Data to Policy Program:

Evidence based Policy Briefs

2016 - 2018

Ministry of Health and Sports

The Republic of The Union of Myanmar

Bloomberg Philanthropies

DATA FOR HEALTH INITIATIVE

D2P Data to Policy

CDC Foundation
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Vital Strategies

"A policy or strategy should be evidence-based as scarce resources available in developing countries are being utilized in implementing the policy using appropriate strategy."

H.E Dr. Myint Htwe
Union Minister
Ministry of Health and Sports

(Excerpt from the opening speech at policy brief presentation session of 2018 Data to Policy Training, 13th August 2018)

Contents

Introduction

Data to Policy Training Program

Data to Policy Training (D2P) is a program that is a part of Bloomberg Philanthropies' Data for Health Initiative and it is supported and implemented in Myanmar by Vital Strategies in collaboration with the U.S. CDC, through the CDC Foundation, and the Ministry of Health and Sports (MOHS).

The program aims to leverage effective use of existing public health data for critical analysis, to provide evidence-based decision making for policy makers and program planners and to equip MOHS officers with core skills required for analysis of data for decision making. It engages the ministry to identify high priority health policy topics to further develop into policy recommendations based on local data. It consists of total of 3-week sessions with strong mentorship during and between sessions. At the end of the training program, participants have to complete polished policy briefs on topics important to the public health. Targeted participants are mid-level officers of the Ministry of Health and Sports.

From 2016 to 2018, the Ministry, in collaboration with the Vital Strategies, implemented intensive three D2P trainings, each training consisting of total 3-week long training and mentorship, in Myanmar. Total of 58 participants (18 teams) from the Department of Public Health, the Department of Medical Research, the Department of the Medical Services and the University of Public Health and Universities of Medicine attended the program. Total of 15 data-driven policy briefs were produced through the program by the participants and presented to the Union Minister and key stakeholders for evidence-based decision making.

What do we mean by health policy?

- Laws that impact health
  - Laws that apply to the health system
  - Laws impacting health enforced by Ministries other than the Ministry of Health and Sports, e.g. Cigarette taxes or mandatory seat belt use
- Regulations set by the Ministry of Health and Sports or other Ministries
  - MOHS regulations, e.g. changes in training of health workers, treatment guidelines
  - Regulations set by other Ministries that impact health, e.g. environmental regulations
  - Procedures/Guidelines to describe an accepted standard of practice, e.g. in a school or hospital
- Strategic decision making for health programs
  - Resources allocation, e.g. increasing funding for disease prevention activities or a specific high burden disease
  - Requests to external funders, the Ministry of Planning and Finance or legislative bodies (Hluttaw), Development Partners, Donor Agencies and funds outside of the Ministry's existing budget
  - Incentives (financial or non-financial) to motivate change in behaviour or organizational practices
  - Program planning e.g. developing new interventions or adapting existing interventions

Policy Topic Guidelines

In addition to reflecting the government's priorities for actions, the policy topics should reflect:

- Both an important public health problem and potential solutions
  (e.g., problem: high rates of lung cancer; potential solution: the reduction of smoking rates via tobacco taxes or warning labels.)

- Be able to take advantage of existing data sources
  (e.g. health surveys such as DHS, STEPS etc. or HMIS data)

10 Steps
to Developing a Policy Brief

PROBLEM STATEMENT	1	Define the Problem
	2	Identify Modifiable Root Causes
	3	Select WHICH Root Causes to Modify; Determine Solutions/Options
POLICY OPTIONS	4	Map Out a Step-by-Step of HOW You Will Implement Each of Your Solutions/Options
	5	Create a Inventory List of Resources Needed to Implement Each Solution/Option
ECONOMIC EVALUATION & FEASIBILITY OF OPTIONS	6	Add Cost Values to Each Resource on Inventory List
	7	Go Back to "Step 4" and Add the Number Values to Each Step
	8	Perform Economic Analysis (Cost and Benefit)
	9	Compare the Economic Analysis Results for Each Solution/Option
RECOMMENDATIONS & NEXT STEPS	10	Select Best Solution/Option and Write Summary and Next Steps

