Effectively Targeting Public Health Intervention in Libon, Philippines

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The Local Government Unit of Libon (LGU) recently incorporated an electronic medical records system to better serve its constituents. The capstone team was invited to provide recommendations for using this system to guide public health policy at the municipal level. The Capstone team designed a multi-stakeholder interview process to assess community health perceptions and used municipal public health data to identify areas of focus. The team studied international best practices, case studies of similar contexts, and international public health targets to construct a guide outlining high-value strategies to target and enact public health policies. The completed guide consists of recommendations that will help the LGU effectively use its limited public health budget to best meet the needs of its constituents in light of the real-time data stream provided by the new electronic medical records system and existing regional and national health priorities.

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Executive Summary

In 2013, the Local Government Unit of Libon, Albay Province, Philippines (LGU) began to implement the Wireless Access for Health electronic medical records system (WAH). This system provides extensive data on health conditions and outcomes in Libon. At the invitation of Mayor Agnes Dycoco and the LGU, a team of scholars from the New York University Wagner School of Public Service (NYU team) has produced this report to guide the LGU's use of the new stream of WAH data. The goal of the report is to provide recommendations that will produce better health outcomes and further engage the community in public health service delivery.

To inform this report, the NYU team has conducted interviews with local stakeholders, national, regional, and provincial agencies, and international organizations. The NYU team has also reviewed relevant health policy literature and health data collection regimes within the Philippines. This research captured local perceptions of health priorities, WAH data collection and analysis capabilities, and national and international requirements for health policy prioritization and reporting.

Based on this research, the NYU team recommends that the LGU monitor seven key health areas using WAH data and other data collection processes already in place in Libon:

Figure A: Suggested health indicators

Medicine
- Contraception prevalence
- Sick children given Vitamin A
- Low birth weight children given Iron
- Anemic children given Iron

Water and Sanitation
- Use of improved source of drinking water
- Access to an improved sanitation facility
- Use of an improved Sanitation facility
- Hand washing
- Safe water storage

Maternal and Child Health
- Maternal mortality
- Child mortality
- Demand for family planning
- Antenatal care
- Skilled attendant at birth
- Postnatal care

Non-communicable Diseases
- Prehypertensive cases
- Stage I hypertension
- Stage II hypertension
- Waist circumference
- Body Mass Index

Tuberculosis
- Case detection rate
- Cure rate

Vaccines
- Fully immunized children
- Completely immunized children
- Children given measles vaccine
- Children protected at birth
- Children given BCG vaccine
- Children given DPT vaccine
- Children given Hep B vaccine
- Children given OPV vaccine

Nutrition
- Stunting prevalence
- Exclusive breastfeeding

These areas of focus address the priorities of local stakeholders, the most pressing areas for intervention as indicated by LGU health professionals and available data, and the priorities of the national and international communities. Each key area is broken out into specific indicators for monitoring and evaluation. A summation of indicators can be seen in Figure A. The NYU team recommends that the LGU use this list of indicators—benchmarked against national and international targets—to prioritize areas for health policy intervention. The LGU can target interventions within the health policy areas listed above based on deficits they measure through WAH data and annual household surveys performed by barangay health workers.

The NYU team has also identified two health policy paradigms that the LGU can use to mobilize health interventions:

(1) **Functional Health Literacy** – Functional health literacy refers to the ability of individuals within the community to understand and use health services. Operationalizing this concept requires the LGU to communicate with residents through easily understandable written and verbal communications. The ultimate goal is to transmit lasting awareness of preventative treatments for common health problems and the routes of accessing existing health services.

(2) **Positive Deviance** – Positive deviance refers to identification and mobilization of individuals within the community who are already modeling better health practices while facing constraints similar to those of their peers. These individuals can be called upon to educate and provide a relatable example for other community members.

Drawing upon these health policy paradigms, the NYU team recommends the following three interlinking strategies for achieving better health outcomes in prioritized areas:

(1) **Volunteerism/Community Mobilization** – The LGU is already mobilizing communities through barangay health workers and barangay-level health councils. The LGU can improve the effectiveness of these efforts by building greater capacity among barangay health workers. By creating greater functional health literacy among barangay health workers, the LGU can multiply that knowledge within communities. The LGU can also stress—and possibly incentivize—accurate and complete health data reports among the barangay health workers. This will improve the quality of WAH data, which will improve health policy targeting based on that data. Further, barangay health workers can be trained to identify positive deviants within the community. The barangay can then provide small inducements (such as public recognition) to these positive deviants to educate their peers at barangay-level meetings or events.

(2) **Community Leadership** – The LGU has also taken steps to mobilize community leaders as champions for public health. Barangay captains, Kagawads, and teachers have been given greater responsibility for community health through barangay health councils. The NYU team recommends that the LGU work with barangay health workers to identify additional

social mobilizers within the barangay, such as clergy, prominent local individuals, and other educators who can be enlisted to support public health campaigns. The LGU can engage these individuals in local health councils to help transmit public health messages prioritized by the LGU. WAH data can be used to educate these individuals about community health priorities. Further, the NYU team recommends that the LGU use a variety of public outreach methods to highlight community successes, such as banners, posters at barangay health stations, and recognition at community and LGU events. This will again draw on the paradigm of positive deviance, where the successes of individuals and communities can motivate and model best practices for peer individuals and communities.

(3) **Information Dissemination** – The LGU currently uses barangay health stations and health workers as the focal point of health information dissemination. With the help of WAH data in prioritizing areas for health interventions, the LGU can more strategically make use of public health resources. By training barangay health workers in functional health literacy, the LGU can make strides in overcoming misinformation that the NYU team identified within local communities. Priority areas for public health can then be promoted through existing communication mechanisms more effectively, such as posters and banners at barangay health stations, communications in community common areas and events, and new areas such as religious gatherings. These materials will have greatest effect if given a uniform appearance that draws on the authority and prestige of the LGU and local leadership.

Finally, the NYU team has identified three areas for further research that the LGU can pursue:

(1) **Transportation Limitations** – Many community members cited a lack of transportation as a barrier to health care. The LGU may want to explore this constraint more fully to inform useful transportation policy interventions.

(2) **Medication Limitations** – Community members also cited a lack of access to necessary medications or the lack of resources to purchase necessary medications as a barrier to better health outcomes. This constraint seems to result from a mixture of miscommunication, lack of information, lack of medicines, and administration of available medicines. The NYU team advises the LGU to further study this phenomenon so that it can craft an appropriate policy intervention.

(3) **Funding for Public Health Interventions** – It is apparent that the LGU is enacting a laudable amount of public health programming with very limited funding. The LGU can use WAH data to better demonstrate to national and international agencies its need and readiness for financial and technical assistance. Further, The NYU team recommends that the LGU research and pursue public-private partnerships with Filipino and multinational organizations to augment its financial and technical capabilities. A list of organizations that the LGU might consider is provided in Section 3 of the full report.

Introduction

In 2011, the Local Government Unit (LGU) of Libon, Albay Province, Philippines completed a comprehensive review of its health services delivery program. Based on the results, the LGU initiated a restructuring of its system to improve health service delivery and increase public awareness of the range of services offered, routes of access, and times of services. The LGU also instituted the BEmHealED (*Barangay Empowerment for Health, Education, and Development*) program to transform barangay (neighborhood district) health teams and constituents into co-managers and co-owners of Libon health programs.

Along with these public programs, municipal administrators introduced a scorecard system to monitor several aspects of the healthcare delivery system. These included a health orientation series with Barangay health teams, construction of additional health stations, and improvement of health facilities in the barangays.

The LGU also initiated an electronic medical record system in partnership with the Zuellig Family Foundation and the Wireless Access for Health (WAH) program, designed to improve local data collection reliability, speed, and consistency. WAH uses a Filipino-developed software program and 3G wireless technology to connect local healthcare workers with an open-source health record system. Upon its full implementation, the system will replace the current practices of manual health data collection and national health data reporting. WAH will allow the municipality to use health statistics to set health policy in real-time.

Given the immense challenges associated with implementing a project of this scale, the LGU invited a team from New York University's Wagner School of Public Service (NYU team) to study present health policy and practices in Libon. Over several months of evaluation, the team has produced this report detailing practical recommendations for leveraging this new stream of health data to build more effective health policies and practices.

The NYU team built its methodology around the following key aspects of health policy in Libon:

- Community perceptions of public health delivery
- Results of WAH data analysis
- National requirements for health prioritization, as dictated by the Field Health Service Information System (FHSIS) reporting system and LGU scorecard reporting system

Taking these factors into account, the team developed a multi-stakeholder interview process to assessed community perceptions of public health in terms of the most pressing public health needs and the most successful public health interventions in Libon. The team engaged with a range of citizen groups, clergy, local leaders, health workers, and LGU employees across Libon's 47 barangays.

The team also reviewed all available statistical health data at the municipal and barangay levels in order to identify key areas of health concern as they related to leading causes of morbidity and mortality. In addition, health targets and objectives were assessed on the regional and national level via a review of the nationwide FHSIS data reporting system, as well as relevant Department

of Health resources. Finally, the team engaged with national and regional experts at USAID, University of the Philippines, and the World Health Organization (WHO) in order to better understand health priorities and public health infrastructure currently in place in the Philippines.

Using the data drawn from these multiple sources, the team converged upon seven areas of focus and 36 specific health indicators. The NYU team then researched case studies of successful local policy initiatives in analogous contexts and identified promising strategies that might also pay dividends in Libon. The team then created this report presenting recommendations and a guide to implementing them.

The report contains four sections that will guide the LGU in identifying and understanding key indicators, setting health policy based on these indicators, and enacting effective policy to create better public health outcomes. Section 1 presents suggested areas of focus for public health in Libon, including targeted indicators. Each area of focus is accompanied by:

- Rationale for inclusion
- Definition of key indicators
- Indicator chart, including:
    - Target measures
    - Statistics of local/provincial/regional/national performance for each indicator
    - Other uses for this data
- Where to find this information in the WAH system

Section 2 presents detailed information about high-value interventions that could be used to generate public enthusiasm and ownership of health issues in Libon. Based on our review of successful approaches in Libon and similar contexts, the NYU team recommends the following strategies as vehicles for implementing data-driven policy interventions introduced in Section 1:

- Volunteerism and community mobilization
- Community leadership
- Information dissemination

Each strategy is described in terms of the current state of related activities in Libon, a theory of change supporting the strategy, recommendations and resources required, related case studies, and a summary of key points.

Areas for further research are presented in Section 3. These are largely based on issues raised during stakeholder interviews. Specifically, this section discusses community concerns about barriers to healthcare posed by transportation limitations and affordability/availability of medicine. Finally, the section concludes by recommending several strategies through which the LGU can overcome resource constraints, namely via external partnerships.

Section 4 consists of four appendices. Appendix A describes the team's methodology. Appendix B presents WAH data reporting standards. Appendix C shows a chart of Non-Communicable Disease indicators. Finally, Appendix D summarizes the list of suggested indicators in a single table.

