Improving Health Outcomes of Children in Cambodia: A Policy Analysis for the Pacha Youth Foundation

ABSTRACT

In supporting youth empowerment in the Cambodian village of Som Roung, the Pacha Youth Foundation (PYF) has discovered health issues complicating effective childhood education. In order to address this issue, and following an initial needs analysis, PYF wants to expand its services to address the immediate health challenges of the children, most notably communicable diseases, chronic malnutrition and poor sanitation. Using data on rural Cambodia and information gathered from surveys administered in Som Roung, we discovered that nationwide improvements made by the Cambodian government and NGOs in overall health indicators over the last decade have mostly concentrated in urban areas. Rural and poor families often receive less care because they lack resources and live far from services. This leads to lower health outcomes, especially for young mothers and children, manifesting in high mortality and malnutrition rates, low immunization rates, and high prevalence of preventable diseases.

We present six pilot program alternatives for PYF to consider. Using the objectives and criteria determined by PYF, we provide projections and trade-offs of each alternative to compare them. While each pilot alternative has a unique set of pros and cons, we recommend that the PYF choose between Vaccinate and Contracted Physicians and Health Education. The Vaccinate alternative would address immunization issues for about 500 children, ranking high in quantity of impact. The Contracted Physicians and Health Education alternative would provide high quality treatment for a smaller population of children (150) and basic health education to the village, ranking high in quality of impact.

Introduction

The Pacha Youth Foundation (PYF), an American-based NGO, strives to “empower underprivileged children in developing countries through formal education, health services, and community development initiatives” (Pacha Youth Foundation). After five years working in the isolated village of Som Roung with the Save Children in Asia Organization (SCAO), providing education to

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1 Save the Children in Asia Organization is a local Cambodian NGO dedicated
supplement the government school’s education programming, PYF wants to extend its services to address the immediate health challenges of the children most affected by poverty. Aware that educational empowerment rarely happens without good health, PYF seeks an effective program model that addresses malnutrition, low vaccination rates, and poor sanitation for impoverished children.

There has been tremendous progress in improving health indicators in Cambodia but most improvements have been concentrated in urban and easy-to-reach rural districts. The residents of remote villages often do not enjoy the same access to Cambodia’s main health care providers: trained midwives, private clinics, community clinics, and pharmacists. This disparity reflects socioeconomic inequalities that complicate immunization coverage, nutrition, and maternal care (WHO Cambodia, 2014).

This discrepancy in service provision reinforces the socioeconomic gap between rich and poor, and the health gap between urban residents close to medical care and those living in isolated rural areas. It also helps explain the high rates of malnutrition and communicable diseases in isolated rural areas (Seoung, 2012). At the margin of extreme poverty and unable to visit distant health clinics for mediocre and expensive care, many rural Cambodians live with poor hygiene and sanitation, chronic disease, and the constant risk of health and financial crisis (UNICEF Cambodia, 2014). Children suffer disproportionately, as shown by entrenched rates of preventable diseases, malnutrition, and educational truancy (WHO Cambodia, 2014).

The isolated rural areas of Cambodia, including Som Roung, need additional assistance to improve health conditions, especially for the most impoverished children. Som Roung village is located approximately 45 minutes north of Phnom Penh. The village has approximately 1,800 people living there, and 400 children under the age of 16. Most families are rice farmers, while others work in garment factories. Only approximately 30 percent have improved sanitary facilities and 30 percent have access to clean drinking water; others drink untreated water or boil their water².

**Health Status in Cambodia**

Almost 30 percent of Cambodians live below the poverty line (UNICEF Cambodia, 2014). In rural areas, the dearth of affordable and proximal health care services and the high prevalence of communicable diseases, nutrient deficiencies, respiratory problems, and poor maternal health and sanitation has put the poor at risk of health and financial crisis (WHO Health in Asia and the Pacific). Families without steady income or financial reserves cannot afford health care and the sick cannot work. Young and developing children suffer disproportionately, especially when forced to grow up hungry and/or drop out of school to work and support the family. Low levels of education lead to additional socioeconomic challenges of poverty, thereby guaranteeing future health problems and the spread of disease (WHO