2018

Policy Briefs

Stunting: An Overlooked Problem

Increase Investments to Reduce Stunting in Myanmar

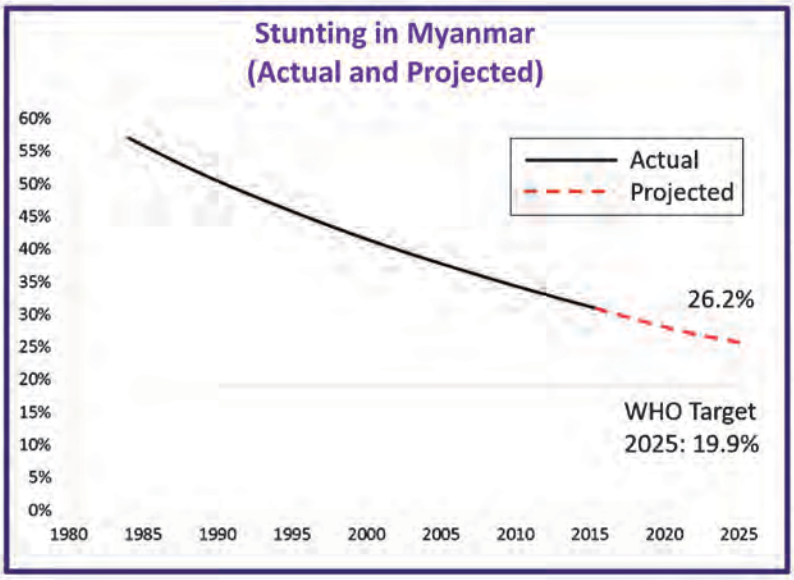
October, 2018

Key Messages

- Stunting is associated with reduced cognitive abilities and educational achievement, reduced productivity, and increased susceptibility to acute infections and chronic diseases as well as increased mortality.
- Despite ongoing efforts to reduce stunting in Myanmar, one in three children <5 years are still stunted.
- Maternal malnutrition and poor infant and young child feeding practices are major causes of stunting in Myanmar.
- To meet the WHO target for reductions in stunting by 2025, MOHS needs to strengthen current nutrition interventions targeting stunting.

Problem Statement

Stunting, when a child is short for his or her age, is a sign of chronic undernutrition that starts *in utero* and continues throughout early childhood [1, 2]. In Myanmar, stunting is a major public health problem, with 29% of children <5 years being stunted [2], resulting in ~300,000 DALYs lost per year. Beyond reduced physical height, stunting reduces a child's cognitive ability, leading to impaired educational outcomes and reduced productivity over the entire lifespan [3]. Stunting also increases a child's susceptibility to both acute infections and chronic diseases [1], and is estimated to contribute to 15-17% of deaths among under-five children globally [4]. Despite its importance, in parts of the world where stunting is common, families and even healthcare providers often fail to recognize it as a problem, resulting in its receiving less attention than other nutritional problems [5, 6].



The critical period for stunting starts during pregnancy, with malnutrition of the mother leading to low birthweight infants, and continues through 24 months of age [7]. Risk factors for stunting are well-understood and have been confirmed in Myanmar: these include poor maternal nutrition, low birthweight, and poor infant and young child feeding practices (IYCF) [2, 8]. Poor IYCF includes lack of exclusive breastfeeding <6 months of age, and inappropriate amounts or diversities of complementary foods in addition to breast milk at 6-24 months of age [6].

Stunting: An Overlooked Problem

There is a strong evidence that multifaceted interventions for both pregnant women and children can significantly reduce stunting. Such interventions improve the health and nutrition of mothers, improve infant and child care behaviours, address health-related causes of undernutrition, and improve the quantity and quality of a child's diet (Table 1) [1, 9]. A widely-agreed-upon package of ten interventions has been shown to be effective at reducing stunting [3, 10]: if implemented at 90% coverage, these interventions have been estimated to reduce stunting by 20% and reduce under-five deaths by 15% [9]. Cost-benefit analysis suggests that interventions leading to 40% reductions in the number stunted children by 2030 would yield $45 for every dollar spent [3]. Myanmar has already implemented some of these interventions and has seen resulting declines in stunting between 2010 and 2015 from 35% to 29% [2, 8]. However, the coverage of these interventions is inadequate and Myanmar is not projected to meet WHO targets of 0.88 million children (prevalence: 19.9%) stunted in Myanmar in 2025 [6]. To achieve this target, additional efforts are needed.

Policy Options

To achieve WHO's target of reducing stunting to 0.88 million children (prevalence: 19.9%) in Myanmar by 2025, the Ministry of Health and Sports (MOHS) needs to strengthen the current nutrition interventions and improve their coverage. Policy options include promotion of IYCF knowledge and practices, provision of balanced protein energy supplementation to undernourished pregnant mothers, and implementation of a package of 10 nutrition-specific interventions.

Option 1: Promotion of Infant and Young Child Feeding (IYCF) knowledge and practices to reduce stunting among children from birth to 2 years of age

- What: Train community health workers (CHW) from every village and ward and provide them with guidelines and materials to educate mothers on appropriate IYCF practices. Implement nationwide media campaign through television, radio and media about proper IYCF practices.
- Why: Although 85% of children aged 6-23 months are currently breastfed, only 16% received the minimum acceptable diet for good IYCF [8]. Combined CHW education and mass media campaigns can increase mothers' knowledge on IYCF by 9-18% and practices of optimal IYCF by 14-57% [11].
- Feasibility: **High**. Myanmar already has experience with CHW as well as with media campaigns in public health areas such as immunization. Combined CHW and mass media campaigns would be the most effective communication method for promoting behavior change with IYCF practices.

Option 2: Provide balanced protein energy supplementation to undernourished pregnant mothers to reduce low birth weight

- What: Train the basic health staff for nutritional assessment of pregnant mothers. Provide balanced protein energy supplementation and nutritional education to all undernourished pregnant women.
- Why: In Myanmar, 16% of reproductive women are undernourished [6]. Evidence shows that balanced protein energy supplementation among undernourished pregnant mothers can significantly reduce low birthweight [12], reducing the risk of stunting in the long run by two- to three-fold [13].
- Feasibility: **Medium**. Balanced protein energy supplementation together with nutritional education is a newly-introduced program in Magway Region, Kayin and Rakhine States.

Option 3: Expansion of current implementation of package of ten proven nutrition-specific interventions addressing both low birth weight and nutrition after birth

- What: Implement a package of 10 nutrition-specific interventions that promote maternal and child nutrition as a whole.
- Why: Myanmar already implements most of these interventions; however, coverage ranges from 10-50% for each, leading to suboptimal reductions in stunting. Implementation of the package of 10 interventions at 90% coverage has been estimated to reduce stunting by 20% and under-five deaths by 15% [9].
- Feasibility: **Medium-high**. Strong efforts and advocacy will be needed to expand coverage to all areas of the country where they are needed.