Section 1

Indicators and Metrics

Introduction: Indicators and Metrics

Wireless Access for Health (WAH) includes a wealth of indicators that can be analyzed in order to provide insight into public health issues, as well as the effectiveness of specific interventions. Based on our research, the NYU team has selected seven areas of priority that reflect the most pressing health issues within Libon, as well as 36 specific indicators within each.

The areas of priority are:

- Medicine (including contraception)
- Vaccinations
- Tuberculosis
- Water and Sanitation
- Maternal and Child Health
- Nutrition
- Non-Communicable Diseases

The selected indicators within each of the seven areas can be used to call to attention any positive or negative fluctuations in health throughout the LGU. Data collected can be analyzed to determine if health targets are being reached across the LGU. If data shows targets are not being reached, health care practices can be further assessed and adjusted accordingly in real time.

1. Medicine

Affordable access to medications is a difficult issue to measure and evaluate. According to United Nations' Millennium Development goal 8E, "In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries" is measured by "proportion of population with access to affordable essential drugs on a sustainable basis", which the Philippines had targeted to reach 85% by 2015. The most current data from 2008 reports that proportion was at 64.5.[1] However, practical application of this metric at the local level is not particularly feasible given the limited time and resources of the LGU. Consequently, assessing the availability of affordable medications must leverage already-collected indicators.

Contraceptive use is one presently collected indicator that provides insight into the distribution of available resources, as is the availability of various vitamins and supplements. Of particular interest are dropout rates for contraception use, as they may illustrate inconsistent availability or unaffordable prices. Ideally, the LGU will utilize WAH to track medication availability, use, and concentration of need. However, the following indicators may serve as an interim method of assessing the flow of medications throughout the municipality.

The definitions of these indicators are as follows:

- **Contraceptive Prevalence Rate:** Percentage of regular contraceptive use amongst eligible (women of child-bearing age) population.

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[1] National Statistical Coordination Board. (2013). The Philippines Millennium Development Goals: MDG Indicators. Retrieved April 30, 2013, from http://www.nscb.gov.ph/stats/mdg/assessment.asp

- **New Acceptors –Pill/IUD/Injectable:** Percentage of eligible patients who have recently begun taking a new form of contraception (by type).

- **Other Acceptors – Pill/IUD/Injectable:** Percentage of eligible patients who are continuing to take a form of contraception (by type).

- **Dropouts - Pill/IUD/Injectable:** Percentage of eligible patients who have stopped taking a form of contraception (by type).

- **Percentage of sick children (6-11 months) given VA:** Percentage of sick children ages 6-11 months seen by medical staff given Vitamin A.

- **Percentage of sick children (12-59 months) given VA:** Percentage of sick children ages 12-59 months seen by medical staff given Vitamin A

- **Percentage of low birth weight children (2-6 months) given Iron:** Percentage of low birth weight children ages 2-6 months seen by medical staff and given Iron.

- **Percentage of anemic children (2-59 months) given Iron:** Percentage of anemic children ages 2-59 months seen by medical staff and given Iron.

1.1 Indicator Chart

Indicator	Target[2]	Libon[3]	Albay[4]	Region 5[5]	National Avg.[6]	Other uses
Contraceptive Prevalence Rate	-	-	30.5	33.4	22.0	FHSIS
New Acceptors – Pill/IUD/Injectable	-	-	19.2/0.9/ 9.9	18.7/1.5/7.5	18.4/3.2/13.4	FHSIS
Other Acceptors – Pill/IUD/Injectable	-	-	44.2/ 1.3/ 14.1	29.0/.9/2.1/11.9	36.3/4.8/19.5	FHSIS
Dropouts - Pill/IUD/Injectable	-	-	33.3/ 0.9/ 9.9	23.59/1.5/7.8	25.5/4.8/16.2	FHSIS
Percentage of sick children (6-11 months) given VA	-	-	12.4	24.3	39.5	FHSIS
Percentage of sick children (12-59 months) given VA	-	-	12.2	23.8	35.1	FHSIS
Percentage of low birth weight children (2-6 months) given Iron	-	-	99.4	79.0	77.0	FHSIS
Percentage of anemic children (2-59 months) given Iron	-	-	89.5	85.2	91.8	FHSIS

In the Monthly Consolidation Table report for Rural Health Units (RHUs), all of the Vitamin indicators can be located in the "Child Care 1", or "CC3" output page. For the family planning indicators, see reports FP1, FP2, and FP4 in the Monthly Consolidation Table.

2. Vaccines

Vaccination delivery and dispersal has improved in the last decade, both globally and in LGU Libon. Beginning in the 1980s, UNICEF and the WHO developed a standard for "Universal Childhood Immunization" of the six EPI vaccines (BCG, OPV, diphtheria, tetanus, pertussis, and measles) with the goal of immunizing 80% of all children by 1990. As of 2011, 83% of all children are immunized—evidence of achievement of long-sought goals. However, 22.4 million children throughout the world remain unvaccinated.[7]

In the long term, universal vaccination has been shown to prevent disease, provide an incentive for global labor-force investment, serve as a cost-effective method of care delivery, and drive

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[2] Targets Unavailable.

[3] Statistics Unavailable.

[4] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf

[5] *Ibid.*

[6] *Ibid.*

[7] World Health Organization. (2012). Summary: Global Immunization Data. Retrieved October 2012, from http://www.who.int/hpvcentre/Global_Immunization_Data.pdf

equity of care throughout populations.[8] Vaccination delivery also presents an opportunity to introduce secondary care or health education, increasing the potential impact of thorough and consistent delivery practices.

In the Philippines, the nationwide Expanded Program on Immunization has four goals:[9]

1. Sustaining high routine Full Immunized Child (FIC) coverage of at least 90% in all provinces and cities
2. Sustaining the polio-free country for global certification
3. Eliminating measles by 2008
4. Eliminating neonatal tetanus by 2008

Oxfam cites diphtheria, tetanus, and pertussis (DTP) vaccination as a standard measure for vaccination rates,[10] but a number of other vaccinations are recorded currently in LGU Libon as required by FHSIS reporting. These metrics can serve, when analyzed on a barangay basis, as active indicators for measuring the effectiveness and thoroughness of vaccine distribution.

The definitions of these indicators are as follows:

- **Percentage of Fully Immunized Children:** Fully immunized children must have completed BCG 1, DPT 1, DPT 2, DPT 3, OPV 1, OPV 2, OPV 3, HB 1, HB 2, HB 3 and measles vaccines before the child is one year old.

- **Percentage of Completely Immunized Children:** Percentage of total children under the age of seven who have been given the complete complement of vaccines.

- **Percentage of <1 y.o. given Measles Vaccine:** Percentage of children under one year of age given the full measles vaccine.

- **Percentage of Children Protected at Birth:** Children protected at birth from neo-natal tetanus.

- **Percentage of Children <1 y.o. given BCG:** Percentage of children under one year of age given the Bacillus Calmette-Guérin vaccine against tuberculosis.

- **Percentage of Children <1 y.o. given DPT 1/2/3:** Percentage of children under one year of age vaccinated against diphtheria, pertussis and tetanus, by stage of the vaccine (1, 2, or 3).

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[8] Lawson S, Douglas DB. (2009). Health buys wealth. Goldman Sachs, Global Markets Institute. Retrieved April 30, 2013, from http://www.academia.edu/432840/Health_Buys_Wealth

[9] National League of Philippine Government Nurses. (2007). *Public Health Nursing in the Philippines*. Manila, Philippines: National League of Philippine Government Nurses.

[10] Wilson, Paul. (2010). Giving Developing Nations the Best Shot: An Overview of Vaccine Access and R&D. Geneva, Switzerland: Oxfam International.

- **Percentage of Children <1 y.o. given Hep B 1/2/3:** Percentage of children under one year of age vaccinated against Hepatitis B, by stage of the vaccine (1, 2, or 3).

- **Percentage of Children <1 y.o. given OPV 1/2/3:** Percentage of children under one year of age given the Oral Polio Vaccine, by stage of the vaccine (1, 2, or 3).

2.1 Indicator Chart

Indicator	Target[11]	Libon[12]	Albay[13]	Region 5[14]	National Avg.[15]	Other uses
Fully Immunized Children (%)	90.0	-	82.4	78.3	56.0	FHSIS
Completely Immunized Children (%)	-	-	18.4	15.2	7.0	FHSIS
<1 y.o. given Measles Vaccine (%)	90.0	-	85.7	82.2	57.0	FHSIS MDG goal 4.3
Children Protected at Birth (%)	90.0	-	86.7	78.3	78.0	FHSIS
Children <1 y.o. given BCG (%)	90.0	-	85.6	88.0	59.0	FHSIS
Children <1 y.o. given DPT 1/2/3 (%)	90.0	-	91.0/ 88.0/86.7	93.0/89.5/85.81	61.0/59.0/ 60.0	FHSIS
Children <1 y.o. given Hep B 1/2/3 (%)	90.0	-	36.4 (within 24 hours of birth), 46.5 (more than 24 hours after birth)/ 81.8/80.3	31.5 & 56.0 /80.7/81.1	23.0 & 35.0/56.0/ 55.0	FHSIS
Children <1 y.o. given OPV 1/2/3 (%)	90.0	-	86.7/84.2/ 81.0	89.3/83.7/79.4	62.0/60.0/ 59.0	FHSIS

In the Monthly Consolidation Table report for RHUs, these indicators can be located in the Child Care 1, (CC1) output page.

3. Tuberculosis

A patient can be cured of tuberculosis (TB) for under $20 USD. However, TB can have severe secondary impacts on patients and families. Costs associated with diagnosis, treatment, and related transport can be prohibitive for individuals, not to the impact of lost wages. As a result of untreated and partially-treated cases of tuberculosis, new strains have evolved that do not

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[11] Millennium Development Goals Targets
[12] Statistics Unavailable.
[13] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf
[14] *Ibid.*
[15] *Ibid.*

respond to standard courses of treatment, bringing greater costs to individuals and communities. For these reasons, tuberculosis remains an important public health issue in Libon.

In its 2012 Global Tuberculosis Report, the WHO listed the Philippines as one of 22 high-burden countries, which account for 80 percent of tuberculosis cases worldwide. While prevalence of tuberculosis in the Philippines has steadily decreased over the past 20 years, the disease still affects about 484 citizens per 100,000.[16]

Although Libon tracks a host of tuberculosis-related health indicators, two stand out as key:

- **TB case detection rate**, which is calculated as the number of new and relapse TB cases measured.

- **TB cure rate**, which is calculated as the percentage of patients who were initially sputum smear-positive and who were sputum smear-negative in the last month of treatment and on at least one previous occasion. This figure is divided by the estimated number of incident cases of TB that year.

