the common aim of improving health data. Countries are at the core of what we do, supported by donors, academics, UN agencies and civil society organizations.	Supporting donors, will be using common investment plans to strengthen health data system, supporting projects in Kenya, Malawi and Tanzania	Health Data-SDG indicators
42	Paris 21[20, 29]	N/A	European Union, IMF, OECD UN, World Bank, Bilateral and regional development agencies	OECD	Paris, France	Global	It is a global partnership of national regional and international statisticians, analysis development professionals and other uses of statistics. Promoting evidence based policy making and facilitate statistical capacity development	Regional, and country-level workshops; special task teams (e.g. on advocacy, statistical strategies, census, statistical capacity-building indicators, rural and agricultural statistics); studies (e.g. On statistical operations review for monitoring MDGs); support for information exchange (e.g. international meetings; quarterly newsletter, web-site, pro-poor policy films for country statisticians, poverty analysts and development agencies; statistical documents database. Currently tracking donor funds and reporting on capacity-building in statistics	National level indicators
43	Organization for Economic Co-operation and Development[20, 42]		UN Regional Commissions (UNECE, UNESCAP and UNECLAC) Statistical office of the European Union (EUROSTAT), Asian Development Bank Statistical Committee of the CIS. PARIS21			30-member countries, and nonmember countries	The Division for Non-Members of the OECD Statistics. Directorate provides TA in statistics to transition countries in East and Central Europe and FSU, the former Yugoslavia Republic, Asia and Latin America to meet international standards.	TA in regional or country workshops, advisory services; reports on conferences, workshops, methodologies; software development for nonmember countries for NA compilation, data editing, analysis, and composite leading indicators.	National level statistical indicators
44	International Comparison Program		The African Development Bank (AfDB), the UN Economic Commission for			More than 120 developing countries	ICP will support regional statistical capacity-building initiative in Africa, Asia, the Middle East, and Latin America and the Caribbean, and the CIS region.	Support, tools and training for price data collection Harmonized statistical concepts according to international norms and standards; providing a comprehensive and an integrated platform for statistical capacity-building; developing suitable software and systems	

			Africa (ECA), UN regional agencies in Latin America and the Middle East; CIS Secretariat Russian Goskonstat						
45	Caribbean Community (CARICOM)[20, 33]		OECD EUROSTAT France Spain Inter-American Development Bank (IDB) UNFPA	Inter-American Development Bank (IDB) UNFPA		Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, Curacao	Statistics Sub-program supports the region's plans for a single market / single economy, and interaction with the WTO, the free trade area of the Americas, and other international arenas.	Funds for TA projects in social statistics including health, trade data, environment and social statistics, national accounts and price data.	
46	MECOVI (see IDB, World Bank LCR) Regional Program for Improvement of the Surveys and Measurement of the Living Conditions in Latin America and the Caribbean[20, 21]		IDB, WB	IDB, WB		MECOVI has been active in Argentina, Bolivia, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, the Dominican Republic and the OECS countries	Established for the improvement of the surveys and the measurement of living conditions in Latin America and the Caribbean.	TA and funding to statistical institutes regional workshops and training courses to strengthen institutional capacity to plan and carry out household surveys with improved data quality, monitor poverty, improve trade data and census management; exchange best practices; ensure statistical underpinning of evaluation of targeted public programs. Country training -- Argentina, Bolivia, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay and Peru, and Ecuador, Honduras and the Dominican Republic. All Latin American countries participate in the regional training courses	Surveys and national level statistical indicators
47	In-depth Network[54]	In-depth Resource and Training Center		Hewlett Foundation, Sida and Wellcome Trust		45-member health research centers that observe through 49 HDSS field sites in 18 LMICs in Africa, Asia and Oceania	A global network of health and demographic surveillance systems (HDSSs) that provide a more complete picture of the health status of communities. Since they collect data from whole communities over extended time periods, they more accurately reflect health and population problems in low- and middle-income countries (LMICs). The HDSSs increasingly link population and health facility data to implement the new Comprehensive Health and Epidemiological Surveillance System (CHESS).	• The training centers works to strengthen the capacities of HDSS members and train their staff to conduct high quality health and demographic research. As well as enhance members' scientific productivity and improve on the quality of data collection, analysis and management. With a focus on building a pool of highly trained and efficient young researchers/scientists to conduct world-class research and ensure sustainable leaders for the respective HDSSs	Health and demographic data
48	Measure Evaluation [55-70]	Data Use and Demand	University of North Carolina, ICF International, John Snow Inc., Management	USAID; PEPFAR	USA	Global	To strengthen the collection and use of routine health data, improve country-level capacity to manage health information systems (HIS) and conduct rigorous evaluations, and to address health information gaps and challenges.	Workshop, webinars, other events. Peer to peer, small grants, supervised technical assistance, facilitating use of manuals, increasing understanding of evidence based, mentoring, training.	Data demand and use, data quality, data science, evaluation, geographic

			Sciences for Health, Palladium, and Tulane University						information systems, secondary data analysis, routine health information systems
49	PATH[73, 74]	Better Immunization Data (BID) Initiative	Tanzania Ministry of Health, Community Development, Gender, Elderly and Children; Zambia Ministry of Health; Gavi, the Vaccine Alliance; World Health Organization (WHO); WHO African Region; UNICEF; University of Oslo; Mohawk College.	Bill and Melinda Gates Foundation	Washington, USA	AFRO (Tanzania Malawi)	A primary goal of the BID Initiative is to improve data use at all levels of the health system. Building a data use culture requires products that ease data collection and visibility, policies to support the culture, and people who can enforce the policies by establishing effective practices	In Tanzania and Zambia, specific interventions such as data use guides, readiness assessments, and guidelines on supportive supervision complemented the use of the electronic immunization registry (EIR) to strengthen a culture of data use	Immunization data
50	Vital Wave[82]					Global	A small group of business managers from Hewlett-Packard's Emerging Market Solutions group provides research, advisory services, and implementation support to other technology companies.	VW works with corporations, development organizations, and governments to scale technology solutions for health, financial services, education, agriculture, and the environment. VW works in improving data use in Malawi and Ethiopia	Payment and surveillance data
51	Macro International[9]	Demographic Health Surveys	Collaboration with the U.S. Bureau of the Census and ORC Macro.	Mostly supported by USAID -- some World Bank, UNICEF or UNFPA funding (200 surveys in 62 countries		90 countries globally	Capacity-building in the Demographic and Health Surveys: Surveys .	450 staff in training programs Five-yearly surveys for data to monitor and evaluate population and health programs; development of basic documentation, questionnaires, interviewer's and supervisor's manuals, data processing guidelines, tabulation plan etc.; Development of proprietary software (ISSA) for data entry, editing and tabulation of DHS data; training workshops, on the job training in report writing; support of analysis work.	Health and demographic data
52	Doris Duke Foundation[50-53]	Africa Health Initiative	Selected institutions in five Population Health Implementation & Training (PHIT)	Doris Duke Foundation	USA	Africa	To catalyze significant advances in strengthening health systems by supporting partnerships that will design, implement and evaluate large-scale models of care that link implementation research and workforce training directly to the delivery of integrated primary healthcare in sub-Saharan Africa.	During the first phase five teams from four institutions were selected to implement proof of concept for 5 to 7 years. Phase two Lessons drawn from phase 1 are applied to more specific health issues including maternal and neonatal survival, developing platforms at subnational and district level for health research	Health facility data

			partnerships working in Ghana, Mozambique, Rwanda, Tanzania and Zambia						
53	Bloomberg Philanthropies[49]	Data for Health	The University of Melbourne Australia; CDC Vital Strategies; Union of North America; Johns Hopkins Bloomberg School of Public Health; World Health Organization; United Nations Economic Commission for Africa, United Nations Economic and Social; Commission for Asia and the Pacific, Australian Department of Foreign Affairs and Trade	New York	USA/Australia	Global	A four-year $100 million initiative aimed at improving health data in 19 low- and middle-income countries spanning Southeast Asia, Sub-Saharan Africa, and Latin America.	(1) Contribute to the development of a state-of-the-art health data technical package of guidance and tools for countries through a grant to WHO. (2) Currently on-going activities in 20 countries to assist governments with translating data into policy change, Bloomberg Philanthropies will support training programs for local officials that are led by organizations specializing in data use. This training will enable officials to better interpret data and use it to inform program and policy decisions.	Vital statistics
54	University of Washington[83]	International Training and Education Center for Health (I-TECH)	BID, MOH, WHO	Bill and Melinda Gates Foundation	Washington, USA	Global (Arica, Asia, the Caribbean, Eastern Europe, and the United States)	Global network that works with local partners to develop skilled health care workers and strong national health systems in resource-limited countries. I-TECH promotes local ownership to sustain effective health systems.	EMR, DHIS data, Continuous quality improvement in Namibia, Haiti etc	Data collection, production use and analysis. Clinical data
55	University of Oslo[71, 72]	Health Information Systems Programme (HISP)		The Research Council of Norway, NORAD, PEPFAR, UIO, The Global Fund	Norway	Global	The overall goal of HISP is to enable and support countries to strengthen their health systems and their capacity to govern their Health Information Systems in a sustainable way to improve the management and delivery of health services	60 countries using DHIS2. Implementation and relevant capacity-building associated to DHIS2. The DHIS2 Academies, seminars and trainings aim to strengthen national and regional capacity to successfully set up, design and maintain DHIS2 systems.	Public health system data DHIS2 tool for collection, validation, analysis, and presentation of aggregate and transactional data, tailored (but not limited) to