Table 1. Ten Proven Nutrition-specific Interventions to address Stunting

Interventions	Option 1	Option 2	Option 3
Interventions for general population			
Universal salt iodization			√
Iron fortification of staples			√
Interventions for pregnant women			
Iron-folic acid supplementation			√
Deworming			√
Balanced energy protein supplementation		√	√
Nutritional education		√	√
Interventions for children			
Community-based nutrition programmes providing information on breastfeeding, complementary feeding	√		√
Community-based management of moderate & severe acute malnutrition			√

Vitamin A supplementation			√
Providing supplementary foods			√
Multiple micronutrient powder			√
Therapeutic zinc supplementation for management of diarrhea			√
Deworming			√

Table 2. Economic analysis: The cost of three policy options after five years' implementation (2019-2024) (Government perspective)

Outcome	Current	Option 1	Option 2	Option 3
No. of stunted children	1,301,420	1,276,558	1,294,067	1,116,278
% of children stunted	26.2	25.7	26.1	22.5
Costs (US$)*	17,093,763	14,854,776	203,969,183	123,611,247
Cases averted	----	24,861	7,353	185,141
Cost/case averted	----	$ 598	$ 27,741	$ 667

Based on the economic analysis, Policy Option 1 is the most cost-effective option. However, only Policy Option 3 can reduce stunting prevalence meaningfully beyond what it would be with current efforts. While all the nutrition-specific interventions in Table 1 are currently being implemented by the Myanmar government and implementing partners at a cost of ~$17 million USD over five years, most only reach 10-50% of targeted populations at present. Full rollout of these interventions would cost $123.6 million USD, which comprises a large proportion of the national health budget. However, **one intervention - supplementation for moderately- and severely-acutely malnourished children – comprises the majority of the cost of Policy Option 3 (~$83,000,000 USD). This intervention is currently being implemented in three states and regions, supported by UNICEF. If donor agencies can support nationwide coverage for just this intervention, the Myanmar government would only need to invest additional $23 million USD beyond current investments to fully roll out Policy Option 3.** This would result in a cost-effectiveness of **$124/case averted rather than $667/case averted.**

Recommendations and next steps

Expanding the implementation of the package of 10 interventions (**Policy Option 3**) is feasible and, with expanded donor support for existing programmes, has the potential to be the most cost-effective option. This option will have the greatest impact on reaching the WHO targets by 2025. Ministry of Health and Sports must plan advocacy efforts to obtain the additional funding in a sustainable manner from donor agencies (UNICEF, 3MDG, World Health Organization, WFP and World Bank) for the high-resource component of the intervention, as described above, and allocate an additional $23 million USD to achieve the target coverage (at least 80%). In addition, basic health staff will be needed to provide refresher training regarding nutrition-specific interventions. Evidence strongly supports this option as having the highest public health and economic impact in the long run.

Stunting: An Overlooked Problem

Expansion of current implementation of ten proven nutrition-specific interventions is feasible and has the highest impact on stunting.

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The Ugly Truth: Safe Abortion Saves Mothers' Lives

October, 2018

Key Messages

- Unsafe abortion is the second leading cause of preventable maternal deaths in Myanmar.
- One third of abortion related maternal deaths in hospital occurred within the first 24 hours of admission, reflecting delay in access to post-abortion care services.
- While unsafe abortion related maternal mortality is preventable through four levels of prevention, safe abortion services as secondary prevention is restricted.
- Expansion of post-abortion care services to primary health care level and availability of secondary prevention services at hospitals can reduce the abortion related maternal mortality by (86%) and will accelerate Myanmar's SDG target of maternal mortality.

Source- msreprofreedomfund.org

Problem Statement

An estimated 56 million abortions occurred each year globally; nearly half were unsafe. Almost all (95%) of unsafe abortion occurred in developing countries, and significantly higher in countries with highly restrictive abortion laws (2). According to the World Health Organization, unsafe abortion accounts for about (8%) of maternal mortality worldwide (3). In Myanmar, more than 54,000 women were hospitalized with abortion-related problems every year, representing 12.2% of total obstetric admissions in 2016 (4). According to Myanmar Maternal Death Surveillance and Response Report (MDSR), 2017, unsafe abortion is the second leading cause of preventable maternal deaths, accounting for 22% of obstetric causes of maternal deaths.