3.1 Indicator Chart

Indicator	Target[17]	Libon[18]	Albay[19]	Region 5	National Avg.[20]	Other uses
TB case detection rate (%)	80.0 (2010) 81.0 (2015)	-	100.0 (2009)	-	75.0 (best est., 2011)	FHSIS LGU Scorecard MDG ind. 6.10
TB cure rate (%)	87.0	-	81.0 (2009)	-	91.0 (2010)	FHSIS LGU Scorecard MDG ind. 6.10

4. Water and Sanitation

Access to water, sanitation, and hygiene services is not only a driver of public health and economic development, but also a contributor to personal dignity, social cohesion, and even school attendance.[21] A USAID study found that poor sanitation alone led to an economic loss of

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[16] World Health Organization. (2012). Global tuberculosis Report. Retrieved February 2013, from http://www.who.int/tb/publications/global_report/en/index.html

[17] Stop TB Partnership. (2006). The Global Plan to Stop TB 2006-2015: Actions for Life: Towards a World Free of Tuberculosis. Stop TB Partnership, 2006, p. 74.

[18] Rates, as established in the indicator and the Millennium Development Goals, is not currently available, but could be calculated with estimates of TB prevalence.

[19] CBMS Philippines. Retrieved March 2013: http://www.pepnet.org/fileadmin/medias/pdf/CBMS_country_proj_profiles/Philippines/7thCBMSConf/Day1/Albay _Salceda.pdf

[20] World Health Organization. (2012). Global tuberculosis Report. Retrieved February 2013, from http://www.who.int/tb/publications/global_report/en/index.html

[21] World Health Organization. (2012). GLAAS 2012 Report: UN water global analysis and assessment of sanitation and drinking water. Geneva, Switzerland: WHO.

1.4 billion USD or 77.8 billion PhP per year in the Philippines.[22] This statistic alone reinforces the need for close monitoring of water and sanitation services.

Water and sanitation concerns were generally clustered in particular barangays. By tracking indicators of service provision, the LGU can effectively target areas of need and introduce relevant water and sanitation public health interventions to low-performing barangays.

Libon currently collects data on two key water and sanitation indicators:

- **Proportion of population with sustainable access to an improved water source**: Where the following definitions apply:[23]

Improved water sources:	**Unimproved water sources:**
Piped water into dwelling	Unprotected spring
Piped water to yard/plot	Unprotected dug well
Public tap or standpipe	Cart with small tank/drum
Tubewell or borehole	Tanker-truck
Protected dug well	Surface water
Protected spring	Bottled water
Rainwater collecting systems	

- **Proportion of population with access to improved sanitation**, where the following definitions apply:[24]

Improved sanitation:	**Unimproved sanitation:**
Flush toilet	Flush/pour flush to elsewhere
Piped sewer system	Pit latrine without slab
Septic tank	Bucket
Flush/pour flush to pit latrine	Hanging toilet or hanging latrine
Ventilated improved pit latrine (VIP)	Facilities shared by more than one household[25]
Pit latrine with slab	Open defecation
Composting toilet	
Special case	

Libon does not currently collect data on the following three indicators, but assessing them during annual household surveys could help provide better insight into the water and sanitation practices and status among constituents:

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[22] WSP-EAP. (2008). Economic Impacts of Sanitation in the Philippines. Manila: Water and Sanitation Program – East Asia and Pacific. Retrieved February 2013, from
http://pcij.org/blog/wpdocs/World_Bank_Economic_Impacts_of_Sanitation_Philippines.pdf
[23] WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply and Sanitation, Types of drinking-water sources and sanitation. Retrieved April 6, 2013, from http://www.easybib.com/reference/guide/apa/website.
[24] *Ibid.*
[25] UNICEF, WHO. (2012). Progress on drinking water and sanitation 2012 update. Geneva, Switzerland: *World Health Organization/UNICEF*.

- **Proportion of the population that uses improved sanitation facilities:** Lack of cleanliness or a number of other users can negatively impact usage of improved sanitation facilities even when access is available

- **Proportion of the population who regularly wash their hands with soap after defecation and cleaning an infant who has defecated, and before preparing food, eating, and feeding infants[26]**

- **Proportion of the population with safe water storage**: Treated/safe to drink water is stored in containers that protect it from contamination/recontamination. Such safe storage is generally dependent on the container. The container should be plastic, ceramic, or metal, and should meet the following criteria:

  1) A small, covered opening that discourages placing objects inside that may be contaminated (such as ladles)

  2) An opening that allows for easy access to water without putting hands or other potentially contaminated objects into the container

  3) Size that suits the home treatment method, with instructions attached for water treatment and cleaning of the container[27]

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[26] The CDC has found that regular hand washing in these instances is associated with about 50% fewer diarrheal and respiratory infections among children in low income communities. See: CDC. (2012). Hand washing in the Developing World. Retrieved April 30, 2013, from
http://www.cdc.gov/healthywater/hygiene/programs/handwashing-developing-world.html and
Luby, S. P., Agboatwalla, M., Painter, J., Altaf, A., Billhimer, W. L., & Hoekstra, R. M. (2004). Effect of intensive handwashing promotion on childhood diarrhea in high-risk communities in Pakistan. *JAMA: the journal of the American Medical Association*, 291(21), 2547-2554.
[27] Center for Disease Control and Prevention. Safe Water Storage. Retrieved March 27, 2013, from
http://www.cdc.gov/safewater/storage.html.

4.1 Indicator Chart

Indicator	Target[28]	Libon[29]	Albay[30]	Region 5	National Avg.[31]	Other uses
Proportion of pop using an improved drinking water source (%)	87.0	-	93.0	-	84.8 (best est., 2011)	FHSIS LGU Scorecard MDG ind. 7.8
Proportion of pop w/access to an improved sanitation facility (%)	86.0	-	-	-	92.5 (2010)	FHSIS LGU Scorecard MDG ind. 7.9
Proportion of pop using an improved sanitation facility (%)	86.0[32]	-	-	-	-	Will positively impact other indicators
Proportion of pop regularly washing hands (%)	100.0[33]	-	-	-	-	Will positively impact other indicators
Proportion of pop with safe water storage (%)	100.0[34]	-	-	-	-	Will positively impact other indicators

5. Maternal and Child Health

Since targets set by the Millennium Development Goals were established, child mortality rates have fallen in targeted countries from 1990 to present.[35] Though rates continue to drop in all regions, an estimated 9 million children die before the age of five worldwide. The maternal mortality rate has also seen declines, but many countries continue to miss targets due to inadequate access of care and gender inequality.[36]

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[28] *Ibid*, p. 85.

[29] Statistics unavailable

[30] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf

[31] National Statistical Coordination Board. Statistics at a glance of the Philippines' Progress based on the MDG indicators (as of October 2012). http://www.nscb.gov.ph/stats/mdg/mdg_watch.asp (accessed Feb 2013).

[32] Though no target exists nationally or internationally, it would be best if 100% of those with access to improved sanitation used it.

[33] Again, while no target exists nationally or internationally, it would be best if 100% of people washed their hands with soap in these instances.

[34] Again, while no target exists nationally or internationally, it would be best if 100% of people safely stored water.

[35] United Nations. (2010). We Can End Poverty 2015: Millennium Development Goals. United Nations Summit: High level Planning Meeting of the General Assembly September 20-22. 2010. United Nations: New York. Available December 7, 2011: http://www.un.org/millenniumgoals/

[36] United Nations. (2010). We Can End Poverty 2015: Millennium Development Goals. United Nations Summit: High level Planning Meeting of the General Assembly September 20-22. 2010. United Nations: New York. Retrieved December 7, 2011, from http://www.un.org/millenniumgoals/

Our research indicates that the municipal administration has a strong understanding of the importance of highlighting women and children in service prevision. The LGU has placed emphasis on programs geared toward maternal and child health, including mother's classes, child nutritional programs, and maternal education. In recent years, the LGU has monitored maternal and child health through indicators presented by FHSIS in order to implement effective programs targeting maternal and child health.

Through continued monitoring and targeting health concerns, the LGU can use relevant data to determine possible low cost interventions that can be implemented at the barangay level, enhancing service provision and improving maternal and child health. With the implementation of WAH, the LGU will be better able to track health indicators and compare them to targeted goals. If the targeted goals are not being met, the LGU can refocus interventions in real-time.

In December 2010, the WHO, in conjunction with The United Nations Commission on Information and Accountability for Women's and Children's Health, identified 11 key indicators of maternal and child health.[37] Of these, six can be used to assess maternal and child health in Libon.

Maternal and Infant Mortality Ratios

- *Maternal Mortality Ratio:* Complications during pregnancy and childbirth are the leading causes of death for women of childbearing age in the developing world. The Maternal Mortality Ratio (MMR) represents the risk associated with each pregnancy. The MMR is useful in the highlighting the social and economic conditions that may be affecting maternal health.[38]

- Tracked by FHSIS, *Infant Mortality Ratio* has long been an indicator used to monitor infant and child health. It has been adopted as a global standard by which infant health is measured.

- *Under-five child mortality (including the proportion of newborn deaths):* Under-five child mortality is a recent indicator added to FHSIS. The WHO deems the measure of under-five mortality a key indicator for measuring child wellbeing, health, and nutritional status. Across the developing world, interventions have shown to be most effective when packaged together to target the leading cause of death, such as malnutrition and diseases, of children under 5 years of age.[39]

Family Planning

- *Demand for family planning satisfied (contraception needs met):* Adequate access to family planning has allows women and their partners to make important decisions about

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[37] World Health Organization. (2011). Monitoring Maternal, newborn and child health: understanding key progress indicators. Geneva, Switzerland: WHO.
[38] *Ibid*.
[39] *Ibid*.

timing of pregnancies and family size.[40] As an indicator, "demand for family planning satisfied" assesses family planning programs and contraceptive services provided to women as a proportion of women's reported desire to receive these services.

Early and Continued Interventions of Maternal and Child health

- *Antenatal care (four or more visits):* The antenatal period is an important time for provide women with adequate health services. The WHO recommends at least four antenatal visits. These visits target the wellbeing of both mothers and their children. At minimum, the four visits should include blood pressure measurement, blood testing, urine testing, and measurement of height/weight. Ideally, healthcare providers can offer other interventions, including education and counseling on birth preparedness and family planning. Other interventions include provision of important supplements, education on exclusive breastfeeding, and education on prevention of violence against women.[41] In correspondence with FHSIS, the LGU keeps records of those mothers that have had four or more visits to a health professional during their pregnancy.