									integrated health information management activities

EDUCATIONAL MODELS-AFRICA AND MIDDLE EAST												
	Institution	Role	Year Established	Operational Status	Area Targeted	Partnership	Funders	Location	Geographic Coverage	Focal Area or Organizational/ Programme Objective	Projects/ Activities	Data Area
1	**Cairo University**	University	1908	Current	Graduate and undergraduate education	Cairo Institute of Statistical Studies and Research, Kasr Al Aini hospitals		Egypt	Egypt	Education	Epidemiology, Biostatistics, Research Methods, Applied Epidemiology, Health Systems Management, Nutrition	Environmental health, bacteriology, nutrition, parasitology, maternal and child health, community health, noncommunicable diseases, communicable diseases
2	**University of Cape Town**	University	1918	Current	Graduate and undergraduate education		National Research Foundation, Medical Research Council	South Africa	South Africa	Education	Public Health Medicine, Family Medicine, Occupational Medicine, Epidemiology and Biostatistics, Health Economics, Health Policy and Systems, Social and Behavioural Sciences, Environmental Health	HIV/AIDS, tuberculosis, cervical cancer, occupational and environmental lung disease, health care access and financing, health and human rights, social and behavioral aspects of health, women's health, maternal and child health
3	**Makerere University**	University	1922	Current	Graduate and undergraduate education	University of Ghana, University of Cape Town, University of Addis Ababa	Rockefeller Foundation, Johns Hopkins University, UNAIDS, European Union, UNICEF, Georgetown University, University of Antwerp, Bernard Nocht Institute, Bill and Melinda Gates Foundation, World Health Organization, GHI, CDC, Liverpool School of Tropical Medicine, MacMaster University, EINHORN, Save the Children, National Institutes of Health, Global Fund, Rotary, Harvard University, Irish AID, University of California, University of Connecticut, World Vision, Karolinska, FHI 360, Wellcome Trust, INDEPTH Network, London School of Hygiene and Tropical Medicine, Grand Challenges Canada, World Bank	Uganda	Uganda, East Africa, and Global	Education	Health Policy and Planning, Epidemiology and Biostatistics, Disease Control and Environmental Health, Community Health and Behavioral Sciences	HIV/AIDS, health systems strengthening, communicable diseases, noncommunicable diseases, immunization, adolescent health, sexual and reproductive health, tobacco use, field epidemiology, maternal and newborn health, epilepsy, mental health, injury and trauma, disability, water and sanitation, nutrition, substance abuse, disaster preparedness and response
4	**University of Kwa-Zulu Natal**	University	1946	Current	Graduate and undergraduate education	Kwa-Zulu Natal Department of Health	USAID, UNICEF, European Union	South Africa	South Africa	Education	Epidemiology, Biostatistics, Disease Prevention and Control, Maternal and Child Health, Women's Health, Health Systems Management, Public Health Medicine	Community health; malaria, tuberculosis, HIV/AIDS; rural healthcare; maternal, child, and newborn health; schistosomiasis; sexual and reproductive health; injury and trauma; health systems strengthening; hospital management; disease prevention and control
5	**University of Ibadan**	University	1948	Current	Graduate education		World Health Organization, Bill and Melinda Gates Foundation, Gates Institute at the Johns Hopkins University, the Centers for Disease Control and Prevention (CDC)	Nigeria	Nigeria	Education	Epidemiology and Medical Statistics, Environmental Health Sciences, Health Policy and Management, Health Promotion and Education, Human Nutrition, Institute of Child Health, Preventive Medicine and Primary Care	Reproductive health, family health, HIV, noncommunicable diseases, malaria, mental health, tuberculosis, sexual health, genetic conditions, respiratory infections
6	**Ain Shams University**	University	1950	Current	Graduate education			Egypt	Egypt	Education	Public health research within the Faculty of Medicine	Primary health care, environmental health,

												microbiology, community health, occupational health, parasitology
7	**University of Zimbabwe**	University	1952	Current	Graduate and undergraduate education	List of University partners can be found here: http://www.uz.ac.zw/index.php/about-uz/partnerships		Zimbabwe	Zimbabwe	Education	Field Epidemiology, Health Promotion, Biostatistics, Clinical Epidemiology, Occupational Safety and Health	
8	**University of Gondar**	University	1954	Current		Ministry of Health of Ethiopia, Ethiopian Field Epidemiology and Laboratory Training Program	World Health Organization	Ethiopia	Ethiopia	Education		
9	**Alexandria University**	University	1956	Current	Graduate education	Ministry of Health of Egypt	Public Health Organization of the Eastern Mediterranean	Egypt	Egypt	Education	Epidemiology, Biostatistics, Health of Hot Areas, Occupational Health, Nutrition, Health Systems Management, Environmental Health, Family Health, Microbiology	Communicable diseases, occupational health, nutrition, food hygiene and control, hospital management, maternal and child health, school health, elderly health, health information systems, tropical medicine, and many sub-categories
10	**University of Stellenbosch**	University	1956	Current	Graduate and undergraduate education			South Africa	Global	Education	Epidemiology, Biostatistics, Health Systems Management, Public Health, Human Nutrition	HIV/AIDS, malaria, tuberculosis, communicable diseases, reproductive health, mental health, noncommunicable diseases, health systems management, injury, trauma and rehabilitation, genetics
11	**Assuit University**	University	1958	Current	Graduate education			Egypt	Egypt	Education	Public health research within the Faculty of Medicine	Health sciences
12	**University of Nairobi**	University	1958	Current	Graduate and undergraduate education			Kenya	Kenya	Education	Epidemiology, Biostatistics, Health Systems Management, Health Policy, Disease Prevention and Control, Community Health Sciences	Nutrition, maternal and child health, occupational health, health promotion, health economics, community health, health education, communicable diseases
13	**Universite de Félix-Houphouët-Boigny**	University	1963	Current	Graduate education			Cote d'Ivoire	Cote d'Ivoire	Education	Public health, research methodology	Health sciences
14	**Universida de Eduardo Mondlane**	University	1963	Current	Graduate education			Mozambique	Mozambique	Education	Field and laboratory epidemiology, public health	Communicable diseases, malaria, community health, research capacity-building, environmental toxins, HIV/AIDS, maternal health, sexual and reproductive health, nutrition
15	**Suez Canal University**	University	1964	Current	Graduate education	Suez Canal University hospitals		Egypt	Egypt	Education		
16	**Addis Ababa University**	University	1964	Current	Graduate and undergraduate education	Ministry of Health of Ethiopia, Ethiopian Field Epidemiology and Laboratory Training Program		Ethiopia	Ethiopia	Education	Epidemiology, Health Systems Management, Environmental Health, Reproductive Health	Communicable diseases, nutrition, maternal and child health, reproductive health, environmental health
17	**Mansoura**	University	1967	Current	Graduate			Egypt	Egypt	Education		