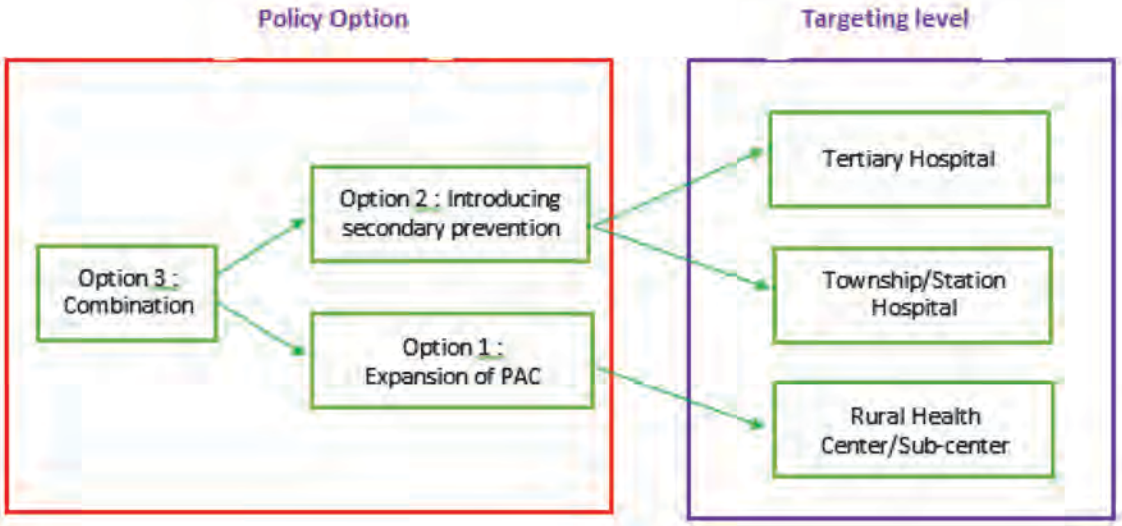
Considering the rights and lives of mothers, safe abortions are legally available and services are generally accessible and available in nearly all developed countries (7). In Romania, introduction of secondary and tertiary prevention services reduce the country's abortion-related death rate from 148 to 58 per 100,000 live births in its first year (5). In Myanmar, since safe abortion is restricted by law, three out of four levels of prevention for unsafe abortion deaths is currently providing. Despite Myanmar is implementing various strategies to prevent abortion related maternal deaths, unsafe abortion is still one of the biggest causes for maternal deaths. So this is high time for Myanmar Ministry of Health and Sports to enact new strategies for preventing unsafe abortion and reduction of maternal mortality ratio to meet its 2030 target.

Currently implementing services under four levels of prevention of abortion in Myanmar

Level of prevention	Service Component	MOHS current services		
		Primary level	Secondary level	Tertiary level
Primary	Family planning	✓	✓	✓
Secondary	Safe methods for abortion	×	×	×
Tertiary	Post- abortion Care	×	✓	✓
Quaternary	Post-abortion family planning	✓	✓	✓

What are the Options?

In order to reduce abortion related maternal deaths, it is necessary to increase access to all four preventive levels of services at all level of care. As primary and quaternary prevention services have already been scaled nationwide, the MOHS must further introduce secondary and scale up tertiary prevention services. We recommend three policy options targeting six regions[1] that represent 73% of all abortion-related deaths in Myanmar (MDSR, 2017) and where comprehensive PAC services are currently offered at the hospitals.



[1]Yangon, Mandalay, Magway, Bago, Mon and Kayin

1. **Expansion of Post Abortion Care (PAC) services:**
   What: Provide PAC services for uncomplicated, incomplete first trimester abortion by Midwives at primary health center, and facilitate timely referral of complicated cases to secondary and tertiary center.
   Why: One third of hospital maternal deaths due to post abortion complications were occurred within the first 24 hours of admission, representing delays in timely access to PAC services. [MDSR,2017]
   Feasibility: High. National PAC guidelines; trained midwives experienced in maternal health care services; and medical supplies are already operational. Implementation would require review and revise national guidelines reasonable for primary care level and training of midwives on medical procedures related to PAC.

2. **Introducing of secondary prevention**:
   What: Providing secondary prevention services as menstrual regulation, to complement current PAC at hospitals.
   Why: To reduce morbidity and mortality of abortion in women who are seeking unsafe service from unskilled providers because of criminalization. Currently, most women hospitalized for post abortion care had attempts to terminate pregnancy by various unsafe methods, leading to severe complications and deaths.
   Feasibility: Medium. Myanmar has no experience on this type of services. Need to develop guideline and approval for providing menstrual regulation services. Social and cultural acceptance may prove to be a barrier for service delivery and uptake.

3. **Combination**: **Expansion of post-abortion care services and introducing of secondary prevention**
   What: Providing PAC by Midwives at the primary care level and introduce secondary prevention services in addition to PAC at hospitals.
   Why: Increasing access to services at all levels of care will allow for an overall greater increase in access to services for all women.
   Feasibility: Medium. Skilled midwives and doctors need to train on the updated guidelines. Need approval and guideline for providing menstrual regulation services. Social and cultural acceptance may prove to be a barrier.

The Ugly Truth: Safe Abortion Saves Mothers' Lives

Feasibility Evaluation

	PAC expansion	Intro 2· prevention	Combination
Political feasibility			
Operational feasibility			

Highly feasible Somewhat feasible

Cost Effective Analysis (CEA)

	PAC expansion	Intro: Secondary prevention	Combination
Estimated lives saved annually	50	130	140
Estimated life-years saved annually	1,754	4,534	4,889
Estimated additional cost on current resource	US$ 257,517	US$ 910,959	US$ 939,334
Cost per life saved	US$ 2,726	US$ 5,599	US$ 4,389
Cost per life-years saved	US$ 78	US$ 160	US$ 125

Recommendations and next steps

The option of combination package saves the most live; 140 lives annually which is almost three times that of PAC expansion alone. Combination of two options is more effective than the introduction of secondary prevention alone, with the cost per life-years saved of US$ 125.