- *Skilled attendant at birth:* Presence of a skilled attendant at birth is an indicator of a health system's ability to provide consistent and adequate care for pregnant woman during the course of labor and delivery. Interventions that support and include the availability of skilled health professionals are tied to lower mortality rates and increased child and maternal health. Skilled personnel have the ability to provide life-saving obstetric care. Though a crucial measure of health, this indicator does not capture access to quality of care, which is a primary measurement of national progress in reducing maternal and infant mortality.[42]

- *Postnatal care for mothers and babies within two days of birth:* Research indicates that nearly 40% of deaths occur during the postnatal period. The majority of maternal and newborn deaths occur within the first 48 hours. Consistently, infant death within the first 28 days is on the steady increase across developing countries. Postnatal care within the first few days after childbirth is a key opportunity to provide service and lessen the likelihood of mortality and future ill health. Education and follow up can be provided to mothers during this time period.[43]

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[40] *Ibid.*

[41] *Ibid.*

[42] *Ibid.*

[43] *Ibid.*

The definitions of these indicators are as follows:[44]

- **Maternal mortality ratio:** The number of maternal deaths recorded or estimated during a given time period per 100,000 live births during the same time.

- **Under-five child mortality (including the proportion of newborn deaths):** The probability that a child born in a specific time period will die before reaching the age of five years, in contrast to age specific mortality rates (expressed by the number of deaths of children under five years of age per 1,000 live births). The proportion of newborn deaths is the proportion of all child deaths among infants up to 28 days of age.

- **Demand for family planning satisfied:** Percentage of women 15-49 years of age either married or in union[45], who feel their family planning needs have been satisfied. This indicator is determined by levels of contraception use and the unmet need for family planning.

- **Antenatal care (four or more visits):** Percentage of women who have had four or more visits to a skilled or unskilled provider during their pregnancy.

- **Skilled Attendant at birth:** Percentage of live births during which a skilled health professional is present.

- **Postnatal care for mothers and babies within two days of birth:** Percentage of mothers and newborns who have received care within two days of childbirth.

Below is an indicator chart detailing current targets and statuses:

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[44] *Ibid*.
[45] WHO indicates age to be considered in indicator as 15-49. See: World Health Organization. (2011). Monitoring Maternal, newborn and child health: understanding key progress indicators. Geneva, Switzerland: WHO.

5.1 Indicator Chart [46,47]

Indicator	Target[48]	Libon[49]	Albay[50]	Region 5[51]	National Avg. [52]	Other uses
WAH: maternal mortality rate (per 1000 live births) WHO: Maternal mortality ratio	30.3-51.8	-	.7	.7	.7	FHSIS, MDG goal
WAH: Under-five mortality rate WHO: Under-five child mortality (including the proportion of newborn deaths)	26.7	-	1.3	1.3	1.3	FHSIS, MDG goal
WAH: Contraceptive prevalence rate WHO: Demand for Family Planning Health Satisfied	100.0	-	30.5	33.4	22.0	FHSIS
WAH and WHO: Antenatal care (four or more visits)	100.0	-	41.5	58.4	34.0	FHSIS
WAH and WHO: Skilled attendant at birth	100.0	-	73.5	67.4	85.6	FHSIS
WAH: Post Partum Women with at least 2 Post Partum Visits WHO: Postnatal care for mothers and babies within two days of birth	100.0	-	57.3	58.1	35.6	FHSIS

Indicators can be located in the data areas pertaining to: Mortality, Natality, Family Planning, and Post-Partum Care. The name of each indicator as seen in FHSIS and WAH is provided in the above chart.

6. Nutrition

Nutrition is a key indicator of future health. Children who are stunted due to malnutrition are at a disadvantage for the rest of their lives. If appropriate nutrition is supplied from the neonatal period through the first few years of life, children are more likely to avoid health concerns that may affect them throughout their life span. The WHO has determined key nutritional targets to improve maternal and child health by 2025. These targets include a 40% reduction in the number of stunted children, 50% reduction of anemia in woman of reproductive age, 30% reduction in

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[46] All data from FHSIS 2011 report.

[47] Targets from calculated from 1990 data from National Statistical Coordination Board. See: National Statistical Coordination Board. (2013). The Philippines Millennium Development Goals: MDG Indicators. Retrieved April 30, 2013, from http://www.nscb.gov.ph/stats/mdg/assessment.asp

[48] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf

[49] Statistics Unavailable.

[50] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf

[51] *Ibid.*

[52] *Ibid.*

low birth weight, and 50% increase in exclusive breastfeeding in the first 6 months, and a reduction and maintenance of wasting children to less than 5%.[53]

With the implementation of WAH, the LGU will be better able to track nutrition indicators and compare them to the rest of the region and country. This will assist in assessing which targets have been reached and what changes should be made to improve nutrition. Within WAH, the LGU should highlight the following indicators to improve nutrition within the barangay.

- *Weight and Height Measurements and Stunting Prevalence:* Weight and height are consistent measures used to identify child malnutrition. Continuing to monitor these indicators, in conjunction with the data collected by WAH, allows municipal policymakers to accurately evaluate malnutrition in Libon. This measure assists in determining which areas are in greatest need of intervention and follow up. Stunting as a measure is especially useful here. A child's linear growth is associated with optimal nutrition, disease prevention, and child health care practices. Stunting is an indicator of continued malnutrition and poor health, especially within the first two years of life. The WHO has cited stunting as a more reliable indicator of nutrition than height and weight measurement.[54]

- *Exclusive Breast Feeding:* Breast milk is the ideal nourishment for infants within the first six months of life. It provides all vitamins and minerals necessary for continued health as the child grows. It protects the infant from certain infections and diseases, ensuring that health concerns are limited during the first few years of life. Ensuing that appropriate nutrition is sustained in a child's early life limits the possibility of health risks in their later childhood and adulthood.[55]

The definition of these indicators is as follows:[56]

- **Weight-for-height:** The WHO and UNICEF recommend the use of a cut-off for weight-for height of below -3 standard deviations (SD) of the WHO standards to identify 6–60 month old infants and children for the management of severe acute malnutrition

- **Stunting Prevalence:** Measured by the percentage in children under five years, whose height for age is below minus two standard deviations from the median of the WHO Child Growth Standards in comparison to the number of children who are at a valid height for their age

- **Exclusive breastfeeding:** Percentage of infant (ages 0-5 months) who are exclusively breast-fed

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[53] World Health Organization. (2013). Global targets 2025: To improve maternal, infant and young child nutrition Available April 2013: http://www.who.int/nutrition/topics/nutrition_globaltargets2025/en/index.html

[54] World Health Organization. (2011). Monitoring Maternal, newborn and child health: understanding key progress indicators. WHO: Geneva.

[55] *Ibid.*

[56] *Ibid.*

Below is an indicator chart detailing current targets and statuses:

6.1 Indicator Chart

Indicator	Target[57]	Libon[58]	Albay[59]	Region 5[60]	National Avg.[61]	Other uses
WAH: height and weight[62] WHO: Stunting Prevalence, weight-for-height	40% reduction in stunted children	-	-	-	-	FHSIS
WAH: Portion of post partum woman initiated breastfeeding WHO: Exclusive breastfeeding (0-5 months of age)	50% increase for first 6 months	-	59.7	57.4	36.5	FHSIS

Indicators can be located in the data areas pertaining to: height and weight measurement and portion of post partum woman initiated breastfeeding. The name of each indicator as seen in FHSIS and WAH is provided in the above chart.

7. Non-communicable Diseases

According to the WHO, 57% of all deaths in 2008 in the Philippines were attributable to the "fatal four" non-communicable diseases: cardiovascular disease, cancer, diabetes, and chronic respiratory disease. With respect to Libon, hypertension, cardiovascular and respiratory diseases were noted as leading causes of morbidity and mortality.

Although not included in official FHSIS reporting, the province of Albay has instituted an integrated non-communicable disease (NCD) scoring program which measures various NCDs. Each LGU has been instructed to manually input data on prescribed indicators to the provincial government on a quarterly basis. In addition, Libon has included an NCD category in its own LGU scorecard, limited to measures of blood pressure and risk factors among male patients. It is unclear how NCD indicators can be merged into the system. However, even if such a merger is not possible, the threat posed by NCDs are simply too great to ignore.

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[57] World Health Organization. (2013). Global targets 2025: To improve maternal, infant and young child nutrition Available April 2013: http://www.who.int/nutrition/topics/nutrition_globaltargets2025/en/index.html
[58] Statistics Unavailable.
[59] National Epidemiology Center. 2011 FHSIS Report. Retrieved March 2013, from http://www.doh.gov.ph/sites/default/files/FHSISPre2011.pdf
[60] *Ibid.*
[61] *Ibid.*
[62] World Health Organization. (2013). Child Growth Standards. Retrieved April 30, 2013, from http://www.who.int/childgrowth/en/

The team has identified five key indicators for tracking potential hypertensive and diabetic cases. Each of the following indicators is already included in quarterly provincial NCD reports. These indicators can be used to measure a broad spectrum of NCD-related maladies at the municipal level. The indicators are:

- **Prehypertensive Cases:** BP between 120-139/80-89

- **Stage I Hypertension:** BP between 140-159/90-99

- **Stage II Hypertension:** BP > 160/100

- **Waist Circumference: >** 90cm (male), > 80cm female

- **Body Mass Index:** BMI >= 23

7.1 Indicator Chart

Indicator	Target[63]	Libon[64]	Albay[65]	Region 5[66]	National Avg.[67]	Other Uses
Prehypertensive Cases	-	-	-	-	-	Provincial NCD Scorecard
Stage I Hypertension	-	-	-	-	-	Provincial NCD Scorecard
Stage II Hypertension	-	-	-	-	-	Provincial NCD Scorecard
Waist Circumference	-	-	-	-	-	Provincial NCD Scorecard
Body Mass Index	-	-	-	-	-	Provincial NCD Scorecard

Provincial health administrators have advocated for the adoption of the WHOs Cardiovascular Risk Prediction chart, which uses a patient's systolic and diastolic blood pressure to assess risk of a fatal or non-fatal cardiovascular event, such as stroke or heart attack. In order to utilize the chart, the following basic patient information is necessary:

- Presence or absence of diabetes
- Gender

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[63] Targets Unavailable.
[64] Statistics Unavailable.
[65] *Ibid.*
[66] *Ibid.*
[67] *Ibid.*

- Smoker/Nonsmoker
- Age
- Systolic BP
- Total blood cholesterol (if in mg/dl, divide by 38 to convert to mmol/l)

The chart is highly visual, simple to interpret, and provides a risk figure measured by percentage. The province has already distributed these charts to doctors throughout the area. See **Appendix C** for an example of this chart.

As previously stated, it is unclear if NCD data is collected in the WAH, but it is collected independently both at the municipal and provincial levels. Within the LGU, data is segregated at the barangay level and collected monthly. As a result, a municipal health officer can see the occurrences of a given NCD (Hypertension, Obesity, etc.) using the above metrics and rapidly diagnose the issue on a local level.

Section 2

Strategies and Recommendations

To promote public health awareness, The NYU team recommends that Libon's public health campaigns combine old and new communication strategies. Each member of the health team should understand potential strategies and be able to articulate the goals that Libon is aiming to attain. The NYU team has identified two theories that can assist the LGU with potential public health campaigns: functional health literacy and positive deviance.