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2 Information obtained from surveys administered to members of the village by the Save the Children in Asia Organization.
Cambodia has the second highest environmental burden of disease in the region; commonplace infectious diseases and respiratory infections have a direct effect on the mortality and morbidity rates (WHO Cambodia, 2014). These environmental problems help drive up Cambodia’s indices for infant mortality and disability-adjusted life years (DALYs) for many communicable, maternal, prenatal, and nutritional conditions (Cost and Disease Burden of Dengue in Cambodia, 2010). Cambodia suffers from under-five mortality rates which are 30 percent higher than neighboring countries (WHO Cambodia Health Profile). The five top killers of young children in Cambodia are respiratory infection (30 percent), diarrhea (27 percent), dengue fever (11 percent), malnutrition, and meningitis (Soeung 2012). The coverage of the recommend vaccinations (EPI6) is only 73 percent for the impoverished population (WHO Cambodia). Disease outbreaks occur in more isolated regions, which indicates suboptimal immunization coverage (Soeung 2012). The charts below display some of the disparities in health.

3 The Expanded Programme on Immunization (EPI6) includes: diphtheria-tetanus-pertussis (DTP), measles vaccines, oral polio vaccine (OPV) and bacille Calmette-Guerin (BCG).
Thirty percent of rural children are underweight, compared to 20 percent of urban children. A similar difference appears in the stunting rate, 42 percent vs. 27 percent (UNICEF Cambodia, 2014).  

Only 18 percent of rural residents have access to improved water sanitation facilities, compared to 67 percent of urban residents. In addition, 56 percent have access to improved drinking water, compared to 81 percent of urban residents (UNICEF Cambodia, 2014).

**High Burden to Health Sector**

At 1.4 midwives and 2.4 doctors per 10,000 residents, Cambodia has one of the lowest rates of health coverage in Southeast Asia (WHO Cambodia Health Profile). Cambodia has increased public health expenditures, but the government lacks funds to subsidize health care, establish an insurance system, or attract high quality health care workers trained in environmental and communicable diseases (WHO Cambodia, 2014). As such, patients typically pay between 60 and 80 percent of health care costs at private clinics and pharmacies, the poor cannot afford clinic visits that can often cost up to 50 percent of their weekly income. To avoid crippling loan payments, many forgo care, as evidenced in low hospitalization rates for rural and poor with dengue fever, one of the most debilitating diseases in Cambodia (Cost and Disease Burden of Dengue in Cambodia).

**Overall Goal Of Policy Proposal**

PYF wants to build the capacity of local leaders to improve the health and socioeconomic future of Som Roung’s poorest children by implementing a strategy that best combines education and health.

The following constraints facing PYF determine the parameters of the pilot program options:

- **Children:** Conforming to PYF’s mission and existing relationship with SCAO, all approaches must prioritize children, especially those in the lowest socioeconomic quintile.

- **Health concerns and immunization coverage:** PYF does not know the vaccination coverage in Som Roung but estimates need based on resident surveys administered by SCAO and rural data from other sources.

- **Som Roung:** Only Som Roung residents would receive treatment before PYF evaluates the scalability to other rural villages.

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4 According to UNICEF, stunting is a form of growth failure due to chronic malnutrition. A child who is stunted or chronically malnourished often appears to be normally proportioned but is actually shorter than normal for his/her age. Stunting starts before birth and is caused by poor maternal nutrition, poor feeding practices, poor food quality as well as frequent infections which can slow down growth. [http://www.unicef.org/nutrition/training/2.3/20.html](http://www.unicef.org/nutrition/training/2.3/20.html)
• **Budget**: PYF has allocated $10,000 to this pilot program.

**Objectives and Criteria**

Given PYF’s mission and experience in Som Roung, we identify key objectives and evaluate the proposals according to criteria that best reflect health impact, short and long-term feasibility, and implementation potential. Here we list each objective and its corresponding criterion.

**Children’s Health**

We evaluate each option according to how well it improves health indicators of Som Roung’s children.

*Vaccines*
- How would the proposal address low vaccination rates and high rates of communicable diseases?
- This criterion considers the number of children covered by the Expanded Programme on Immunization (EPI6).