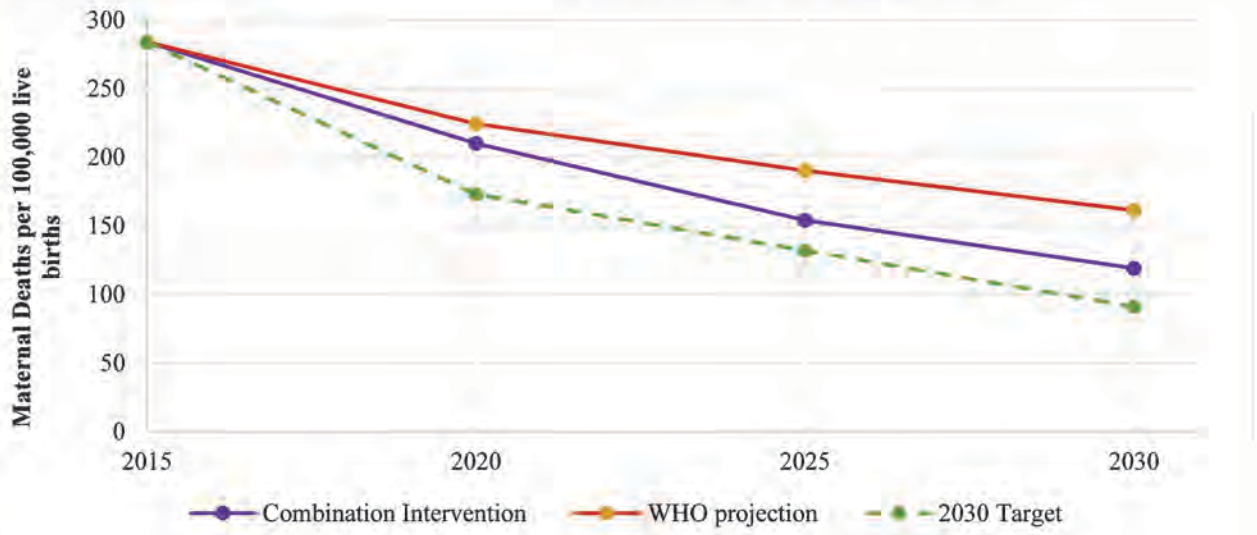
Scaling up of two evidence-based interventions at different levels of care is the best way to improve access to services in order to reduce high maternal mortality due to unsafe abortion. This can reduce abortion related maternal deaths by (86%) and accelerate Myanmar's achievement of its SDG maternal mortality target.

Actions for next steps

- Advocacy to relevant stakeholders and decision makers
- Community awareness raising on information of services expansion together with comprehensive sexuality education
- Sensitization to community and providers on secondary prevention services
- Review and revise national guidelines reasonable for primary care level and secondary prevention services for higher levels

- Planning and implementation of training for health care staff for post abortion care at the primary care level and secondary prevention services at the hospital level
- Procurement and supply chain planning for PAC-related medicines and supplies.

Projected and Target Maternal Mortality Ratio 2015-2030, Myanmar



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Toxic Beauty
Interventions to Increase Cosmetic Safety in Myanmar

October 2018

Key Messages

- Only 10% of cosmetics in the market were notified in Myanmar.
- Harmful cosmetics in Myanmar markets has increased from 0.6% in 2010 to 11% in 2017 and 35% of cosmetic users experienced an adverse event.
- Toxic ingredients like mercury, lead, hydroquinone and color additives found in cosmetics can have long term health impact.
- Strengthening of check points at sea and airports will reduce the access to toxic cosmetics by 90% and reduce the access to toxic cosmetics.
- This will avert an estimated 447,000 adverse cosmetic events per year and is more cost effective than Risk Communication Channels.

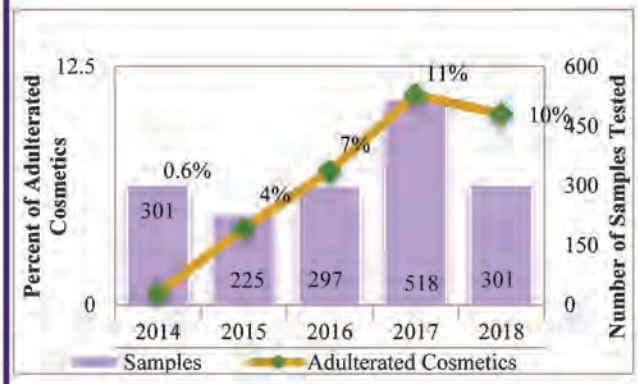
Problem Statement

Unsafe cosmetics adulterated with toxic chemicals are a public health problem in Myanmar. Cosmetics containing toxic ingredients such as mercury, hydroquinone, corticosteroids, lead, and some prohibited colorants can have both short-term effects such as dermatitis and onchronosis as well as long-term health effects that include renal damage, psychosis, DNA damage, and death[1]. Harmful cosmetics in Myanmar markets have increased from 0.6% in 2010 to 11% in 2017[2]. Studies in Myanmar have identified that mercury was found in 50-86% of cosmetic samples studied and hydroquinone in 42% of the studied[4]. In addition, long termed users develop toxicity rather than short-termed users[3].

88% of lipsticks contained concentrations of lead above the specified limit (20ppm)[5]. Lead is a known neurotoxic which affects the nervous system leading to reduced brain functions, memory loss and ability to focus[6]. Long term use can cause lead poisoning manifested as loss of consciousness, anaemia and epilepsy[7]. Rhodamine B, a prohibited color additive, is found in 9% of lipsticks in Myanmar[8]. It can cause toxicity in human, related to reproductive development, nervous systems and is carcinogenic[9].