	University				education							
18	**University of Yaounde 1**	University	1969	Current	Graduate education		UNDP, World Health Organization	Cameroon	Cameroon	Education	Training in applied and fundamental research, both for medical students and for Masters in Public Health students	Primary health care, health promotion
19	**Ahmadu Bello University**	University	1969	Current	Graduate and undergraduate education	Ministry of Health of Nigeria, National Postgraduate Medicine College		Nigeria	Nigeria	Education	Public Health (MPH), Field Epidemiology and Laboratory Training Program (FELTP), Disaster Management, Nursing Sciences, Environmental Health, Health Education, Biostatistics	Community health, field epidemiology, disaster prevention and control, environmental health, health education, health promotion, nursing sciences
20	**University of Nigeria College of Medicine**	University	1970	Current	Graduate and undergraduate education			Nigeria	Nigeria and other countries in West Africa	Education	Epidemiology, Biostatistics, Primary Health Care, Health Promotion, Health Systems Management, Health Policy and Management, Environmental Health, Occupational Health	Tuberculosis, HIV, primary health care, rural health care, school health, immunizations, health education
21	**University of Benin**	University	1970	Current	Graduate education	University of Ibadan, Ahmadu Bello University, Nigerian Institute for Medical Research, University of Ghana, University of Benin, University Abdou Moumoni, University of Aberdeen (Scotland), Harvard School of Public Health, Ottawa University, University of Maryland	General Electric, Emzor Pharmaceuticals, Phillips International, Fidson Pharmaceuticals, Thomson Reuters	Nigeria	West Africa	Education	Reproductive Health, Family Health, Public Health, Nursing Sciences, Health Economics	Reproductive health, fertility, maternal mortality, HIV/AIDS, reproductive health policy
22	**Zagazig University**	University	1974	Current	Graduate education			Egypt	Egypt	Education		Noncommunicable diseases, occupational health, environmental health, nutrition, disaster preparedness and response
23	**Faculté de Médecine de Sfax**	University	1974	Current	Undergraduate education			Tunisia	Tunisia	Education	Epidemiology, Statistical Analysis, Community Health, Social Medicine	Preventive medicine, primary health care
24	**University of Gezira**	University	1975	Current	Graduate and undergraduate education			Sudan	Sudan	Education	Environmental Health, Epidemiology, Heath Education, Food Health and Safety, Basic Sciences	
25	**Minya University**	University	1976	Current	Graduate education			Egypt	Egypt	Education		
26	**University of Port Harcourt**	University	1976	Current	Graduate and undergraduate education			Nigeria	Nigeria	Education	Public health research within the Faculty of Medicine	Primary health care, hospital care
27	**University of Ilorin**	University	1976	Current	Undergraduate education			Nigeria	Nigeria	Education	Community health	Community-based research, health systems management
28	**Institut Regional de Santé Publique / Ouidah**	University	1977	Current	Graduate education	World Health Organization, Universite d'Abomey-Calavi		Benin	Benin	Education	Two-year graduate degrees in public health disciplines, short-term training courses in specific subjects (like nutrition or disaster management)	Nutrition, health promotion, reproductive health, health systems management, hospital hygiene and infection control
29	**University of Calabar**	University	1979	Current	Graduate and undergraduate education	Ministry of Health of Nigeria	USAID, IntraHealth	Nigeria	Nigeria	Education	Health Education and Health Promotion, Epidemiology, Environmental Health, Public Health Nutrition, Public Health Sociology, Health Services Management	Disease prevention and control, nutrition, epidemiology, emerging communicable diseases, emergency and disaster management, health systems

												research
30	**Menoufia University**	University	1984	Current	Graduate education			Egypt	Egypt	Education	Public health research within the Faculty of Medicine	Primary health care, health promotion, communicable diseases, noncommunicable diseases, childhood diseases
31	**Institut National de la Santé Publique**	Teaching and Research Institute	1984	Current	Post-Graduate training for health professionals			Tunisia	Tunisia	Training	Research Methodology, Epidemiology, Surveillance, Health Systems Management, Data Analysis and Management, Scientific Writing	Cardiovascular disease, mental health, elderly health, adolescent health, cancer, smoking, nutrition
32	**Kinshasha School of Public Health**	University	1985	Current	Graduate education	University of Kinshasha Faculty of Medicine	USAID, Tulane University School of Public Health and Tropical Medicine, Universite Catholique de Louvain, Universite Libre de Bruxelles	Democratic Republic of Congo	Democratic Republic of Congo	Education	Epidemiology, biostatistics	Environment; hygiene, sanitation, and water; nutrition; community health; health systems policy and administration
33	**Institut de Santé et Dévelopement**	Teaching and Research Institute	1987	Current	Graduate and Post-Graduate Education	Ministry of Health of Senegal	WHO, UNICEF	Senegal	Senegal	Research, Training, and Education	Epidemiology, Public Health Research	Community health, field epidemiology, health systems management, maternal and newborn health, malaria, tuberculosis, HIV/AIDS, water and sanitation, sexual and reproductive health
34	**Ecole National de Sante Publique**	Research Institute	1989	Current	Graduate education	Ministry of Health Algerie		Algeria	Algeria	Education	Two-year graduate degree in epidemiology	Surveillance, field epidemiology, health systems management
35	**Sohag School of Medicine**	University	1991	Current	Graduate education			Egypt	Egypt	Education		
36	**University of Khartoum**	University	1991	Current	Graduate and undergraduate education	Orange House		Sudan	Sudan	Education	Environmental Health, Environmental Studies, Epidemiology, Food Hygiene and Safety, Health Education	
37	**University of Kordofan**	University	1992	Current	Graduate and undergraduate education			Sudan	Sudan	Education	Environmental Health, Health Promotion and Health Education, Medical Entomology and Parasitology, Epidemiology, Food Hygiene and Safety	Disease prevention and control, social determinants of health, health systems management, community health, environmental health, surveillance
38	**University of the Western Cape**	University	1993	Current	Graduate education	Nearly 50 national and international partners in academia, governmental organizations, and non-governmental organizations	Western Cape Department of Health, Mauerberger Foundation Fund, Medical Research Council, National Research Foundation, South African Qualifications Authority, International Belgian Government (via the Framework lll Agreement with the Institute of Tropical Medicine, Belgium), British High Commission, Centers for Disease Control and Prevention (CDC), Department for International Development (DfID), DGIS, Ministry of Foreign Affairs, Netherlands, European Commission, European & Developing Countries Clinical Trials Partnership (EDCTP), Flemish Inter-University Council (VLIR), Hamilton Health Sciences Corporation, International Development Research	South Africa	South Africa and other countries in Africa	Education	Epidemiology, Biostatistics, Health Systems Management	Health policy and systems, health promotion, HIV, maternal and child health, noncommunicable diseases, nutrition and food security, sexual and reproductive health, social determinants of health

							Centre, Medical Research Council (MRC), Netherlands Organisation for Scientific Research/ Science for Global Research, Rockefeller Foundation, TBReach, The Atlantic Philanthropies, UNICEF, University of Washington/ITECH, University of Bergen, Norway, University of Ottawa, Canada, World Health Organisation (WHO)					
39	**University of Ghana**	University	1994	Current	Graduate and undergraduate education	Ghana Health Service		Ghana	All Africa, especially West Africa	Education	Environmental health, Occupational Health, Biostatistics, Epidemiology, Health Policy and Management, Family and Reproductive Health, Social and Behavioral Sciences	Maternal and child health, communicable diseases, environmental health, noncommunicable diseases, tropical medicine, rural healthcare
40	**Obafemi Awolowo University, Ile-Ife**	University	1994	Current	Graduate education			Nigeria	Nigeria and sub-Saharan Africa	Education	Public health education toward Masters or Doctoral degrees (MSc, PhD)	Population health, reproductive health, family health
41	**Jimma University**	University	1997	Current	Graduate and undergraduate education	Flemish Intrauniversity Council, Copenhagen University	Brown University, David and Lucille Packard Foundation	Ethiopia	Ethiopia	Education	Epidemiology, Health Systems Management, Environmental Health, Population and Family Health, Health Education	Maternal and child health, parasitology, monitoring and evaluation, health economics, nutrition, ecology, tropical medicine
42	**Moi University**	University	1998	Current	Graduate and undergraduate education	SIDA, AMREF, German Academic Exchange (DAAD), MTRH, Red Cross, Indiana University, Ministry of Health of Kenya, World Health Organization, VLIR, International Rescue Committee, Boston School of Field Studies		Kenya	Africa	Education	Health Policy and Management, Epidemiology and Nutrition, Environmental Health, Disaster Prevention and Management	Public health nutrition, health systems, humanitarian assistance, food safety, occupational health, vector-borne diseases
43	**University of Pretoria**	University	1998	Current	Graduate and Post-Graduate Education	MEASURE Evaluation	USAID, University of North Carolina at Chapel Hill	South Africa	Global, with special focus on Africa	Education	Environmental and Occupational Health Sciences, Behaviour and Health Management Sciences, Public Health and Preventive Medicine, Health Measurement Sciences	Malaria, environmental health, maternal and child health, water and sanitation, neonatal health, tuberculosis, respiratory infections, occupational health, toxicology, health systems strengthening
44	**Asmara College of Health Sciences**	University	1999	Current	Undergraduat e education	University of Asmara		Eritrea	Eritrea	Education	Health Sciences, Public Health	Primary healthcare, health education, health promotion, maternal and child health, nutrition
45	**University of Rwanda**	University	2000	Current	Graduate education	Ministry of Health of Rwanda, Rwanda Bio-Medico Center, CARE Rwanda, CNLS - National Aids Control Commission, TRAC - Treatment and Research Aids Center, USAID Rwanda Mission, King Faisal	World Health Organization, World Bank, UNICEF, Centers for Disease Control and Prevention (CDC), Constella Group, Belgian Technical Cooperation, GTZ, Health InterNetwork Access to Research Initiative, Institute of Tropical Medicine Antwerp, IntraHealth International, JHPIEGO, John Snow, Inc., The Leadership Initiative for	Rwanda	Rwanda and other countries in East Africa	Education	Epidemiology, Field Epidemiology and Laboratory Management, Hospital and Health Systems Management	Population health, HIV/AIDS, research capacity strengthening, health systems management, health systems strengthening, field epidemiology, disease prevention and control, malaria, mental health, community health