*Health Status*
- How would the proposal address acute and chronic health issues for poor children?
- This criterion will assess the quality of treatment of disease, infection, and malnutrition.
- How many children would $10,000 cover?

*Sanitation*
- How would the proposal respond to poor sanitary conditions that lead to higher rates of communicable disease?
- This criterion examines the projected reduction of unsanitary behavior through health education.

**Long-Term Impacts**

In its relationship with Som Roung, Pacha Youth seeks to implement a pilot program that is structured to adapt to evolving needs and challenges, as well as plant the seeds for long-term improvement in the educational outcomes of the village’s children. We therefore examine:

*Impact on Education*
- What is the proposal’s estimated impact on education attainment?
- This criterion looks at how improving children health outcomes has an impact on school attendance and performance.

*Sustainability*
- How sustainable is the impact of the program in terms of health, financial, and education indicators?
- This criterion looks at the long-term effects on children’s health and local empowerment, and the risk of failure due to environmental, political, or economic changes.
Implementation

While programs could have tremendous potential benefit for the target population, we recognize the importance of analyzing the feasibility of implementation.

Scalability

• How easily would the proposed program scale up in other (isolated) villages in Cambodia?
• This criterion considers the logistical difficulties in expanding the pilot program to other isolated villages and potential socio-cultural resistance.

Social and Cultural Feasibility

• What is the likelihood that PYF will implement the program as expected?
• Based on socio-cultural norms, this criterion examines local acceptance by the very poor.

Alternative Pilot Program Proposals

Six alternatives were created by the authors to accomplish PYF’s objectives. The alternatives were derived from various maternal and child health service delivery approaches. Each alternative is described below.

Alternative One: Status Quo

Children currently rely on their parents, the community, and limited government initiatives to obtain health care. Access to health services and vaccinations is limited and the services are too expensive for the most impoverished families to utilize. Children without suggested immunizations would likely continue to live without them. Education on nutrition, sanitation, and hygiene still is the responsibility of government schools. Partnering with SCAO, PYF would continue with its youth education project, which does not directly address health issues.

Alternative Two: Comprehensive Medical Treatment

PYF would hire two medical physicians and two nurses to treat children in Som Roung. The doctors would come to the village for six days, and then return later for two days to finish the vaccination schedule. Using PYF’s school as its medical facility, the medical team would perform basic health assessments, vaccinate, and treat immediate health needs (disease and infection). The medical team would also educate patient families on sanitation, nutritional issues, and strategies to access future medical attention. PYF and SCAO would organize an outreach campaign the week before to inform families of the medical services offered. The medical team would cost $400 per day ($3,200 total), with $6,000 for supplies, logistics, and equipment. Vaccinations would cost approximately $13 per person for the complete set (Kaddar, Laydon, Levine, 2004).

This campaign would focus on children ages two to sixteen, and treat the

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5 Estimate provided by SCAO
youngest and most impoverished first. To maintain high vaccination rates, PYF would organize yearly trips (funded by yearly fundraising campaigns) to the nearest clinic for children lacking necessary vaccines. The medical team would travel to and from Phnom Penh (40 km) daily.

**Alternative Three: Health Education**

Medical students at the Royal University of Phnom Penh have expressed interest in delivering health education to the children of Som Roung. The education team of three medical students would travel to Som Roung for three weeks, holding seminars two days per week and visiting houses to provide direct information and advice to families two days per week. One seminar would occur at the PYF school and the other on the opposite side of the village town. The students would receive $2,160 for their services ($180 per trip for twelve trips).

During seminars, the team would discuss sanitation issues, basic healthcare practices, healthcare access, and nutrition. Seminars would also focus on improving nutritional eating habits with the food resources available in the area and the importance of Protein-Energy Malnutrition, Vitamin A, Iodine, and Iron deficiency (Seoung 2012).

The education team would also work closely with the PYF staff to train future health education leaders using a peer-education model to give the staff and volunteers the skills to educate the children in the future. The education team would also identify Som Roung residents interested in volunteering at the education seminars and learning more about the village’s health situation. These community members would receive the title Village Health Educator (Khmer equivalent) and would speak to the community about basic health practices.