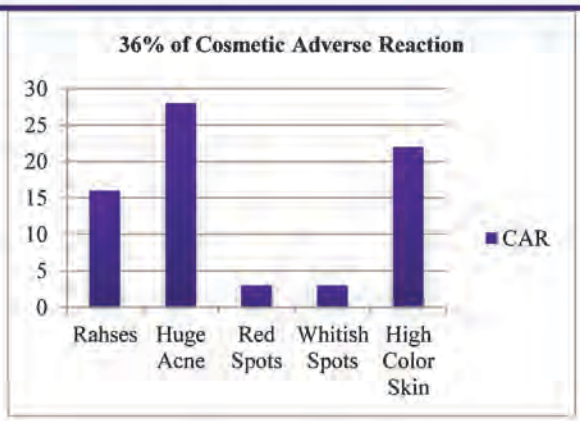
Over the past 5 years, the number and variety of cosmetics available in Myanmar have increased, from only 351 products available in 2013 to 4,253 in 2017[10]. Almost all cosmetics are imported and 90% of cosmetics available in the market were not notified according to 2016-2017 Post Market Surveillance data. Approximately seven in ten women in Myanmar use cosmetics today. Among them, 35% have reported short-term adverse effects including skin irritation (22.4%), hyperpigmentation (22.5%), red spots or acne (17.4%), and skin inflammation (8.4%)[11]. Another study among female university students found that 36% experienced rashes, large acne, red spots, whitish spots or discoloration, and hyperpigmentation as a result of cosmetic usage[12].

Multiple factors have contributed to the increased availability and high use of harmful cosmetics among women in Myanmar[13]. Weak regulatory and enforcement mechanism at the border (lack of inspection teams at sea and airports), where majority of cosmetics enter Myanmar, and low coverage in post-market surveillance activities contribute to increased availability and accessibility of harmful cosmetics. Further, importers and dealers, who have poor knowledge and awareness on regulatory guidelines, are not compliant with ASEAN Cosmetic Directive. In addition, consumers have poor knowledge and awareness about harmful and toxic cosmetics. However, some continue to use harmful cosmetics due to social pressure even if they have good knowledge and awareness.



Percentage of Adulterated Cosmetics

Source: Post-Market Surveillance Data 2014 – 2018 (FDA)



Cosmetic Adverse Reactions

Source: Study on Consumption Behaviour and Awareness, Implementation Research, FDA, 2018

Policy Options

In order to mitigate the adverse health impacts of harmful cosmetics, we must reduce the availability and accessibility of unsafe cosmetics and promote awareness among public. Proposed policy options to achieve this are strengthening check points at ports and establishment of effective Risk Communication Channels.

Strengthening Check Points at Ports:

It aims to set up a mandatory policy to require all commercially imported cosmetics to be approved by the FDA, prior to being cleared by Customs and Border Inspection Team. In order to implement this, FDA will recruit new inspection teams at 3 seaports covering Yangon, Kawt-Taung and Kyauk-Phyu regions and 3 airports at Yangon, Mandalay and Kawt-Taung regions. Laboratory facilities will be established at the entry points of 3 Seaports & 3 Airports where the required testing for imported good samples prior to clearance will be done. In addition, mini-laboratory facilities at existing 5 land border check points will be reinforced. Consequently, this will result in regular assessment and issuance of notification certificates by inspection team at all entry points through national single window with e-submission system to reduce availability of harmful cosmetics.

The overall feasibility is high as FDA will mandate with ASEAN Cosmetic directives. It will be the most relevant action to encourage notification for all cosmetics to be imported. But cosmetics illegally imported through illicit trade will be unaffected. This will require collaboration between Ministry of Health and Sports, Department of Custom under Ministry of Finance and National Planning and Department of Import, Export under Ministry of Commerce. Moreover, bilateral networking with Thailand and China Border Checkpoints will be needed for safe cosmetics.

Establishment of Effective Risk Communication Channels:

Communicating risks about unsafe use of cosmetics containing toxic chemicals (CTC) among public through campaigns and regular channels will reduce the demand and use of harmful cosmetics. Action will be taken to provide consumer education for safe cosmetics (Mass Media Campaign, Health talks), advocacy meetings on cosmetic adverse events with health care professionals, and establishment of online community complaint system. This will increase awareness and knowledge of consumers and reduce adverse reactions & consequent treatment costs for them. Awareness raising will be promoted not only among consumers but also among the dealers and retailers.

The feasibility is high, but there may be some limitation in conducting community-based approach campaign among geographically and culturally diverse population. This will require voluntary participation and

coordination among various stakeholders such as Non-profit Government Organizations, MMCWA, Women Federal Association (WFA), University Federal Association, Myanmar Cosmetics Association (MCA), UMFCCI and Consumer Protection Organization. The consumer complaints and the adverse events reporting system will act as a feedback mechanism for effective action and accountability.