- **Functional health literacy** describes a state in which constituents have a clear idea of what health services are available to them, how to access those services, and what basic, incremental behavior adjustments can be made in order to lead healthier lives.

- **Positive Deviance** is a characteristic that describes certain individuals or groups within every community whose behaviors and strategies enable them to find better solutions to problems than their peers, while having access to the same resources and facing similar or worse challenges.[68] It becomes a developmental approach when these individuals are engaged to model behaviors for their peers.

The NYU team has identified several potentially beneficial health communication interventions that reflect Libon's unique economic, demographic, and health realities. Our strategies are:

- Volunteerism and Community Mobilization
- Community Leadership
- Information Dissemination

Functional health literacy and positive deviance are the overarching theories that undergird each of these strategies.

1. Volunteerism/Community Mobilization

This section outlines several strategies that aim to enhance the existing networks of Barangay health workers and related personnel in order to deliver an improved level of care and support to citizens throughout Libon.

One of the municipality's major strengths lays in its established network of community health workers. Health workers deliver vital information on an interpersonal basis throughout the region. These peer-to-peer encounters create a sense of trust and ownership within the community.

Field visits and data collection have led our team to infer that current outreach strategies are extremely effective in addressing certain health issues, most notably maternal care. However, there are several health issues, specifically TB, Nutrition, and NCDs, that are in need of effective

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[68] Tufts University. (2013). Friedman School of Nutrition Science and Policy. The Positive Deviance Initiative. Retrieved April 30, 2013, from www.positivedeviance.org

interventions. We believe that these interventions can be delivered through simple strategies focusing on health literacy and positive deviance.

First, the LGU must explore expanding the role of community health workers and volunteers by training these personnel to utilize innovative strategies that provide an increased and more personalized level of support to LGU constituents. These strategies seek to transform the role of these individuals from passive conduits of information to active agents of behavior change.

1.1 Functional Health Literacy and Incentivizing Community Participation

The LGU must ensure that health workers take messages of prevention and awareness directly into the communities that they serve. The goal of these messages is to promote functional health literacy across the community. We hypothesize that the impact of functional health literacy programs could increase if community members were more involved in the promotion of positive health practices. Due to limited capacity, barangay health workers are unable to provide sustained, concentrated attention to drive lasting awareness and behavior change. To alleviate this problem, health workers must be armed with functional knowledge that will enable them to pass along awareness of critical services in a straightforward, easily digestible manner.

Case Study: Incentivizing Accurate Data Collection in Tarlac, Philippines

As the first region in which Wireless Access for Health (WAH) was introduced, Tarlac has been the proving ground for many, if not all of the system's refinements. Despite advanced technology, WAH still relies on data collected by barangay/municipal health workers as primary inputs. One of the biggest issues that plagued WAH in Tarlac was incomplete or inaccurate data collection. This in turn affected WAH's capacity to correctly diagnose health trends, to the point where the system's utility became extremely limited. In response, WAH administrators and the SMART Foundation teamed up to create an incentive system that rewarded accurate, complete data collection. On a quarterly basis, WAH administrators review data and identify the top barangay health workers who have submitted the most accurate and complete data. These health workers are awarded 500 peso prepaid phone cards as an acknowledgment of their achievement. WAH administrators and local public officials have praised the incentive system, claiming that data quality has dramatically increased. Consequently, policymakers' ability to implement fully informed, real-time health interventions has improved.

Case study completed by NYU Team during visit to Tarlac in April of 2013.

Current Actions

Presently, barangay health workers are provided a small monthly stipend in exchange for helping the LGU carry out its health objectives throughout the region. Our observations suggest that capacity building among constituents is lacking. However, it is evident that the LGU recognizes the importance of attaching prestige to the barangay health worker position and supplements small compensation with minor incentives such as clothing.

Once the WAH system is operational, it is imperative that health workers are given the proper incentives to submit accurate, complete data reports. Failure to do so undermines the entire program. Although barangay health workers already report feeling prestige associated with their

position, WAH implementation will add another layer of responsibility. If the LGU highlights this added responsibility in a positive manner, health workers will feel associated prestige and be more likely to collect correct data.

Theory of Change

The creation of a barangay health worker position can be promoted as a prestigious role essential to public service in Libon. As a result of this community's perceived value, the desirability of the position will make constituents vie for the position. Constituents will serve as a more localized dispensary of functional health literacy information. Increased health literacy will lead to improved health outcomes throughout the LGU. This model of incentives has proven to be effective elsewhere in motivating barangay health workers to submit accurate and complete data reports.

Recommendations

The effectiveness of WAH is directly tied to the quality of data that is submitted into the system. The LGU must be absolutely certain that its barangay health workers are doing their absolute best to furnish high quality data. To create incentives, the LGU might consider providing incentives that bring more prestige to the health worker position. This may require a degree of resource utilization through the provision of training and incentives. However, as previously stated, these incentives do not need to be grandiose if prestige is associated with the role. WAH in Tarlac currently uses set criteria for judging accuracy and completeness. These same criteria can be applied to Libon.

See **Appendix C** for a full list of WAH reporting standards.

Key Takeaways

- Functional health literacy is the awareness gained as a result of knowing which basic services are available, and what incremental changes can be made to behavior/attitudes in order to create an overall healthier lifestyle.

- LGU awareness campaigns should focus on promoting functional health literacy to provide constituents with a clear overall picture of the facilities and available services.

- Precedent shows that barangay health workers respond positively to small non-monetary incentives. This positive response leads to more accurate and complete reporting, which elevates the quality of WAH data.

1.2 Positive Deviance

We believe that the practice of Positive Deviance can be implemented by employing barangay health workers as mobilizers who can identify individuals within particular communities who can serve as an example for individuals to model their own habits and behaviors after.

Current Actions

Libon has a deep and vast network of well trained and motivated barangay health workers who serve as intermediaries between municipal government and constituents. The primary function of the barangay health worker is to dispense health information deemed pressing or relevant to constituents within the LGU. This system has improved outcomes within specific health areas. However, little action is being taken on the part of barangay health workers to build capacity among constituents. Efforts should be made to improve community participation and awareness of health issues through designation of individuals to serve as change agents and models of ideal health behavior.

Theory of Change

Since the late sixties, a variety of research has been conducted regarding the utilization of "positive deviants" to encourage behavioral and normative changes, particularly regarding health. Such programs utilize the positive actions of individuals acting outside (or "deviating" from) a negative norm to model improved practices. Marsh and Schroder summarize the work of these programs as:

> *"Programmers who use the PD approach for improving health outcomes work with communities to determine community norms regarding a specific, desirable outcome (e.g., good child growth), to identify a few (usually four to six) individuals who have achieved the good outcome (i.e., not the "normal" or expected outcome) despite high risk, to conduct a PD inquiry to learn from these PD individuals the behaviors that are likely to explain the good outcome and be feasible for their neighbors, and to design behavior change interventions to enable adoption of these new PD behaviors. Most PD interventions thus far have targeted childhood malnutrition and have*

Case Study: Addressing Child Feeding Practices in Gujarat, India

In this case, the authors attempt to build capacities of student volunteers as community mobilizers in a rural community in Gujarat, India. The role of these student volunteers was to impart knowledge on the issues related to optimal infant and young child feeding practices. Positive deviant children were identified as models of ideal health, and the nutritional practices that had contributed to their wellbeing were promoted during community-wide capacity building sessions. Employing these volunteers as home-grown change agents resulted in dramatic, community-wide improvements. At the beginning of the one-month study, only 5% of the population possessed knowledge of positive feeding and child care. At the study's conclusion that figure had risen to 90%. Similarly, only 2% of the community practiced healthy feeding and care, compared to 80% at month's end. The study showed that community-based volunteers could be mobilized to impressive effect with respect to shifting attitudes and practices on a community-wide scale.

Meenakshi, Nandini, Vandana, Neha. Capacity Building of Student Volunteers to Influence Infants & Young Child Feeding Behaviors of Urban Mothers. Retrieved on May 1, 2013, from http://iapsmgc.org/OA10V2I2.pdf

provided communal opportunities to observe and practice new behaviors until skills are mastered (e.g., hearth settings)."[69]

Positive deviance programs leverage a large amount of peer learning that yields consistent results, and programs can be directly evaluated by accessible metrics. For example, many child nutrition programs utilizing the PD model have seen demonstrable improvements in child height-weight ratios.[70]

The Positive Deviance theory of change can be best illustrated through a hypothetical scenario. For example, using designated metrics, the municipality's medical staff might conclude that the high rate of low infant weight is correlated with a lack of breastfeeding. In order to implement a low-cost intervention to promote awareness of the issue, LGU officials instruct barangay health workers to find examples of mothers who breastfeed regularly and whose children are of normal weight. These selected mothers are then publicized by the LGU (at group meetings, through literature, given awards etc.) as practitioners of healthy behavior. Noting how a neighbor of similar means and background has been able to raise a healthy child, other barangay mothers will modify their own practices and attitudes in order to improve health outcomes for their children.

Recommendations

Due to its relatively low cost and potential for positive benefit, we recommend that the LGU consider employing positive deviance as a vehicle through which to increase awareness, expand participation, and improve outcomes with respect to health issues.

In the context of Libon, any successful PD intervention will first require that municipal officials utilize WAH and FHSIS reporting systems to correctly identify health issue priorities within the region. Once the health issue is determined, the LGU must train the barangay health worker to identify individuals who display positive deviant behavior. For example, a barangay health worker must be trained to know what attributes and practices are characteristic of a mother who adequately breastfeeds. Given that barangay health workers are already well acquainted with their respective communities, we do not anticipate identifying positive deviants as a major hurdle. Once identified, the health worker must persuade the positive deviant to serve as a model for the community. This could be accomplished through the provision of simple rewards, such as clothing or a certificate of recognition from the mayor.

Key Takeaways

- Positive Deviance (PD) is a strategy that employs individuals within communities as home-grown mobilizers, who demonstrate that positive lifestyle adjustments are possible for people of similar means.

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[69] United Nations University. (2002). Food and Nutrition Bulletin. 23 (4). Retrieved April 30, 2013, from http://www.savethechildren.org/atf/cf/%7B9def2ebe-10ae-432c-9bd0-df91d2eba74a%7D/FNB-v23n4-supplement.pdf

[70] Ghassemi, H., Mansour, M., and Zeitlin, M. (1990). Positive Deviance in Child Nutrition -with emphasis on Psychosocial and Behavioural Aspects and Implications for Development. The United Nations University.

- Barangay health workers can help facilitate identification and promotion of positive deviants within individual neighborhoods throughout the region.

- Positive Deviance has been shown to be a cost effective, highly beneficial intervention in rural communities throughout the world.