						Hospital, CHUB Hospital, CHUK Hospital	Public Health in East Africa, Measure Evaluation, Management Sciences for Health, PATH, Payson Center for International Development, PSI - Population Services International, PUBMED, RTI - Research Triangle Institute, Swiss Agency for Development and Cooperation, UNAIDS, USAID, The Global Fund					
46	**University of the Witwatersrand**	University	2000	Current	Graduate, Undergraduate, and Post-Graduate Education	INDEPTH Network	NIH Fogarty International Center, World Health Organization	South Africa	South Africa and other countries in sub-Saharan Africa	Education	Epidemiology, Biostatistics, Field Epidemiology, Infectious Disease Epidemiology, Public Health Informatics, Implementation Science	Health systems, occupational health, environmental health, health economics, communicable diseases, field epidemiology, surveillance, population health
47	**University of Lubumbashi**	University	2003	Current	Graduate education	Congolese government, Kingdom of Belgium	Antwerp Institute of Tropical Medicine, Universite Libre de Bruxelles, University of Liege, Universite Catholique de Louvain	Democratic Republic of Congo	Democratic Republic of Congo	Education	Epidemiology, disease prevention and control, preventive medicine	Nutrition, health systems management, hospital management
48	**Muhimbili University of Health and Allied Sciences (MUHAS)**	University	2003	Current	Graduate and undergraduate education	OneHealth Central and Eastern Africa, East Africa Journal of Public Health, Ministry of Health and Social Welfare of Tanzania		Tanzania	Tanzania, East Africa, and Global	Education	Behavioural Sciences; Community Health; Development Studies; Epidemiology and Biostatistics; Parasitology and Medical Entomology; Environmental and Occupational Health	HIV/AIDS, tuberculosis, malaria, adolescent health, public health informatics, health systems strengthening, demographic surveillance, environmental health, genetic epidemiology, respiratory disease
49	**University of Lagos**	University	2008	Current	Graduate and undergraduate education	Lagos University Teaching Hospital, National Postgraduate Medical College of Nigeria, Ministry of Health of Nigeria, state and local health offices		Nigeria	Nigeria	Education	Medical Statistics, Epidemiology, Health Systems Management, General Public Health	Environmental health, occupational Health, maternal and child health,
50	**University of Malawi**	University	2013	Current	Graduate and undergraduate education	Centre of Bioethics in East and Central Africa (CEBESA), Centre of Reproductive Health (CRH), Nutrition Research group and Training and Research Unit of Excellence (TRUE), Ministry of Health of Malawi	University of Malawi, University of Melbourne, Partners in Health, Seed Global Health	Malawi	Malawi, South African Development Community (SADC)	Education	Epidemiology, Public Health, Family Medicine, Health Systems Management, Health Policy	Nutrition and early childhood development, HIV (treatment and implementation science), malaria (prevention, treatment, and operational research), reproductive health, adolescent health
51	**Institut National de l'Administration Sanitaire. Rabat**	University	2013	Current	Graduate education	Ministry of Health of Morocco, Field Epidemiology Training Program (FETP) - Morocco, Institute of Tropical Medicine Antwerp (IMT) in Belgium, The School of Advanced Studies in Public Health (EHSEP) of Renne in France, The Clinical Foundation of	Higher Institute of Commerce and Administration of Enterprises (ISCAE); Faculty of Medicine; the National Social Security Fund (CNSS)	Morocco	Morocco, and North Africa	Education	Epidemiology, Family Health, Community Health, Hospital Management	Maternal and child health, vector-borne disease, water and sanitation, communicable diseases, hospital management, family health, community health

						Barcelona in Spain; The University of Aberdeen - IPACT-Scotland in the United Kingdom; The Center for Disease Control and Prevention (CDC) Atlanta, USA; The School of Management Sciences of the University of Quebec in Montreal, Canada, Japan International Cooperation Agency (JICA), Network of Economics and Health Systems in the Maghreb (RESSMA), Network for Sexual and Reproductive Health (SSR)						
52	**University of Zambia**	University	1966 (School), 1994 (MPH)	Current	Graduate and undergraduate education			Zambia	Zambia	Education	Environmental Health, Epidemiology and Biostatistics, Health Policy and Management, Health Promotion and Population Studies	
53	**Shendi University**	University		Current				Sudan	Sudan	Education		
54	**NHLBI-UnitedHealth Global Health Centers of Excellence**	Public, private, academic partnership	2009	Current as of 2016	Research capacity development	NHLBI, UnitedHealth, Guatemala Center of Excellence	National Institute of Health Fogarty International Center	Tunisia Kenya South Africa	Africa	Building capacity for heart and lung disease research, prevention, and control	Training and mentorship in epidemiology and research methodology for early-career healthcare professionals	Heart and lung disease, and other chronic diseases
55	**FETP /Africa Field Epidemiology Training Network**	Training Program	1994	Current	Field epidemiology training	Partnership of Ministries of Health, local Universities, WHO and US CDC as well as Private institutions. Initial partnership included The University of Ghana, School of Public Health; Ministry of Public Health and Sanitation-Kenya; The Field Epidemiology and Laboratory Training Program, Makerere University School of Public Health- Uganda; and The University of Zimbabwe, Department of Community Medicine	Funding from Ministries of Health, local Universities, WHO and US CDC as well as Private institutions	47 Sub-Saharan Africa	Africa	Building public health epidemiological capacity through training personnel to become high-caliber field epidemiologists and strengthening disease surveillance	Competency-based curriculum in classroom mixed with substantial field experience	Communicable diseases, disaster response, surveillance systems, outbreak investigations, planned surveys corresponding to country-specific epidemiological trends
56	**FETP**	Training		Current	Field	CDC to provide	Programs are established within	8 Countries in	Africa/ME	Building public	Competency-based curriculum in classroom	

	/Eastern Mediterranean Public Health Network	Program			epidemiology training	effective and sustainable support to our FETPs.	ministries of health and may receive technical assistance from the CDC	Eastern Mediterranean: Egypt, Morocco, Yemen, Iraq, Jordan, Saudi Arabia, Oman , Pakistan		health epidemiological capacity through training personnel to become high-caliber field epidemiologists and strengthening disease surveillance	mixed with substantial field experience	Communicable diseases, disaster response, surveillance systems, outbreak investigations, planned surveys corresponding to country-specific epidemiological trends

EDUCATIONAL MODELS -SOUTH ASIA

	Institution	Role	Year Established	Operational Status	Area Targeted	Partnership	Funders	Location	Geographic Coverage	Focal Area or Organizational / Programme Objective	Projects/ Activities	Data Area
1	**National Institute of Health Sciences**	Educational Institution	1926	Current	Training		World Health Organization	Sri Lanka	Sri Lanka	Training	Primary healthcare capacity-building	Public health nursing, public health inspection, and public health biomedical informatics
2	**All India Institute of Hygiene and Public Health**	Educational Institution	1932	Current	Public health research, training, and program development	West Bengal University of Health Sciences, Ministry of Health and Family Welfare, World Health Organization, UNICEF, Indian College of Medical Research		India	India	Education	Biochemistry, Epidemiology, Maternal and Child Health, Nutrition, Microbiology, Occupational Health, Social Medicine, Health Administration, Public Health Nursing	Urban health, rural health, health promotion, water and sanitation, emergency management, nutrition, dietetics, noncommunicable diseases, socioeconomic status, HIV, mental health, violence prevention, substance abuse, ageing, environmental health, vaccine-preventable diseases, maternal health, occupational health, vector-borne disease
3	**Institute of Public Health Pakistan**	Educational Institution	1949	Current	Public health training	Pakistan Medical and Dental Council, College of Physicians and Surgeons of Pakistan		Pakistan	Pakistan	Education	Epidemiology and Biostatistics	Public health practices, occupational health, nutrition and dietetics, entomology, parasitology, maternal and child health, infectious diseases, health education, environmental health, dental public health, health information systems, bacteriology
4	**Institute of Public Health Nutrition**	Policy development	1974	Current	Research, training, and surveillance	Ministry of Health and Family Welfare, Directorate General of Health Services, Directorate General of Family Planning, Bangladesh Television, Bangladesh Breastfeeding Foundation, icddr,b, Bangladesh Bureau of Statistics, NIPSOM, UNICEF, USAID Bangladesh, BKMI, Micronutrient Initiative	USAID, BKMI	Bangladesh	Bangladesh	Policy development, education	Policy development, research dissemination, surveillance, and training for public health professionals	Nutrition, family planning, breastfeeding, Millennium Development Goals 4 and 5
5	**BRAC**	Implementer	1975	Current	Making development efforts evidence-based, effective, and community-sensitive	Australian AID, UKAID	EU, Columbia University, Gates Foundation, FHI360, George Washington University, Center for Policy Dialogue Bangladesh, International Labor Organization, Government of Canada, IFTDO, GMMB, University of Aberdeen,	Bangladesh	Asia, South Pacific, Africa, Middle East, North America,	Support broad programs for health and well-being in governance, management,	Designing BRAC's development interventions, monitoring progress, documenting achievements, and undertaking impact assessment studies	Development Economics, Agricultural Economics, Educational, Social Development, Impact Assessment, Health, Nutrition and Environment