Comparison of Policy Options

	Strengthening of Check Points	Establishing Risk Communication Channels
Program Cost (MMK)	342,869,000	241,337,333
Treatment Cost (MMK)	823,755,068	939,813,593
Total Cost (MMK)	1,166,624,068	1,181,150,926
Number of Adverse Reactions per year	1,174,092	1,339,509
Number of Adverse Reaction Reduced due to CTC per year after intervention	447,133	281,716
Total Cost per prevented Adverse Reaction (MMK/AR)	(2609)	(4192)
Program Cost per prevented Adverse Reaction (MMK/AR)	(767)	(857)
Political Feasibility	High	High
Operational Feasibility	Medium	Medium

Recommendations and next steps

Strengthening Check Points at ports is feasible and cost effective in preventing adverse reaction compared to establishment of Effective Risk Communication Channels. This will reduce the availability of toxic cosmetics. Cosmetic division in Food and Drug Administration Department will need to develop policy guidelines and implementation framework. Raising awareness and advocacy meetings for Department of Customs and staff at checkpoints would be helpful for effective implementation. Establishment of laboratory facilities in conjunction with recruitment and training of personnel at sea and airports should be done. Since cosmetics illegally imported through illicit trade will be unaffected by this measure, establishment of effective risk communication channels can also be considered if there are no budgetary constraints.

Strengthening of check points along with rigorous enforcement of guidelines will have significant impact on adverse effects of harmful cosmetics. Collaboration with Department of Customs as well as the regional trade border control team is critical for success.

Contributors

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Babies Having Babies:

Preventing Teen Pregnancy for a Brighter Future for Girls in Myanmar

October 2018

Key Messages

- *In Myanmar, adolescent birth rate has doubled in less than a decade which can cause negative consequences on maternal and child health*
- *Out of total adolescent girls (15-19 years) over 2.3 million, approximately 76.3% live in rural areas*
- *Adolescent pregnancies were greatest in rural adolescent girls who had less than a primary level education (64.9%) and low level of reproductive knowledge*
- *Delivering reproductive health messages via Facebook has potentially high impact and low cost especially for rural areas*

Problem Statement

Adolescent Pregnancy

Adolescent pregnancy is a public health concern in both developed and developing countries around the world. About 16 million adolescent girls between 15 and 19 years of age give birth each year[1]. Globally, adolescent pregnancies are more likely to occur in marginalized communities, with 95% occurring in developing countries[2]. The situation can often vary within country between urban and rural settings. There can be up to three times more teenage pregnancies in rural populations than in urban populations[3]. In regions where early marriage is common, adolescent pregnancies are more likely to occur.[2] In South East Asia, nearly 60% of all girls are married by the age of 18. Births to unmarried adolescent mothers are more likely to be unintended pregnancies and far more likely to end in induced abortions. Every year, some 3.9 million girls aged 15 to 19 years undergo unsafe abortions[4].

Adolescent Pregnancy Dangerous for Mother and Child

Many health problems are particularly associated with negative outcome of pregnancy during adolescence for both mother and child. Pregnancy and childbirth complications are the leading cause of death among 15 to 19-year-old girls globally[5]. Risks of eclampsia, postpartum hemorrhage, and systemic infections are higher

in adolescent mothers than in women aged 20 to 24 years. In low- and middle-income countries, there is an increased risk of low birthweight, preterm delivery, and severe neonatal conditions among babies born to mothers under 20 years of age[6]. Stillbirths and death in the first week of life are 50% higher among babies born to mothers younger than 20 years[7].

Adolescent Pregnancy in Myanmar

In Myanmar, the total population of 15-19-year-old girls is 2,334,991 in both urban and rural areas. Life Skill curriculum including reproductive health are provided nationally to adolescents in secondary level schooling. However, in situations where adolescents do not obtain secondary level education due to early marriage, dropout, or educational costs, access to reproductive health education opportunities is missed. Among adolescent girls aged 15-19 who have begun childbearing, nearly 65% had less than a primary level education and more than half (76%) live in rural areas. The proportion of sexually active adolescent girls in rural areas is 256,849. The adolescent birth rate has doubled from 17/1000 in 2007 to 36/1000 in 2015 among girls aged 15-19 years[8]. The maternal mortality ratio is 228.6 per 100,000 live births in 15-19 years compared to 282 per 100,000 live births in all women. Among all maternal deaths, 6% occurs between 15 and 19 years of age[9].

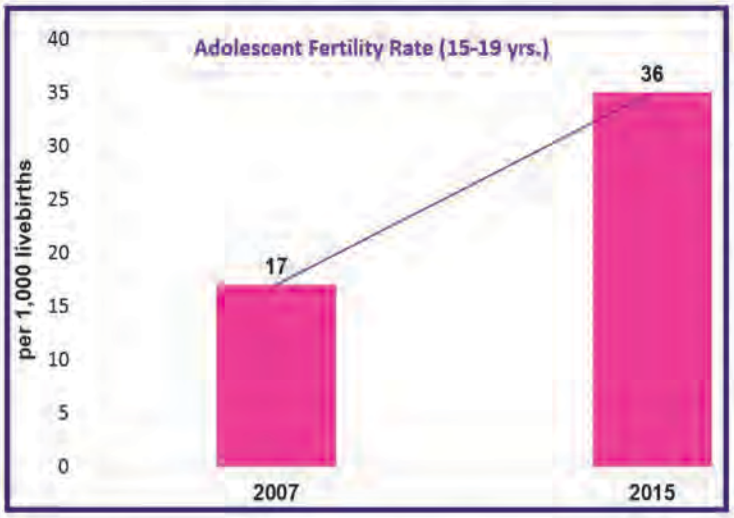

Figure 1: Adolescent Fertility Rate (15-19 years) (2007 & 2015), Myanmar Demographic Health Survey 2015

Previous efforts to address the gaps in delivering RH information for out of school adolescents have included established Youth Information Corners (YIC) in 70 townships. However, many YIC centers are not functioning, lack necessary equipment, inadequate staff, or lack of funding. Alternatively, efforts to educate adolescents through mobile applications have been recently introduced. However, the coverage is still not satisfactory because of lack of user-friendliness, not being preferred medium for adolescents and some technical

constraints such as being required to download and install. Improving adolescent knowledge and attitudes towards sexual and reproductive health, contraception and promotion of contraceptive access and use are critically important to adolescent pregnancy prevention and reduction in maternal mortality in Myanmar. Adolescent sexual and reproductive health knowledge means knowing modern contraceptive methods such as injectables, pills, condoms, intrauterine contraceptive device, sterilization, etc[10]. In Myanmar, adolescents with poor sexual and reproductive health education are 4 times more likely to have teen pregnancies than those with higher education[8].