2. Community Leadership

In the context of a resource-constrained environment, leveraging existing human resources in the community and the positive results of coordination, investment and feedback can have an important impact on improving local health outcomes. Invested members of the community can improve attitudes about ownership of health, and help build local support for LGU-wide health initiatives.

2.1 Partnering with Barangay Social Mobilizers

Current Actions

The LGU of Libon already takes many steps to decentralize much of the communication with individuals through barangay health aids and volunteers. Barangays provide tight networks that can be further leveraged by the LGU to improve communication of health information throughout the communities of Libon. Many members of these networks are already directly engaged with the LGU in some function, such as Barangay Captains and Kagawads. Others, like teachers, are being brought into the health conversation through the development of health councils. Traditional healers have been brought into the LGU health system through the ordinance on in-facility birthing. Even community members, like local religious institutions, who do not have a formal relationship with the LGU health system, have a vested interest in programs to improve health in their community.

These "social mobilizers" function not only figures of respect and authority, but as advocates for localized health priorities, and are therefore essential partners in the dissemination of information about health and health services. During our interviews, we found that many of the schools in the LGU are integrating nutrition and health programs into their curriculums. While this is an important first step, this curricular component must be supported by other community-based activity to maximize long-term results.[71]

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[71] Perry, C. L., Kelder, S. H., Murray, D. M., & Klepp, K. I. (1992). Communitywide smoking prevention: long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. *American Journal of Public Health*, 82(9), 1210-1216.

Theory of Change

While some partnerships may already exist, there are some demonstrated methods of collaboration with local community figures that might provide additional strategies of engagement for the LGU to consider. Since many of the LGU's (and the nation's) health initiatives are focused on the health of children, the presentation of health in the classroom is an important place to begin. Health education is directly tied to "improved knowledge and understanding of health determinants, and changed attitudes and motivations in relation to health behavior, as well as improved self-efficacy in relation to defined tasks."[72]

Bandura's paper on "Health Promotion by Social Cognitive Means" provides a broader description of a fully-fledged, education-centric child health promotion plan:

> *"An effective preventive program includes four major components. The first component is informational. It informs children of the health risks and benefits of different lifestyle habits. The second component develops the social and self-management skills for translating informed concerns into effective preventive practices. The third component builds a resilient sense of efficacy to support the exercise of control in the face of difficulties and setbacks that inevitably arise. The final component enlists and creates social supports for desired personal changes."[73]*

Case Study: The Sonagachi Project in Kolkata

An effective system for improving investment in children's health will not only include skill-based, practical lessons in classrooms, but social/normative support from the wider community. Developing support for this social motivation requires the influence of key community members. A case study of the Sonagachi Project in Kolkata, India, an organization that focuses on preventing HIV infection amongst sex workers, attributes much the Project's success to the integration of a variety of community members and circles – sex workers, health workers, the aid community, men's clubs – into the project's outreach. The study illustrates the importance of investment across social and economic boundaries in order for community-based projects to be successful.

Cornish, G. (2006). The necessary contradictions of 'community-led' health promotion: A case study of HIV prevention in an Indian red light district. Social Science Medicine.

Retrieved April 30, 2013, from
http://www.ncbi.nlm.nih.gov/pubmed/17055635

Recommendations

In the context of Libon, partnership means continuing to encourage the development of Barangay health councils and ensuring that they consist of a broad distribution of stakeholders – teachers, health workers, Kagawads, and local citizens. It may also be advisable to reach out to other community members – including religious institutions – to assess their willingness to aid the LGU in spreading information about health and health services. While the monetary resources required for this outreach are minimal (perhaps light meals or snacks to encourage meeting attendance), the most important resource to dedicate to this effort will be time – of both LGU/RHU leadership and the community members they seek to engage. Specifically, the LGU could leverage the following strategies for direct community leadership engagement:

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[72] Nutbeam, D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health promotion international*, 15(3), 259-267.
[73] Bandura, Albert "Health Promotion by Social Cognitive Means" Health Education and Behavior 2004 online: http://heb.sagepub.com/content/31/2/143

- The development of community health councils in barangays that do not already have them and the elevation of existing community health council opinions to central leadership.

- Inform the opinions of community leaders of the health status of their barangays by leveraging data from WAH reports to illustrate progress, areas for improvement, and emerging issues.

Key Takeaways:

- Engagement with barangay-level community leaders and influencers is necessary to improve community-wide health education.

- Health education programs for children must be supported by community-wide, normative activities.

- Data from the WAH system can be used to illustrate community successes and areas for improvement, and impress upon community leadership the need for action and partnership.

2.2 Highlighting Community Successes

Current Actions

During our research in Libon, the presence of a variety of public outreach methods regarding the success of local individuals or programs was readily noticeable. In particular, a healthy culture of publicly-funded signage highlighting successes, such as a list of students passing their chief exam at the local community college, is already in use by the LGU. Public assemblies and a variety of other community-oriented events are also utilized to illustrate exciting developments within the community of the LGU.

Theory of Change

As in Section 1.2, the idea of "positive deviance" once again proves helpful as a theoretical model for engaging citizens. In the previous section,

Case Study: UNICEF and Positive Deviance in West Bengal

In West Bengal, India, UNICEF has been encouraging the utilization of positive deviants to help teach nutrition courses to new mothers. The good actors are identified and invited to join local health teams in their presentations and classes. These positive deviants have a unique perspective on how to provide healthy food for children within the limitations of their communities and social circumstances, and offer a large amount of practical advice for women attending the classes about how to provide all the nutrition their children need in a cost and time-effective manner. Consistently, others who attended the classes saw noticeable healthy weight improvements in their children within six months.

The WHO compiled a series of case studies on raising awareness of mental health issues that might provide strategies of interest in Libon. While the guide surveys a wide variety of contexts and issues, the campaigns tended to involve multi-media outreach (radio and posters, television and printed materials) and used direct communication and training through community members, not external entities, to improve awareness of health issues, healthy lifestyles, and available services.

Walker, A. (2009). Positive Deviance Helps Curb Malnutrition in West Bengal. India: UNICEF Retrieved April 30, 2013, from http://www.unicef.org/india/reallives_5861.htm

WHO case studies retrieved on April 30, 2013, from: http://www.who.int/mental_health/evidence/en/country_case_studies.pdf

this model provides a strong example of how to pull in more volunteers by attracting individuals modeling good behavior. Such programs also serve to highlight the successes of these actors and raise their profile in the community. Being recognized as a "model mother" or a "picture of health" by official representatives of the RHU provides the incentive of community esteem, while simultaneously offering the practical legitimacy of the strategies these positive deviants demonstrate to the wider community.

Recommendations

Libon already has a robust culture of the community recognizing success. Relying mostly on publically viewable posters and assemblies, the LGU visibly credits citizens with successes (such as passing major school exams). Elevating health issues through this medium and others may yield positive results when building community investment in health issues. Recognizing barangays or health stations with particularly strong health indicators, as well as those demonstrating significant improvement, may associate the barangay's health situation with a sense of pride throughout the LGU. Resources for this outreach will be minimal – as the use of LGU-made signage is already a regular expense.

 Similarly, such public posters would raise awareness of the state of public health. With the implementation of the new WAH system, SMS distributions might also be a new venue for communicating not only health information, but successes in different barangays. While the details of this system will have to be determined by the LGU, the significance of wide cell phone penetration in Libon should not be underestimated in these efforts.

The LGU should also encourage barangay health workers to identify positive deviants in the community for all priority health concerns. It should be noted that, in research literature, this practice has shown particularly strong results regarding childcare and maternal health. These good actors should be highlighted at existing events – such as mother's classes – and be encouraged to help lead discussions and seminars for new mothers.

Different roles should be determined for different actors in the community. Community leadership –Barangay Captains and Kagawads – have a strong platform of authority and could include messages about public health services in announcements about a variety of topics. These leaders can make great partners in giving recognition to community members investing in public health, identified positive deviants, and successful Barangay Health Workers. Having local officials publicly endorse the work of volunteers will increase the prestige associated with volunteering and reward (in a low-cost manner) the community members who are giving their time to assist the LGU.

Members of the LGU's religious community have a powerful platform and an attentive audience and might make strong partners in promoting new health programs. While these community members will likely be drawn to certain activities to promote, the LGU should utilize their assistance as often as possible. More engagement with public health will drive more visitors to the health centers, where they will be reachable with bench talks and other interventions.

This will require few resources, and cultivate a culture of peer learning that may help the spread of positive health practices.

Key Takeaways:

- Current community success actions highlight the work of good actors; these should be expanded to include healthy individuals.

- Models of positive deviance can provide peer education with practical information, particularly new mothers.

- WAH provides not only metric data to evaluate programs, but information pertinent to the community's understanding of their own health. This data can be used to encourage utilization of services.

3. Information Dissemination

Health information dissemination can be used as a means to influence patient health seeking behaviors. Information dissemination ensures uniformity in understanding of current health concerns by calling into attention concerns at the community level. The LGU can strategically provide information in a way that directs individuals to prioritize current health concerns and minimize negative health outcomes by taking appropriate preventative measures.[74]

3.1 Strategic Communication in Health Information Dissemination

Current Actions

In recent months, Libon has developed a municipal health system using the concept of the Barangay Health Station as a health portal including health promotion and education initiatives. The LGU has taken steps to ensure community members are followed by a local health worker and provided with information on services. These local health workers are active and engaged within the community. Though

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Case Study: Strategies used in Yambio, southern Sudan to control Ebola

In Yambio, support was provided from the top community leaders down to local residents to ensure health information was appropriately disseminated across the community. Church leaders and a team of community mobilizers reminded people across the community about key behaviors and preventive measures that they should take to promote healthy lifestyles and avoid negative health outcomes. Community mobilizes designed a schedule of speaking and community gatherings to tell local residents of health concerns in the community and what was being done to counteract negative health outcomes.

In order to make information concise and promote preventative behaviors, the community health organizers in Yambio decided on three behaviors that they would target to be avoided. These were communicated among and targeted within social mobilization activities and messages.

Leaflets and other printed information were produced detailing common questions about outbreaks and health concerns. The printed materials also aided in clarifying circulating rumors around health beliefs. The community used a visual picture that captured the importance of following through with positive health practices. Testimonies and photographs of real life events of people affected added to their communities by providing reinforcement through images. The government provided key health players with same colored t-shirts to boost their self-confidence and ensure that they appeared credible in the eyes of the community.

World Health Organization. (2012). Communication for Behavioral Impact (COMBI): a Toolkit for Behavioral Communication in Outbreak Response. WHO. Retrieved April 30, 2013, from http://apps.who.int/iris/bitstream/10665/75170/1/WHO_HSE_GCR_2012.13_eng.pdf

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[74] World Health Organization. (2012). Communication for Behavioral Impact (COMBI): a Toolkit for Behavioral Communication in Outbreak Response. Geneva, Switzerland: WHO.

resources and informational materials are limited across the LGU, midwives and health workers have effectively used current resources.