**Alternative Four: Contracted Physicians and Health Education**

PYF would contract two local physicians, two nurses, and a health education team. The medical team would provide services as described in Alternative Two, Comprehensive Medical Treatment, with a smaller budget. The team would work in Som Roung for five consecutive days, and again one month later for two more days (cost, $2,800), serving the youngest children and prioritizing those with the greatest need. With a budget of $5,040, the medical team would be able to treat approximately 150 children.

PYF would pay $2,160 to the health education team, comprised of paid university students, to provide the same services as described in Alternative Four, Health Education.

**Alternative Five: Vaccinate**

PYF would contract four nurses to administer vaccines to the children of Som Roung, ages two to sixteen, over a six day period. They would return later, again for three days, to give the final round of vaccines. The nurses would cost $300

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6 Based on interview with students and an administrator at the Royal University of Phnom Penh, 2013
per day ($3,300 total). The Expanded Programme on Immunization (EPI) would be provided: diphtheria-tetanus-pertussis (DTP), measles vaccines, oral polio vaccine (OPV) and bacille Calmette-Guerin (BCG), at a cost of approximately $13 per person for the complete set (Kaddar, Laydon, Levine, 2004). The nurses would use PYF’s school facility for service delivery and bring all necessary equipment and vaccines.

To maintain high vaccination rates, PYF would organize yearly trips (funded by fundraising campaigns) to the nearest clinic for children lacking necessary vaccines.

**Alternative Six: Partner with Local NGO**

The Ministry of Health of Cambodia has provided a list of local NGOs that provide healthcare and health education in rural Cambodia. PYF used this list to find local NGOs with a similar mission and service capacity. The Cambodian Health Education Development (CHED) organization has confirmed its interest and capacity in providing all recommended vaccinations, health assessment and treatment, and basic health education to the children of Som Roung. With the $10,000 budget, CHED would coordinate the services described in Alternative Five, Contract Physicians and Health Education, treating 140 children and providing twelve health education seminars.

**Analysis: Projections and Trade-Offs**

We evaluate each pilot program proposal according to Pacha Youth’s constraints, principal objectives and analytical criteria. The information is summarized in the policy matrix on the following pages. The analysis provides an in-depth look at how the pilot program proposals address the health challenges of Som Roung and the trade-offs associated with each alternative.

**Status Quo**

The current health situation in Som Roung would continue with lower immunization coverage (73 percent), higher child mortality rate (7.5 percent), and worse sanitation than urban residents. Truancy due to family health challenges would remain a concern for educational outcomes. Neither the government nor SCAO has the resources to implement a new health initiative in the village, so PYF would continue its youth empowerment work in Som Roung without addressing the health issues that affect educational performance.

**Trade-Offs**

While the cheapest and most politically feasible option, long-term concerns of ineffective herd immunity7 and possible disease outbreaks remain.

7 According to the Center for Disease Control, herd immunity is a situation in which a sufficient proportion of a population is immune to an infectious disease (through vaccination and/or prior illness) to make its spread from person to person unlikely. Even individuals not vaccinated (such as
Comprehensive Medical Treatment

The physicians would vaccinate and treat 180 of the poorest children of Som Roung for infections, worms, disease, nutritional deficiency, and injuries. This would greatly improve short-term health. In terms of sustainability, children and families would benefit from immunizations and learn about better sanitation practices. Free of illness, treated children would likely attend school and improve academic performance. However, this proposal relies on outside workers to provide treatment and does not guarantee significant behavior changes in the village in terms of sanitation and nutrition.

It may be difficult to scale to other villages without an established cultural contact. Som Roung, as well as other villages, may resist vaccinations and health treatment from outsiders. By selecting children for treatment, PYF risks accusations of bias and negative local sentiment. It also faces logistical supply issues to get viable vaccines to the village with the team.

Trade-Offs

This option would provide higher quality treatment to more children than the other options. The educational impact and long-term behavioral change would be limited to those receiving treatment. There may also be some difficulties in contracting and managing the physicians, as opposed to utilizing an NGO with staff doctors. We do not expect resistance to the medical team due to the respected status of doctors in Cambodia.