							IRRI, Chevron, Bangladesh Rice Research Institute, International Food Policy Research Institute, Global Fund, Educate a Child, IRC, Bangladesh Agricultural Research Institute, CIP		Europe	and capacity-building		
6	**National Institute of Health and Family Welfare**	Research and training organization	1977	Current	Public health training	All India Institute of Hygiene & Public Health - Kolkata, Mahatma Gandhi Institute of Medical Sciences - Wardha, Indian Institute of Public Health - Ahmedabad, Indian Institute of Public Health - Delhi, PGIMER - Chandigarh, JIPMER - Puducherry, IIPH - Hyderabad, IIPH - Bhubeaneshwar	Ministry of Health and Family Welfare	India	India	Education	Epidemiology, Demography, Biostatistics, Behavioral and Social Science in Health, Health Education and Communication, Quality Assurance and Health Impact Assessment	Health systems management, public health management
7	**The International Centre for Diarrheal Disease Research, Bangladesh (icddr,b)**	Regional center of excellence	1978	Current	Capacity-building technical training		US Centers for Disease Control and Prevention (CDC)	Bangladesh	South Asia	Child health, infectious disease and vaccine sciences, reproductive health, nutrition, population sciences, health systems research, safe water, food safety, HIV/AIDS and poverty and health	Training courses in public health skills, laboratory skills, clinical management, emerging and re-emerging needs for population health and well-being	Need-based training and technical assistance for public health professionals in South Asia
8	**Indian Institute of Health Management Research**	Educational Institution	1984	Current	Health systems management	Ministry of Health and Family Welfare, Government of India, National Institute of Health and Family Welfare, ACTD Afghanistan, AIPH, Gulf Medical University, India PHEIN, Johns Hopkins Bloomberg School of Public Health, Mahidol University, SAARC, Sup Biotech, University of Chester, World Health Organization	Government of India, Johns Hopkins Bloomberg School of Public Health	India	South East Asia	Health systems management training and research	Graduate courses in Program Planning, Implementation, Monitoring and Evaluation; Result Based Management; Strengthening District Health Systems for Effective Primary Health Care; Quality Assurance; Decentralized Planning and Management ; NGO Management and Capacity-building; Data Management and Analysis	Population and development, nutrition, WASH, Livelihood, Adult population and Ageing, Mental Health, Data Systems Strengthening, Gender, Communicable and Non-communicable Diseases, Injury, Drug Management, Climate Change and Health, Disability, Reproductive Health, Maternal and Child Health
9	**Health Services Academy**	Educational Institution	1988	Current	Teaching, research, and capacity-building	World Health Organization, UNICEF, USAID, Prime Minister's Program for Prevention and Control of Hepatitis, Aga Khan University, Population Council of		Pakistan	Pakistan	Education	Epidemiology and Biostatistics	Nutrition, health promotion, water and sanitation

						Pakistan, Family Planning Association of Pakistan						
10	**North South University**	Educational Institution	1993	Current	Epidemiology, biostatistics, research methodology	USAID, ICDDRB, Save the Children, FHI, UNAIDS, UNFPA, WHO, IDRC, University of Manitoba, Mahidol University, Assumption University, Bangkok University, SEAPHEIN	Johns Hopkins University, Water Aid, Cares	Bangladesh	Bangladesh	Education, capacity-building	Research and training programs for graduate and undergraduate students	Chronic diseases, infectious diseases, and clinical epidemiology; public health policy; social determinants of health and social epidemiology; global health; substance abuse and addictions; occupational and environmental health; and biostatistics methodological research
11	**University of Dhaka**	Educational Institution	1998	Current	Health economics	University of Dhaka, icddr,b, NIPSOM, Ministry of Health and Family Welfare	Department for International Development, Ministry of Health and Family Welfare	Bangladesh	Bangladesh	Education	Training courses in health economics, epidemiology, research methodology, and decision analysis	Economic Theory, Health Policy and Planning, Applied Econometrics, Economic Evaluation of Health Care, Research Methodology
12	**Indian Council of Medical Research**	Educational Institution	1999	Current	Public health research, education, training, and program development	Department of Health Research, Government of India, World Health Organization		India	India	Education	Epidemiology, biostatistics, public health principles and practice, demography, health systems, social and behavioral sciences, nutrition, occupational health, and environmental health	Field epidemiology, surveillance, communicable diseases, maternal and child health, communicable diseases, bioethics, sexual and reproductive health, vaccine-preventable diseases, disability
13	**Northern University of Bangladesh**	Educational Institution	2002	Current	Epidemiology, biostatistics, research methodology			Bangladesh	Bangladesh	Education	Training courses in epidemiology, biostatistics, and research methodology	Environmental health, anthropology, occupational safety and nutrition
14	**State University of Bangladesh**	Educational Institution	2002	Current	Epidemiology, health informatics, biostatistics, research methodology	Mahidol University, Tribhuban University, Kathmandu University, Purbanchal University, Kyrgyz Republic Chui University, Wah Medical College, ORBIS International		Bangladesh	Bangladesh, Nepal	Education	Research and training programs for graduate students	Improve health status and quality of life in developing countries, women's health, HIV/AIDS, reproductive and sexual health
15	**James P. Grant School of Public Health, BRAC University**	Educational Institution	2004	Current	Biostatistics, epidemiology, quantitative research methods, monitoring and evaluation of public health programs	BRAC University, BRAC, icddr,b	World Health Organization, Rockefeller Foundation, World Bank, UK-AID, Netherlands Organisation for Scientific Research, IDRC, UNICEF, Gates Foundation, UN FAO, International Labour Organization, Share-net, PATH, USAID, UNAIDS, Global Fund, Ministry of Foreign Affairs of the Netherlands, RFSU, U-Ottawa, GIZ, Sightsavers, University of Saskatchewan, BRAC USA, Abt Associates, Canadian International Development Agency, Johns Hopkins Bloomberg School of Public Health, Nagasaki University, Standard Chartered, Asia Pacific Observatory of Public Health Systems and Policies, London School of Economics, WHO-TDR, International Women's Health Coalition, Centre for Economic Policy Research, American University of Beirut, Georgetown University, Nuffic, Great Ormond Street Institute of Child Health, UNFPA, Save the Children, SIDA, Royal Commonwealth Society, Institute of Development Studies, Harvard University, MSH, Australian Department of Foreign Affairs and Trade, BRAC, BRAC University,	Bangladesh	Asia, Africa, South America	Education, capacity-building	Monitoring and evaluation, infectious diseases, nutrition, sexual and reproductive health, urban equity and health, universal health coverage	Biostatistics and epidemiology instruction at graduate level