Materials in use are flip charts, leaflets and other informational materials primarily provided through the RHU from the national government. Often resources are scarce and limited. Our research indicates that the LGU is putting available resources to appropriate use.

Theory of Change

Community behaviors toward health should be examined to target the most effective means of disseminating health information across the community. Understanding perceptions and views of the community can assist in molding health awareness messages in ways that people within the community will understand. [75] During various interviews, health workers indicated that community members are receptive to the information that they provide. The main barrier is the negative misconceptions of drugs and procedures. The rapport that health workers establish in their communities assists in bridging information and understanding gaps.

The LGU should capitalize on this rapport by tying in behavioral/cognitive theories to help shape community perceptions on health information. Highlighting positive changes in health behavior will assist in creating sustainable practices for continued positive health outcomes. The use of effective health literacy interventions ensures that all individuals have access to the understandable information. Understanding relevant information will assist in changing behavior. Creating changes in behavior will ultimately assist in better health awareness, which will in turn lead to better health outcomes that may assist in future funding.[76]

Recommendations

Current practices, such as the use of scorecards and master lists, have assisted in keeping track of data across the LGU. However, due to non-uniformity in metrics, data is unable to be fully collected and analyzed to assist in trend watching and health provision. Once WAH is fully implemented, data can be collected and analyzed to highlight areas of priority. During community gatherings, community organizers and health workers can make announcements about health priorities, preventative measures, and community gains in achieving better health. To promote the greatest coherence, community mobilizers and health workers must be trained in basic communication techniques. This will assist in their ability to provide relevant health information and answer difficult questions.

All efforts should be made by the LGU to increase the credibility of those that will be providing information and resources. Fostering acknowledgement of health care workers and volunteers will create credibility of the workers. Credibility will increase the likelihood of community members being receptive to the information.[77]

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[75] Bandura, A. (2004). Health promotion by social cognitive means. Health education and behavior, 31(2), 143-164. http://heb.sagepub.com/content/31/2/143

[76] World Health Organization. (2012). Communication for Behavioral Impact (COMBI): a Toolkit for Behavioral Communication in Outbreak Response. Geneva, Switzerland: WHO.

[77] *Ibid.*

Promotional marketing and advertising is essential in increasing public awareness about health education and prevention. Banners and posters get information across a community quickly and uniformly. Where information is effectively hung in health stations, the LGU should consider hanging materials in other common areas throughout the community. They can be placed in marketplaces, churches, and town centers. A small portion of the health budget could be allocated to making banners and posters that can be displayed in public areas. When feasible, leaflets and up-to-date materials should be provided to those in the community as a means to create awareness. Old materials should be recycled into new campaigns if relevant and proven effective. Any new materials that are produced by the LGU should be uniform in appearance and use pictures and testimonials.[78]

Key Takeaways:

- Health information should be provided at community meetings and church gatherings held in local areas.

- Health workers should be trained in health literacy and providing health information in a clear and concise way.

- Educational seminars and programs should be set up and led by teachers, health officials, and other leaders of the community.

- Community members should be encouraged to ask questions when being provided health resources and information.

- Materials, such as banners, pamphlets, and leaflets, should be kept up to date, hung in public areas other than health centers, and/or distributed when available.

- Pictures and testimonies can be used when appropriate in educational materials.

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[78] World Health Organization. (2012). Communication for Behavioral Impact (COMBI): a Toolkit for Behavioral Communication in Outbreak Response. Geneva, Switzerland: WHO.

Section 3

Areas for Further Consideration

1. Transportation Limitations

During stakeholder interviews within the barangay, the issue of transportation was often linked to access to healthcare. Constituents cited a lack of transportation and/or a lack of funds to pay for transportation as one of the main barriers to health services, especially in barangays far from the RHU.

While this issue was raised regularly during community meetings, this report focuses on use of the newly-available WAH data to orient health policy formation. Sufficient data was not collected to make meaningful recommendations to the LGU regarding overcoming this barrier to health services access. This would be a worthwhile area of research for the LGU or outside researchers in the future. By understanding the nature of this reported barrier the LGU may find further avenues for increasing the public health outcomes in Libon.

2. Medication Limitations

Stakeholders interviewed during barangay meetings indicated that they do not have access to needed medicines. They found that medicines are not available or the medicines are too expensive. After interview sessions, the barangay health workers and RHU staff would take time to education these constituents about the prerequisites necessary to access social programs and medical care.

The nature of this issue was unclear to the NYU team, though it appeared a mixture of miscommunication, lack of information, actual lack of medicines, and administration of available medicines. This question did not fall within the scope of this report, but further research by the LGU or outside researchers would be beneficial. Constituents are not currently utilizing available medicines and social programs to their full extent. By pinpointing the nature of this problem, the LGU can best target health policy and public funds to eliminate it.

3. Funding Public Health Interventions

In the course of the NYU team's work in Libon it was apparent that the LGU uses every dollar allocated to public health to its fullest potential; however, more funds are needed to adequately fund public health services and education in Libon. The team is confident that by following the guidelines and recommendations for setting health policy elaborated in this report, in conjunction with analysis of real-time health data provided by the WAH system, the LGU will become more attractive to national and international donors. By using this guide to establish strategic public health initiatives and measure their successes with real-time health data, Libon can better meet the stringent monitoring and evaluation requirements of such donors.

Additionally, the LGU might benefit from sector-specific grants at the national level that trickle down to the municipal level. For example, the Global Fund to Fight AIDS, Tuberculosis and

Malaria recently created a more flexible system of grants to countries fighting tuberculosis.[79] The LGU, using the new WAH system, could volunteer as a pilot project for the region or country. Such opportunities for funding rely on global health priorities, and will obviously require substantial coordination with provincial, regional, and national health offices.

While it is beyond the scope of this guide, Libon clearly would benefit from greater funding of health initiatives. The LGU should explore existing Corporate Social Responsibility (CSR) and Creating Shared Value (CSV)[80] initiatives within the business community. CSR refers to efforts by businesses to create the greatest benefits and minimize risks to society while building that value of the business and the brand. CSV refers to long-term strategies that businesses employ to build up communities, markets, and economies that will ultimately benefit the business and the society (thus the shared value). The LGU should approach the socially motivated arm of select corporations with clear, measurable health indicators and outcomes drawn from WAH and a plan to improve health service delivery based on funding from the corporation. Below is a list of organizations the LGU might consider researching further:

Organization	Website
Philippine Business for Social Progress	http://www.pbsp.org.ph/
Lopez Group Foundation	http://lopez-holdings.ph/about_us.php?id=127
Petron Foundation	http://www.petron.com/csr.html
Meralco	http://www.meralco.com.ph/company/page-csr-partner.html
SMART Corporate Social Responsibility	http://www1.smart.com.ph/about/corporate-social-responsibility/
Synergeia Foundation	http://www.synergeia.org.ph/
Jollibee Foundation	http://www.jollibeefoundation.org/
Card MRI	http://cardbankph.com/wp_cardbankph/home.php

The LGU may also be able to research other corporate foundations interested in health on the League of Corporate Foundations website, under "health": http://www.lcf.org.ph/wwd/health.

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[79] The Global Fund to Fight AIDS, Tuberculosis and Malaria. (2013). Global Fund Launches New Funding Model. Retrieved April 30, 2012, from http://www.theglobalfund.org/en/mediacenter/newsreleases/2013-02-28_Global_Fund_Launches_New_Funding_Model/

[80] For more information on CSV, see:
Porter, M. E., & Kramer, M. R. (2006). Strategy and society. *Harvard Business Review*, 84(12), 78-92.
Porter, M. E., & Kramer, M. R. (2011). The Big Idea: Creating Shared Value. How to reinvent capitalism—and unleash a wave of innovation and growth. *Harvard Business Review*, 89(1-2).

Section 4

Appendices

Appendix A – Methodology and Indicator Chart

Methodology

Research Methods	
1. Case Studies	As discussed in section 2.
2. Local Stakeholder Interviews	Citizen groups, clergy, local leaders, health workers, midwives, and LGU employees across Libon's 47 barangays (neighborhood districts).
3. National/International Organization Interviews	University of the Philippines, World Health Organization, USAID,
4. FHSIS Data Analysis	FHSIS 2008 and 2011 reports

Qualitative versus quantitative methods

The NYU team did not use surveys within the interview process. The team conducted interviews with an open-ended, semi-structured list of questions. These questions assessed general information about health practices and awareness in the region. During interviews, team members asked additional questions based on the direction of the interviews.

Appendix B- WAH Reporting Standards

Criterion	Definition
Timely	Previous month's reports are submitted by the 7th day of the current month
Complete	Reports for all four programs are submitted: • Morbidity • Maternal Care • Child Care • Family Planning
Reliable	The M1 (An aggregate report based on target client list) is compared to WAH electronic report.
Accurate	Data quality check (DQC) is performed at the RHU. The accuracy of the M1 is validated against the target client list.

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Appendix C – NCD indicators[81]

Women / Men cardiovascular risk SCORE chart. 10-year risk of fatal CVD in populations at high CVD risk. © ESC 2007