Health Education

The entire village of approximately 1,800 people would benefit from the health education seminars by learning about healthier eating habits, sanitary practices, and basic health care access. The education would create long-term benefits to the village’s health with improvements in education attainment due to healthier habits. But it would not treat diseases. No children would experience immediate improvements in health status nor would vaccination coverage change significantly. Some families may seek out vaccinations as a direct result of information received through the educational seminar. While this option has fewer concrete short-term benefits, it has the potential to deliver sustained locally driven change if done correctly.

Through an emphasis on local buy-in and involvement (especially the Village Health Educator initiative), education seminars would create sustainable improvements in community health. Conducted by Khmer university students, the health seminars would easily scale to other villages due to their family and personal connections across the country. However, PYF must find local cultural contacts and deal with the logistical challenges of working in other remote villages.
The education could create long-term behavioral changes but would not improve any of the main health indicators without local buy-in. Children and families could receive limited medical attention from the medical students. The Health Education Campaign does not utilize the allotted budget of $10,000. The remaining money in the budget could be used to scale the program to other villages, train local community leaders, or improve the health education initiative in response to unforeseen challenges.
## Alternatives

<table>
<thead>
<tr>
<th>Physicians and Health Education</th>
<th>Vaccinate</th>
<th>Partner with Local NGO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved vaccination coverage for 150 children; May incentivize others to vaccinate</td>
<td>Improved vaccination coverage for 500 children; May incentivize others to vaccinate</td>
<td>Improved vaccination coverage for &gt;150 children; May incentivize others to vaccinate</td>
</tr>
<tr>
<td>150 children will receive health treatment; Village health improvements by healthier habits</td>
<td>Vaccinated kids absorb nutrients easier; Does not directly address other health concerns</td>
<td>Health status of &gt;150 children improves; Healthier habits through education</td>
</tr>
<tr>
<td>Health education seminar will improve healthy behavior and sanitary practices for village</td>
<td>Vaccines counterbalance effects of preventable diseases but do not change sanitation</td>
<td>Health education seminar will improve hygienic practices for village</td>
</tr>
<tr>
<td>Treated children will greatly improve in education outcomes; All children will improve slightly</td>
<td>Decrease in disease from herd immunity; Healthier kids miss less school and parents miss less work</td>
<td>Increased health status from healthier behavior will likely increase education attainment</td>
</tr>
<tr>
<td>Lasting impact from education; Treated children will have long-term benefits</td>
<td>Long-term benefits from immunization; Continuing vaccinations for next generation</td>
<td>Increased overhead costs equals less $ for health services; Lasting impact from education and treatment</td>
</tr>
<tr>
<td>Need cultural connection to new villages; Education campaign may help gain trust</td>
<td>Need cultural connection for new villages; More distant and remote villages would create challenge</td>
<td>CHED will likely be more adaptable to new villages because they are Khmer and established</td>
</tr>
<tr>
<td>The health treatment may receive some resistance; Fun education seminar likely welcomed</td>
<td>Could be social/cultural resistance to receiving vaccinations</td>
<td>Less cultural resistance because they are Khmer. May be some resistance to vaccinations</td>
</tr>
</tbody>
</table>

### Contracted Physicians and Health Education

This alternative would treat 150 children with quality healthcare and immunization coverage. The health education seminar would bring information about healthy practices to the entire village. The combination of services creates an impact of quality and quantity; the children receiving the treatment would greatly improve their school attendance and performance, as would other children due to the peer effect (Peer Effects in the Classroom). All children would benefit from improved knowledge of healthy living habits and sanitary practices. As stated in their respective
proposals, health education and improved immunization coverage would have long-term benefits and the Village Health Educators would help increase local buy-in and ownership.

This option would scale to other villages better than the Comprehensive Medical Treatment Alternative and bring much-needed care to the very poor better than the Health Education alternative. The Khmer university students and their connections around the country would facilitate finding local cultural contacts as well as initiate relationships with a larger network of medical professionals interested in bringing health care to isolated villages. The synergy from combining the Contract Physicians and Health Education alternative will increase the impact of both.