							Bangladesh Ministry of Health and Family Welfare					
16	**Independent University of Bangladesh**	Educational Institution	2005	Current	Biostatistics, epidemiology, research methods, project design and evaluation	McMaster University, SHARE (South Asian Hub for Advocacy, Research, and Education on Mental Health), Harvard University School of Public Health, Heidelberg University		Bangladesh	Bangladesh	Education, capacity-building	Epidemiologic studies	Non-communicable diseases, HIV, suicide, depression, health-seeking behavior, respiratory disease from cooking fuel, injuries
17	**Johns Hopkins Bloomberg School of Public Health**	Educational Institution	2005	Current	Global health research capacity	Aga Khan University, Khyber Medical University	Johns Hopkins International Injury Research Unit	Pakistan	Pakistan and Afghanistan	Research training	Research capacity-building	Trauma and injury
18	**Indian Institutes of Public Health**	Educational Institution	2006	Current	Public health research, training, and program development	Public Health Foundation of India		India	India	Education	Epidemiology, biostatistics, behavioral sciences, health economics, health services management, and promotion of evidence-based, context-specific, resource-sensitive interventions	Environmental health, nutrition, injuries, tobacco control, women's health, children's health, health inequities and human rights, gender and health, health communication, ethics of health care and research, communicable diseases, noncommunicable diseases
19	**Public Health Foundation of India**	Strengthening education and training, advancing research and technology, and facilitating public health policy and practice	2006	Current	Public health research, training, and program development	University of Manitoba, MHIN,	Ministry of Health and Family Welfare, Indian Council of Medical Research (ICMR), National Human Rights Commission (NHRC), Department of Science and Technology (DST), Wellcome Trust, National Institutes of Health, Bill and Melinda Gates Foundation, Norwegian Government, Bloomberg Global Initiative, World Health Organization, World Bank, USAID, UNICEF	India	India	Capacity-building	Policy development, research dissemination, surveillance, and training for public health professionals	Advocacy, Maternal and neonatal health, Adult health, Mental health, Families and carers, Non-communicable diseases, Communicable diseases, Community and Primary care, Disabilities, Social determinants of health
20	**University of Kelaniya**	Educational Institution	2006	Current	Research training	University of Alabama at Birmingham	Fogarty International Center	Sri Lanka	Sri Lanka	Training	Research capacity-building	Environmental and Occupational Health
21	**Mahatma Gandhi Institute of Medical Sciences**	Educational Institution	2007	Current	Public health research, training, and program development	Government of India, Public Health Foundation of India	World Health Organization	India	India	Education	Public health management	Health research, and maternal, newborn, and child health
22	**Bangladesh University of Health Sciences**	Educational Institution	2008	Current	Biostatistics, epidemiology, research methodology, data analysis, spatial statistics, disease mapping	Deakin University, University of New South Wales, University of Western Sydney, University of Putra Malaysia, Taras Shevchenko National University of Kyiv, Baquai Medical University, World Diabetes Foundation, University of Oslo, Pennsylvania State University, University of Calcutta, University of Queensland, University of Karachi, University of Copenhagen, University of Santo Tomas		Bangladesh	Bangladesh	Education, capacity-building	Epidemiologic studies	Diabetes, cancer, cardiovascular disease, injuries, maternal and child health, mental health, musculoskeletal conditions and infectious diseases
23	**Government of Madhya Pradesh**	Educational Institution	2010	Current	Public health management, knowledge, and	Ministry of Health and Family Welfare, Government of India		India	India	Education	Epidemiology, Demography, Disease Surveillance, Biostatistics, Research Methods and Operations Research, Essential of Health	National Health Programs, Health Systems and Health Sector Reforms, Urban Health, Behavioural and Social Science in Health, Quality, Equity and Access to Health

					skills						Economics	Care, Health Communication and Promotion, Health Management Information Systems, Public Health Nutrition, Communicable Diseases, Non-Communicable Diseases, Health Policy and Health Care Planning, Environmental and Occupational Health
24	**State University of Bangladesh**	Capacity-building through twinning	2011	Current	Research capacity	Ministry of Health Research and Epidemiology Unit	State University of Bangladesh	Bhutan	Bhutan	Capacity-building	Assessment, recommendations	Capacity-building
25	**Varenda University**	Educational Institution	2012	Current	Epidemiology, biostatistics, research methodology			Bangladesh	Bangladesh	Education	Training courses in epidemiology, biostatistics, and research methodology	Family planning, access to healthcare, emerging non-communicable diseases, HIV/AIDS, environmental contamination
26	**Bhutan Foundation**	Training	2013	Current	Public health research, training, and program development	Yale School of Public Health, KGUMSB	Yale School of Public Health, Shelly and Donald Rubin Foundation, Geballe Bhutan Research Support Fund, Yale South Asian Studies Council	Bhutan	Bhutan	Training	Training courses in public health research methodology, and translating research into policy	Maternal health, oral health, research capacity, vector identification, surveillance, malaria elimination
27	**Harvard T.H. Chan School of Public Health**	Educational Institution	2013	Current	Public health research, training, and program development	India Research Centre, Public Health Foundation of India	Private donations	India	India	Capacity-building	Public health research, evidence-based policies and programs	
28	**Khesar Gyalpo University of Medical Sciences (KGUMSB)**	Educational Institution	2013	Current	Public health research, training, and program development	Yale School of Public Health, Bhutan Foundation	Yale School of Public Health, Shelly and Donald Rubin Foundation	Bhutan	Bhutan	Training	Training courses in public health research methodology, and translating research into policy	Maternal health, oral health, research capacity, vector identification, surveillance
29	**American International University Bangladesh**	Educational Institution	1994 (Universi ty)	Current	Epidemiology, biostatistics, research methodology			Bangladesh	Bangladesh	Education	Training courses in epidemiology, biostatistics, and research methodology	Socioeconomic status
30	**Bangladesh Training and Research Foundation**	Educational Institution		Current	Capacity-building training and conducting research	Bangladesh Center for Communications Programs	Johns Hopkins Center for Communication Programs (CCP)	Bangladesh		Research training	Training, training of trainers, qualitative and quantitative research, surveys	Health promotion, communications strategies
31	**Public Health Foundation of Bangladesh**	Professional association		Unkno wn	Training	State University of Bangladesh, Government of Nepal		Bangladesh	Bangladesh , Nepal	Training	Training courses in epidemiology and research methodology	
32	**University of Health Sciences, Lahore**	Educational Institution		Current	Public health training	Institute of Public Health Pakistan, National Institute of Health Pakistan		Pakistan	Pakistan	Education	Epidemiology and Biostatistics	Maternal, child, and newborn health, Health economics, Health systems management, Health promotion, Health education
33	**FETP and the Eastern Mediterranean Public Health Network**	Training Program		Current	Field epidemiology training	CDC to provide effective and sustainable support to our FETPs	Programs are established within ministries of health and may receive technical assistance from the CDC	Pakistan Bangladesh India Kazakhstan China Philippines Indonesia Myanmar Laos Cambodia Vietnam Thailand Singapore Papua New Guinea	Asia/ME	Building public health epidemiological capacity through training personnel to become high-caliber field epidemiologists and strengthening disease surveillance	Competency-based curriculum in classroom mixed with substantial field experience	Communicable diseases, disaster response, surveillance systems, outbreak investigations, planned surveys corresponding to country-specific epidemiological trends

EDUCATIONAL MODELS-EAST ASIA AND PACIFIC

	Institution	Role	Year Established	Operational Status	Area Targeted	Partnership	Funders	Location	Geographic Coverage	Focal Area or Organizational/ Programme Objective	Projects/ Activities	Data Area
1	University of the Philippines, Manila	Educational institution	1969	Current	Graduate and undergraduate training in public health	SEAMEO, SEAMEO TROMED, WFPHA, World Health Organization, United Nations Population Fund, Joint United Nations Programme on HIV/AIDS, UNICEF, USAID, JICA, International Committee for the Red Cross, WFP, World Bank, Asian Development Bank, Department of Health, Philippine Council for Health Research and Development, Philippine Tuberculosis Society, Inc., Department of Agriculture, Food and Nutrition Research Institute		Philippines	Philippines	Education	Epidemiology, Biostatistics, Health Policy and Management, Nutrition, Parasitology, Microbiology, Community Health, Environmental Health	Communicable diseases, noncommunicable diseases, reproductive health, survey methodology, food safety and security, surveillance systems
2	Adventist International Institute of Advanced Studies	Educational institution	1987	Current	Graduate training in public health		Seventh Day Adventist Church	Philippines	Philippines	Education	Epidemiology, Biostatistics	Health promotion, health ministry, risk reduction, nutrition
3	Hanoi University	Educational institution	1990	Current	Graduate and undergraduate training in public health	Ministry of Health, Ministry of Education and Training	Rockefeller Foundation, China Medical Board of New York, US Centers for Disease Control and Prevention	Vietnam	Vietnam	Education	General public health research	Environmental health, occupational health, population health, injury policy and prevention, healthcare management
4	UCLA - Fielding School of Public Health	Educational institution	1997	Current	Post-graduate training in public health research	University of Health Sciences, Cambodia	National Institutes of Health, US Centers for Disease Control and Prevention (CDC)	Cambodia	Cambodia	Education	Sponsorship of UHS graduate students for advanced training in public health research methodology	HIV testing, treatment, and care, and epidemic control
5	Siem Reap Citizens for Health, Educational, and Social Issues (SiRCHESI)	Non-governmental organization	1999	Current as of 2014	Participatory Action Research in resource-challenged areas	Siem Reap Province Health Department, Siem Reap Province AIDS Office	Bangkok Airways	Cambodia	Siem Reap, Cambodia	Field-based research techniques including qualitative and quantitative data collection and analysis, field survey methodology, and research dissemination	Health promotion, field-based research internship, public health research programs	HIV/AIDS, substance use and abuse, human trafficking, commercial sex work, communicable diseases
6	Fukushima Medical University	Educational institution	2000	Completed, but may be repeated	Post-graduate training in public health research	Population Council of Vietnam, Ho Chi Minh City University of Medicine and Pharmacy	Fukushima Medical University	Vietnam	Vietnam	Education	Training in public health research principles and techniques	Epidemiology, Biostatistics, Research Methodology, Qualitative Research