Total cholesterol: HDL Cholesterol ratio

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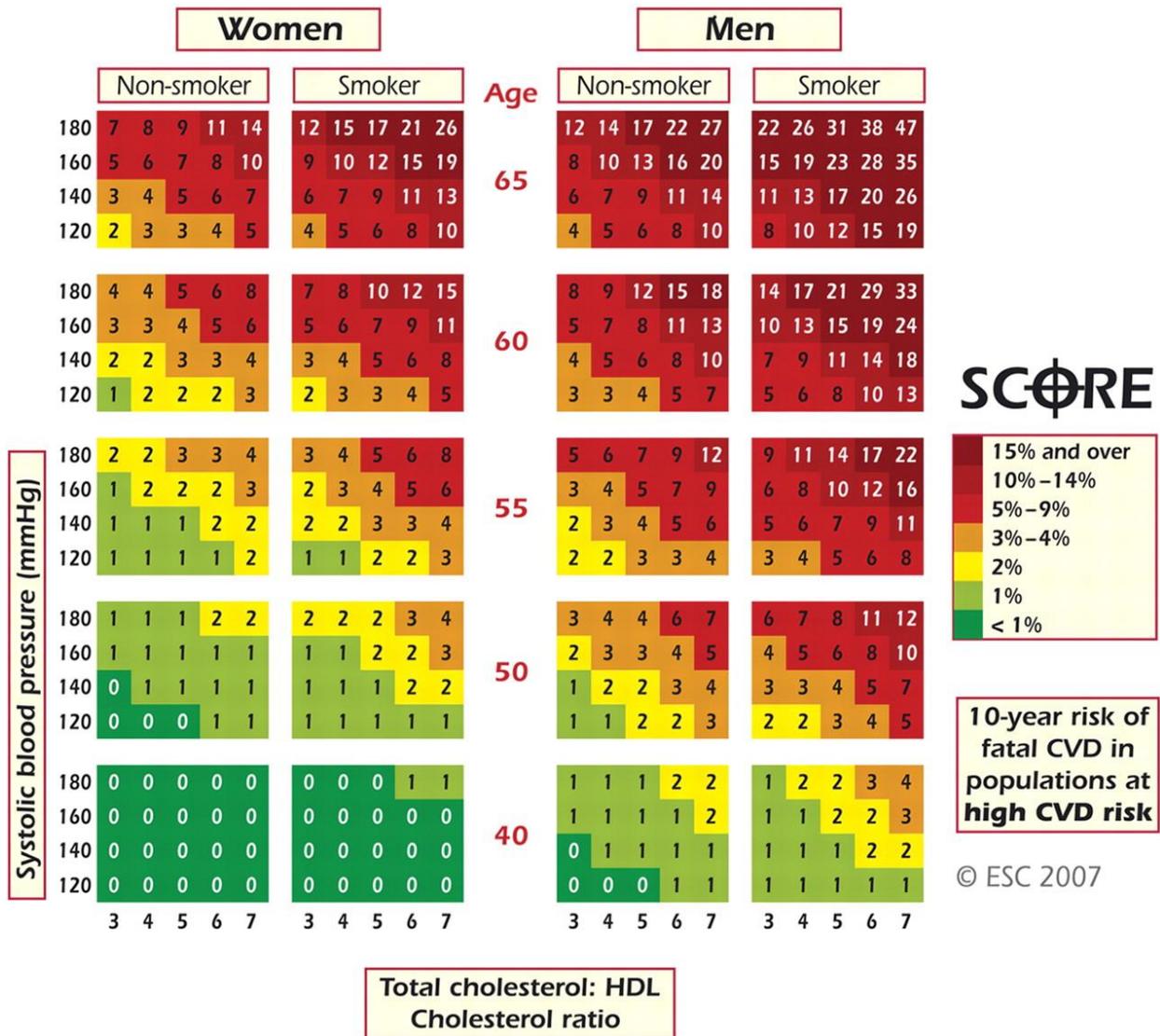
[81] World Health Organization. WHO Cardiovascular Risk Prediction Chart (Accessed April 2013): http://www.who.int/cardiovascular_diseases/publications/Pocket_GL_information/en/index.html

Appendix D - Indicator Chart

Sector	Indicator	Brief Definition	Target	National Avg.	Region 5	Albay	Libon
Medicine	Contraceptive Prevalence Rate	Percentage of regular contraceptive use amongst eligible (women of child-bearing age) population.	N/A	22	33.37	30.46	N/A
Medicine	New Acceptors – Pill/IUD/Injectable	Percentage of eligible patients who have recently begun taking a new form of contraception (by type).	N/A	18.35/3.15/13.42	18.71/1.52/7.46	19.18/0.87/ 9.93	N/A
Medicine	Other Acceptors – Pill/IUD/Injectable	Percentage of eligible patients who are continuing to take a form of contraception (by type).	N/A	36.31/4.75/19.48	29/.93/2.10/11.87	44.23/ 1.28/ 14.10	N/A
Medicine	Dropouts - Pill/IUD/Injectable	Percentage of eligible patients who have stopped taking a form of contraception (by type).	N/A	25.51/4.84/16.16	23.59/1.5/7.8	33.26/0.88/ 9.92	N/A

Sector	Medicine	Medicine	Medicine	Medicine	Vaccines
Indicator	Percentage of sick children (6-11 months) given VA	Percentage of sick children (12-59 months) given VA	Percentage of low birth weight children (2-6 months) given Iron	Percentage of anemic children (2-59 months) given Iron	Percentage of Fully Immunized Children
Brief Definition	Percentage of sick children ages 6-11 months seen by medical staff given Vitamin A.	Percentage of sick children ages 12-59 months seen by medical staff given Vitamin A	Percentage of low birth weight children ages 2-6 months seen by medical staff and given Iron.	Percentage of anemic children ages 2-59 months seen by medical staff and given Iron	Fully immunized children must have completed BCG 1, DPT 1, DPT 2, DPT 3, OPV 1, OPV 2, OPV 3, HB 1, HB 2, HB 3 and measles vaccines before the child is one year old.
Target	N/A	N/A	N/A	N/A	90%
National Avg.	39.48	35.05	77	91.76	56
Region 5	24.3	23.79	79.04	85.2	78.26
Albay	12.43	12.15	99.39	89.45	82.39
Libon	N/A	N/A	N/A	N/A	N/A

Sector	Vaccines	Vaccines	Vaccines	Vaccines	Vaccines
Indicator	Percentage of Completely Immunized Children	Percentage of <1 y.o. given Measles Vaccine	Percentage of Children Protected at Birth	Percentage of Children <1 y.o. given BCG	Percentage of Children <1 y.o. given DPT 1/2/3
Brief Definition	Percentage of total children under the age of seven who have been given the complete complement of vaccines	Percentage of children under one year of age given the full measles vaccine.	Children protected at birth from neo-natal tetanus.	Percentage of children under one year of age given the Bacillus Calmette-Guérin vaccine against tuberculosis	Percentage of children under one year of age vaccinated against diphtheria, pertussis and tetanus, by stage of the vaccine (1, 2, or 3)
Target	N/A	90%	90%	90%	90%
National Avg.	7	57	78	59	61/59/60
Region 5	15.23	82.24	78.29	88	93/89.45/85.81
Albay	18.36	85.72	86.7	85.56	91.01/88.01/86.68
Libon	N/A	N/A	N/A	N/A	N/A

Sector	Vaccines	Vaccines	Tuberculosis	Tuberculosis	Water/Sanitation
Indicator	Percentage of Children <1 y.o. given Hep B 1/2/3	Percentage of Children <1 y.o. given OPV 1/2/3	TB case detection rate (%)	TB cure rate (%)	Proportion of pop using an improved drinking water source (%)
Brief Definition	Percentage of children under one year of age vaccinated against Hepatitis B, by stage of the vaccine (1, 2, or 3)	Percentage of children under one year of age given the Oral Polio Vaccine, by stage of the vaccine (1, 2, or 3)	The number of new and relapse TB cases measured.	The percentage of patients who were initially sputum smear-positive and who were sputum smear-negative in the last month of treatment and on at least one previous occasion. This figure is divided by the estimated number of incident cases of TB that year.	Proportion of the population that uses an improved water source
Target	90%	90%	80.0 (2010) 81.0 (2015)	87	87
National Avg.	23 & 35/56/55	62/60/59	75 (best est., 2011)	91.0 (2010)	84.8 (best est., 2011)
Region 5	31.47 & 56 /80.71/81.12	89.33/83.68/79.37	N/A	N/A	82.7
Albay	36.35 (within 24 hours of birth), 46.50 (more than 24 hours after birth)/ 81.80/80.33	86.68/84.24/80.98	100 (2009)	81 (2009)	93
Libon	N/A	N/A	N/A	N/A	N/A

	Water/Sanitation	Water/Sanitation	Water/Sanitation	Water/Sanitation	Maternal/Neonatal
Sector					
Indicator	Proportion of pop w/access to an improved sanitation facility (%)	Proportion of pop using an improved sanitation facility (%)	Proportion of pop regularly washing hands (%)	Proportion of pop with safe water storage (%)	WAH: maternal mortality rate (per 1000 live births) WHO: Maternal mortality ratio
Brief Definition	Proportion of the population that has access to improved sanitation facilities	Proportion of the population that uses improved sanitation facilities	Proportion of the population who regularly wash their hands with soap after defecation and cleaning an infant who has defecated, and before preparing food, eating, and feeding infants	Treated/safe to drink water is stored in containers that protect it from contamination/recontamination.	The number of maternal deaths recorded or estimated during a given time period per 100,000 live births during the same time
Target	86	86	100	100	30.3-51.8
National Avg.	92.5 (2010)	N/A	N/A	N/A	0.67
Region 5	35.1	N/A	N/A	N/A	0.68
Albay	N/A	N/A	N/A	N/A	0.65
Libon	N/A	N/A	N/A	N/A	N/A

	Indicator 1	Indicator 2	Indicator 3	Indicator 4	Indicator 5
Sector	Maternal/Neonatal	Maternal/Neonatal	Maternal/Neonatal	Maternal/Neonatal	Maternal/Neonatal
Indicator	WAH: Under-five mortality rate WHO: Under-five child mortality (including the proportion of newborn deaths)	WAH: Contraceptive prevalence rate WHO: Demand for Family Planning Health Satisfied	WAH and WHO: Antenatal care (four or more visits)	WAH and WHO: Skilled attendant at birth	WAH: Post Partum Women with at least 2 Post Partum Visits WHO: Postnatal care for mothers and babies within two days of birth
Brief Definition	The probability that a child born in a specific time period will die before reaching the age of five years.	Percentage of women 15-49 years of age either married or in union, who feel their family planning needs have been satisfied.	Percentage of women who have had four or more visits to a skilled or unskilled provider during their pregnancy	Percentage of live births during which a skilled health professional is present.	Percentage of mothers and newborns who have received care within two days of childbirth
Target	26.7	100	100	100	100
National Avg.	1.23	22	34	85.6	35.6
Region 5	1.32	33.4	58.44	67.4	58.1
Albay	1.33	30.5	41.5	73.5	57.3
Libon	N/A	N/A	N/A	N/A	N/A

Sector	Nutrition	Nutrition	Disease	Disease	Disease
Indicator	WAH: height and weight WHO: Stunting Prevalence, weight-for-height	WAH: Portion of post partum woman initiated breastfeeding WHO: Exclusive breastfeeding (0-5 months of age)	Prehypertensive Cases	Stage I Hypertension	Stage II Hypertension
Brief Definition	Height and Weight: Below -3 standard deviations (SD) of the WHO standards to identify 6–60 month old infants and children for the management of severe acute malnutrition. Stunting: Percentage in children under five years, whose height for age is below minus two standard deviations from the median of the WHO Child Growth Standards in comparison to the number of children who are at a valid height for their age	Percentage of infant (ages 0-5 months) who are exclusively breast-fed	BP between 120-139/80-89	BP between 140-159/90-99	BP > 160/100
Target	40% reduction in stunted children*	50% increase for first 6 months*	N/A	N/A	N/A
National Avg.	N/A	36.5	N/A	N/A	N/A
Region 5	N/A	57.4	N/A	N/A	N/A
Albay	N/A	59.7	N/A	N/A	N/A
Libon	N/A	N/A	N/A	N/A	N/A

Sector	Indicator	Brief Definition	Target	National Avg.	Region 5	Albay	Libon
Disease	Waist Circumference	> 90cm (male), > 80cm female	N/A	N/A	N/A	N/A	N/A
Disease	Body Mass Index	>= 23	N/A	N/A	N/A	N/A	N/A

NYUWagner