Trade-Offs

Including the Health Education campaign would decrease by thirty the number of children treated by physicians. The long-term benefits of the health education will likely outweigh their cost. Not all children will be vaccinated, but those that receive the high quality treatment will benefit extensively, encouraging a peer effect to the benefit of others.

Vaccinate

This proposal would reach and protect the greatest number of children. Approximately 500 children would receive full immunization coverage,\(^8\) preventing many of the diseases found in the region’s rural poor and giving children a chance for educational success. It does not directly address issues of sanitation or malnutrition, but children free from debilitating communicable disease would be more likely to attend school and process the current nutrients they get each day. In addition, poor sanitation would have less effect on vaccinated children. In using nurses (equally respected in Cambodia as doctors), the costs decrease and PYF can treat more children.

Trade-offs

By vaccinating as many children as possible, PYF would lack funds to focus on general health assessments and improvements in sanitation. The nurses would provide some information to families regarding the immunizations, but this option lacks local ownership and could require additional visits. An immunized generation would bring tremendous sustainable social and economic benefits in terms of improved Disability-Adjusted Life Years (DALYs) and worker productivity. PYF would need additional local cultural contacts to scale the program to other villages and must deal with logistical issues of transporting nurses and viable vaccines.

\(^8\) $3,300 for medical staff, vaccination set cost \~$13. ($10,000-$3,300)/$13=515 children
Partner with Cambodian Health Education Development (CHED)

Working with CHED would give Pacha Youth an established local partner with which to work in more communities outside of Som Roung. This option would directly address the issues of children’s health in the same way as the Comprehensive Treatment proposal by bringing health assessments, vaccines, and acute care to the children with greatest need. It would also bring health education seminars to Som Roung.

Trade-Offs

While this option estimates similar benefits and costs as other proposals, it must include the overhead costs of CHED. Thus, it delivers less health treatment while keeping health education stable. These overhead costs are comparatively low, but partnering with CHED could cause funders to question donating to a broker instead of program implementer. But the partnership allows PYF to expand its reach beyond Som Roung due to CHED’s superior community network, thus improving the program’s scalability and implementation potential.

Final Recommendation

Of the six pilot program options, we find that two stand out above the others, but PYF should implement the alternative that best reflects its priorities and judgment on how to best support the mission. In essence, the decision comes down to ‘quality’ vs. ‘quantity.’ If PYF wants to make a positive impact on the health status of as many children as possible, it should implement the Vaccinate alternative, which would provide immunization coverage to the majority of Som Roung. If PYF wants to make a more extensive impact on the health of the sickest and neediest children, it should implement the Contracted Physicians and Health Education option. The poorest children would receive extensive treatment and the village would gain some benefit from the education program. In essence, PYF must choose between addressing one problem for nearly all of the children and addressing several issues for fewer children.

Of these two alternatives, we suggest that PYF implement the Contracted Physicians and Health Education pilot program because of positive impact the peer effect would create and the synergy created by combined health education for the entire community and the strong positive health improvements for 150 children. We believe the combination of the two effects would increase awareness and spur the adoption of healthy behaviors whenever possible, thus increasing acceptance of further health focused work from PYF in the future.
Conclusion

In Som Roung, Pacha Youth must address the health issues impeding children’s ability to obtain an education if it hopes to advance its mission of empowering children through education. This policy analysis looked at the underlying causes of mortality, morbidity, and malnutrition in rural Cambodia to devise an appropriate pilot program that mixes education and health improvement in Som Roung. The proposed program prioritizes a set of objectives to identify a program that will improve children’s health, increase educational outcomes, have long-term potential benefits, and create minimal cultural resistance. The alternatives Vaccinate and Contracted Physicians and Health Education best fulfill the criteria in two distinct ways, represented by the concept of ‘quality’ vs. ‘quantity’ (i.e., comprehensive treatment for fewer children vs. large-scale vaccinations for as many children as possible). As stated above, we suggest that PYF implement and later evaluate the latter pilot program to help form more sustainable and scalable programs for the future. PYF should contract physicians to come into Som Roung to deliver direct health services to the children, including vaccinations, and a team of medical students should visit the village and conduct health education seminars to advance the community’s awareness of issues surrounding maternal and child health.

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