7	University of the East Ramon Magsaysay Memorial Medical Center, Inc.	Educational institution	2003	Current	Graduate training in public health	University of the East College of Medicine, University of the East College of Nursing		Philippines	Philippines	Education	Epidemiology, Research Methodology	Communicable diseases, noncommunicable diseases, hospital epidemiology, health systems management
8	**Loma Linda University School of Public Health**	Educational institution	2005	Unknown	Tobacco control research	Ministry of Health Cambodia, Ministry of Health Lao PDR	Adventist Development Relief Agency	Cambodia and Lao PDR	Cambodia and Lao PDR	Intensive two-year research training program in tobacco control	Development and implementation of two research projects on tobacco-related beliefs, use, and practices, with presentations of results at conferences	Tobacco control
9	**Universitas Gadjah Mada**	Educational institution	2005	Current	Graduate training in health information systems, data analysis, and data management	Provincial and district health offices, primary health centers and hospitals	Ministry of Health, GIZ, World Health Organization, World Bank, Telkom	Indonesia	Indonesia	Education	Biostatistics, Epidemiology, Health Informatics, Health Systems Management, Data Analysis and Data Management	Maternal, child, and new born health; communicable diseases; noncommunicable diseases
10	**National Institute of Public Health**	Educational institution	2007	Current	Graduate education in public health	University of California at Los Angeles, University of New South Wales, University of Bielefeld, National Institute of Public Health	World Health Organization, Rockefeller Foundation, US Centers for Disease Control and Prevention (CDC), UNICEF, SEAMEO TROMED, GTZ	Cambodia	Cambodia	Education	Health system development, disease prevention and control	HIV/AIDS, malaria, noncommunicable diseases, resource-challenged populations
11	**University of Public Health Yangon**	Educational institution	2007	Current	Public health research, practice, capacity-building	University of Medicine 1, World Health Organization SEARO	Myanmar Ministry of Health	Myanmar	Myanmar	Education	Epidemiology, Population Health, Community Health, Health Behavior and Communication, Nutrition, Food Safety, Occupational Health, Environmental Health, Family Health, Biostatistics, Health Policy and Management	Communicable diseases, noncommunicable diseases
12	**Data-based Decision Making Field Epidemiology Training Program**	Field training program	2008	Unknown	Field epidemiology training for public health professionals	TEPHINET, local and regional public health offices		Solomon Islands	Solomon Islands	Field-based research techniques including qualitative and quantitative data collection and analysis, field survey methodology, and research dissemination	Field epidemiology, biostatistics, health informatics	Communicable diseases, noncommunicable diseases, injuries, nutrition, maternal health, neonatal health
13	**Malaria Consortium**	Non-governmental organization	2009	Current	Infectious diseases of poverty, monitoring, evaluation, and surveillance	Ministry of Health		Cambodia	Cambodia	Vector-borne disease control and prevention	Research capacity-building and technical assistance for disease elimination programs	Malaria, neglected tropical diseases, childhood pneumonia
14	**University of Health Sciences**	Educational institution	2009	Current	Public health research and practice	Government of Lao PDR, Ministry of Health, local health departments		Lao PDR	Lao PDR	Education	Health science, health research	Applied public health practice
15	**Cabinet of Health Research and Development (CHRD)**	Government agency	2010	Current	Research capacity	Ministry of Health, Menzies School of Health Research, University of Timor-Leste Faculty of Medicine and Health Science, UNPAZ Faculty of Public Health	World Health Organization, World Bank, AusAID, European Union	Timor-Leste	Timor-Leste	Capacity-building	Strengthening the public health system	Local and regional public health concerns
16	**State University of Bangladesh**		2011	Current	Research capacity	Cabinet of Health and Research Development	State University of Bangladesh	Timor-Leste	Timor-Leste	Capacity-building	Assessment, recommendations	Capacity-building

17	**University of New South Wales**	Educational institution	2012	Unknown	Public health research, practice, capacity-building	Papua New Guinea Institute of Medical Research	University of New South Wales	Papua New Guinea	Papua New Guinea	Capacity-building for strengthening public health capacity	Implementing research and analyzing research data	HIV and antiretroviral therapy
18	**NORAD**	Non-governmental organization	2013	Unknown	Public health research, practice, capacity-building	University of Public Health Yangon, University of Medicine 1, University of Oslo, University of Mahidol, University of Prince of Songkla	NORAD	Myanmar	Myanmar	Education	Development of public health research capacity through modernized courses, emphases on research in public health programs, and establishment of a Health Information System Project of data collection, analysis, and results dissemination	Health research capacity
19	**Pacific Adventist University**	Educational institution	2013	Completed	Quantitative analysis	Tropical Health Solutions (private contractor)		Papua New Guinea	Papua New Guinea	Quantitative research methodology	Intensive short-course in statistics and SPSS programming	Quantitative research, SPSS
20	**Vanuatu Ministry of Health**	Government agency	2016	Completed, but may be repeated	Public health surveillance, data analysis, and epidemiology	Pacific Community (SPC), Pacific Public Health Surveillance Network (PPHSN), local and regional public health offices	German Development Bank (KfW)	Vanuatu	Vanuatu	Public health surveillance and data analysis capacity-building	Public health surveillance, disease outbreak investigations, epidemiology, computing for public health practice, and a field epidemiology project	Local and regional public health concerns
21	**Mongolian National University of Medical Sciences**	Educational institution	1942 (University), 2002 (School of Public Health)	Current	Public health research and practice			Mongolia	Mongolia	Education	Epidemiology, Biostatistics, Health Policy and Management, Behavioral Sciences, Community Health, Environmental Health	Communicable diseases, noncommunicable diseases, hospital-acquired infections, health risk assessment
22	**Medical Committee Netherlands-Vietnam (MCNV)**	Non-governmental organization	1968, 2016	Current	Research training	Laos National Institute of Public Health, University of Health Sciences in Laos, VU University, Hanoi School of Public Health	European Union	Lao PDR	Lao PDR	Short-term research training through workshops, and long-term research training through affiliated schools of public health	Enhance decision-making abilities through provision of evidence-based policy advice	Poverty, sexual and reproductive health, nutrition, healthcare research, evidence-based policy recommendations
23	**Universitas Indonesia**	Educational institution	1969, 1989, 2013	Current	Graduate training in biostatistics, epidemiology, health informatics, and health economics			Indonesia	Indonesia	Education	Biostatistics, Epidemiology, Population Studies, Health Policy and Administration, Nutrition, Environmental Health, Occupational Health and Safety, Health Education and Behavioral Science	Reproductive health, health promotion, environmental health, nutrition, health policy and management, disaster preparedness, communicable diseases, injury and occupational health
24	**James Cook University**	Educational institution	1999, 2001, 2011	Unknown	Research training for medical professionals	Atoifi Adventist Hospital, Solomon Islands	James Cook University	Solomon Islands	Solomon Islands	Professional exchange	Health and medical research, capacity-building dialogue, community involvement	Hospital-based research, community health research
25	**Johns Hopkins Bloomberg School of Public Health**	Educational institution	2010 - 2015	Completed	Public health research and practice	Mongolian National University of Medical Sciences School of Public Health	Johns Hopkins Bloomberg School of Public Health	Mongolia	Mongolia	Education	Development of educational programs, short term research collaborations, research capacity-building	Cardiovascular disease
26	**University of Copenhagen**	Educational institution	2010, 2011	Unknown	Public health research and practice	National Public Health Institute of Mongolia, Ministry of Health of Mongolia	Millennium Challenge Account	Mongolia	Mongolia	Education	Field surveys, data analysis, results dissemination, and policy recommendations	Noncommunicable diseases
27	**Japan International Cooperation Agency (JICA)**	Non-governmental organization	2010, 2011, 2012, 2013	Completed, but may be repeated	Post-graduate training in public health research	Ho Chi Minh City University of Medicine and Pharmacy, Fukushima Medical University, Ho Chi Minh City Medical Association, Japanese Epidemiological Association	Population Council of Vietnam	Vietnam	Vietnam	Education	Training in public health research principles and techniques	Epidemiology, Biostatistics, Publication Skills
28	**Mongolian National**	Government agency	2013, 2014	Unknown	Capacity-building for detection of	Massey University, Chinese Ministry of Health	Government of Mongolia, Government of China	Mongolia	Mongolia	Capacity-building for wildlife disease	Extensive training on wildlife disease surveillance techniques and database	One Health, emerging zoonoses, avian influenza, brucellosis,

	Emergency Management Agency				emerging infectious diseases					surveillance and response	management	anthrax, foot and mouth disease, human hepatitis, and environmental hazards of cooking smoke
29	**University of Sydney**	Educational institution	About 2006	Current	Research collaboration of public health professionals	Solomon Islands Ministry of Health, National Referral Hospital (Honiara)		Solomon Islands	Solomon Islands	Qualitative and quantitative research projects	Health and medical research, capacity-building dialogue, community involvement	Health aid coordination, injury, trauma, critical care, referral practices, telemedicine
30	**University of Papua New Guinea**	Educational institution	Approximately 1987	Current	Public health			Papua New Guinea	Papua New Guinea	Clinical and public health capacity		
31	**Centre for the Research on the Epidemiology of Disasters (CRED)**	Non-governmental organization		Current	Field training in the epidemiology of disasters and disaster preparedness	Universite Catholique de Louvain School of Public Health, University of Indonesia		Indonesia	Indonesia	University-based field epidemiology training	Capacity-building training in public health, field epidemiology, and disaster management	Disaster epidemiology, disaster preparedness, data management and data analysis in emergency situations
32	**College of Micronesia**	Educational institution		Current	Formal education in public health	Pohnpei Division of Public Health, Environmental Protection Agency, Island Food Group	Micronesian Human Resources Development Centre	Federated States of Micronesia	Federated States of Micronesia	Education	Community health assessments, practical experience at local public health offices	Maternal and child health, community health, school health
33	**University of Health Sciences**	Educational institution			Collection, analysis, and management of hospital-based data	Ministry of Health, National Institute of Public Health, Pasteur Institute, World Health Organization, ANRS, Foundation Merieux et Foundation Pierre Fabre, Boston University, London School of Hygiene and Tropical Medicine, University of Aix-Marseille, University of Paris-Sud, University of Toulouse, University of California at Los Angeles, Fogarty International Center		Cambodia	Cambodia	Education	Training in data collection, analysis, and management	Hospital-based research
34	**FETP -Field Epidemiological Training Program**	Training Program		Current	Field epidemiology training	US Centers for Disease Control and Prevention (CDC) to provide effective and sustainable support to our FETPs.	The programs are established within Ministries of Health and may access technical assistance from the CDC and WHO	Pakistan Bangladesh India Kazakhstan China Philippines Indonesia Myanmar Laos Cambodia Vietnam Thailand Singapore Papua New Guinea	Asia/ME	Building public health epidemiological capacity through training personnel to become high-caliber field epidemiologists and strengthening disease surveillance	Competency-based curriculum in classroom mixed with substantial field experience	Communicable diseases, disaster response, surveillance systems, outbreak investigations, planned surveys corresponding to country-specific epidemiological trends

EDUCATIONAL MODELS-LATIN AMERICA AND THE CARRIBEAN

	Institution	Role	Year Established	Operational Status	Area Targeted	Partnership	Funders	Location	Geographic Coverage	Focal Area or Organizational/ Programme Objective	Projects/ Activities	Data Area
1	**Latin American Diabetes Epidemiology Group**	Non-governmental organization	2001	Completed	Diabetes epidemiology	Bolivian Diabetes Society, Government of Bolivia	World Health Organization, Pan American Health Organization	Bolivia	Bolivia	Training in diabetes epidemiology	Epidemiology, survey methodology, data analysis	Diabetes
2	**University of El Salvador**	Educational institution	2003	Current	Healthcare research	University of El Salvador Sustainable Agri-Food Program, Observatory of Public Health Policies	Government of Spain	El Salvador	El Salvador	Training in research methods	Building capacity in developing countries for conducting scientific and technical health research	Health promotion and disease prevention, communicable vector-borne diseases like dengue fever and Chagas, environmental health
3	**Guatemala-Penn Partners**	Educational institution	2005	Current	Collaboration among universities	Universidad Francisco Marroquin, Universidad de San Carlos de Guatemala, Universidad del Valle de Guatemala, Universidad Rafael Landivar, University of Pennsylvania, Guatemala Ministry of Health, Instituto Guatemalteco de Seguridad	National Institutes of Health Fogarty International Center	Guatemala	Guatemala	Prepare Guatemalan researchers and public health professionals for careers as principal investigators and program leaders	Two-year program, in which the first year entails MS (Clinical Epidemiology) or MPH coursework at University of Pennsylvania, and second year entails returning to Guatemala for a research project and fieldwork	Chronic illnesses, injury, or violence
4	**National Autonomous University of Honduras**	Educational institution	2007	Current as of 2013	Research capacity development	Brock University, Baylor University	Global Health Research Initiative of Canada	Honduras	Honduras	Strengthening research capacity in infectious diseases in Honduras	Two-year Masters of Science (MSc) focusing on infectious and zoonotic diseases, along with continuing infrastructure improvements and expansion of research networks	Infectious and zoonotic diseases, especially those which directly address the Millennium Development Goals
5	**NHLBI-UnitedHealth Global Health Centers of Excellence**	Public, private, academic partnership	2009	Current as of 2016	Research capacity development	NHLBI, UnitedHealth, Guatemala Center of Excellence	National Institute of Health Fogarty International Center	Argentina Peru Mexico Panama Guatemala	Argentina Peru Mexico Panama Guatemala	Building capacity for heart and lung disease research, prevention, and control	Training and mentorship in epidemiology and research methodology for early-career healthcare professionals	Heart and lung disease, and other chronic diseases
6	**Instituto de Cancerologia (INCAN)**	Educational institution	2010	Current as of 2013	Research capacity development	Washington University in St. Louis School of Medicine	National Institutes of Health Fogarty International Center, National Institutes of Health National Cancer Institute	Guatemala	Guatemala	Building capacity for cancer research, prevention, and control	Year-long training in epidemiology, biostatistics, research ethics and regulation, data collection and management and sociocultural anthropology, followed by research project mentorship	Prevention and control of cancer, particularly among difficult-to-reach populations
7	**Unidad de Cirugia Cardiovascular de Guatemala**	Educational institution		Current as of 2013	Mentorship program with collaborating university partners	Washington University in St. Louis	Washington University in St. Louis	Guatemala	Guatemala	Build research capacity of recent medical graduates	Four-year program in which recent medical graduates receive training in epidemiology, biostatistics, research methodology, and implementation of findings	Chronic illnesses
8	**REDSUR (the network of Central and South American FETPs)**	Training Program		Current	Field epidemiology training	US Centers for Disease Control and Prevention, Ministry of Health, WHO, PAHO, CDC	USAID, American Association of Public Health Laboratories, World Health Organization, Pan American Health Organization	Argentina, Belize, Brazil, Colombia, Costa Rica, Haiti, El Salvador, Guatemala, Honduras,		Building public health epidemiological capacity through training personnel to become high-caliber field epidemiologists and strengthening disease surveillance	Competency-based curriculum in classroom mixed with substantial field experience	Communicable diseases, disaster response, surveillance systems, outbreak investigations, planned surveys corresponding to country-specific epidemiological trends

								Mexico, Panama, Paraguay, Peru and the Dominican Republic.				
9	**Caribbean**	The Caribbean Regional Field Epidemiology and Laboratory Training Programme (CR-FELTP)	Training Program		Current	Field epidemiology training	CR-FELTP is a partnership between the Caribbean Public Health Agency (CARPHA), the health ministries of participating islands, and the U.S. Centers for Disease Control and Prevention (CDC), with additional technical support from the Pan American Health Organization (PAHO), and University of West Indies.		Caribbean	Caribbean	The goal of the CR-FELTP is to build country capacity for training and coaching as well as technical skills in field epidemiology and laboratory science. It is essential that the program is "owned" by each implementing country, to sustain the FELTP into the future.	The Caribbean Regional FELTP is structured in three tiers: Level I is a five-month program that provides basic training in applied epidemiology, public health laboratory science, and communications. Level II will comprise an additional 4 months of learning in the same content areas, at an intermediate level, and introduce competencies in the areas of teaching and training. Level III will be a full two-year "fellowship" program. At each tier, Trainees will spend about 20% of the time in the classroom, and the remaining 80% of their time on the job, implementing what they have learned and demonstrating their skills while providing service to public health organizations.