Lack of knowledge and awareness on contraceptive methods and correct use are the main reasons for not using contraception which leads to adolescent pregnancies[11]. Research findings suggest that in rural areas 60% of adolescent girls were aware of the availability of sexual and reproductive health services[12] but few had knowledge on sexual and reproductive health issues and correct contraceptive practice, compared to urban areas[8]. Despite having awareness of contraception, only 12% of the youths always use contraception during sex[13]. Additionally, a primary source of information about at least one contraception method came from friends and peers, many of whom had never used any of contraception themselves[14].

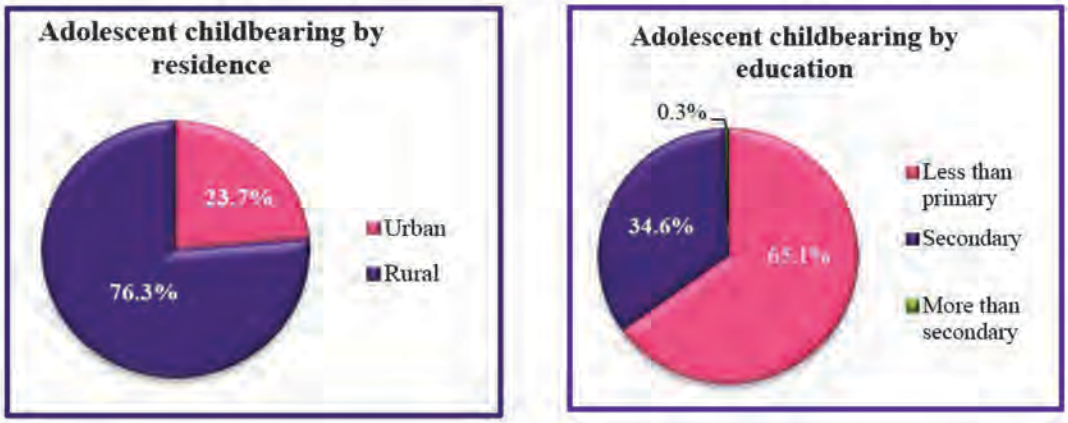

Figure 2: Adolescent Child Bearing by residence and education, Myanmar Demographic Health Survey 2015

Policy Options

In Myanmar, many intervention programs are currently underway and policy proposals to address adolescent pregnancies have been presented to the Ministry of Health and Sports. However, the gaps remain. Mixed intervention (education and contraceptive promotion) showed the reduction of unintended pregnancy in adolescents[15]. The current programs inadequately reach all adolescents, especially those who do not reach

secondary level education and those in rural settings, which contribute to two-thirds of all teenage pregnancies. Additionally, despite knowing about modern contraceptive methods, knowledge on how to correctly use contraceptives remain low in rural areas. To address the knowledge issues, we must use the power of mass media communication methods like television, radio programs, or social media (Facebook) to increase knowledge and improve attitudes on sexual reproductive issues and promote correct use of contraception among adolescents.

1. **Social Media: Adolescent Targeted Facebook Page**

   What: Set up an interactive Facebook page with expert ASRH operator team to update page with educational short videos and posts focused on ASRH issues and topics. Page with encourage adolescent engagement through activities like interactive quizzes for prizes, including Q&A sessions with operators.

   Why: Facebook is becoming popular among teens. They can have a platform for gathering, sharing their experiences and discussing their concerns. Rural Facebook users are increasing and can be used by both in and out-of-school adolescents.

   Feasibility: High. Low budgetary costs to implement and maintain. Provides a cost savings compared to current interventions. Potential high public health impact

2. **Television Program: Edutainment Series focused on ASRH Issues and Topics**

   What: Produce an educational mini-series with 12 episodes about SRH and consequences of teen pregnancy and broadcast it on national TV channels (MRTV, MWD, MRTV-4, Channel 7) during primetime to maximize viewers.

   Why: Television shows that reflect adolescents' daily activities and struggles are more appealing. Provides an opportunity for adolescents to witness correct sexual reproductive practices and behaviors, allowing them to see adverse consequences of character decisions and situations. Parents are more likely to get involved in educating their teens when they watch together in primetime.

   Feasibility: Low. High production cost and primetime broadcasting is costly. Public health impact very low due to fewer TV ownership in rural areas

3. **FM Radio Program: Radio Broadcast Focused on ASRH Issues and Topics**

   What: Podcast style talk shows (30min) twice a week from all nationwide FM radios. With an after-show hotline for questions and answers discussing various adolescent health and reproductive issues.

   Why: Radio listening frequency is higher in rural areas where more teen pregnancies occur.

Adolescents can make anonymous calls to station to obtain correct information and answers to specific questions.

Feasibility: Medium. Production cost and primetime broadcasting cost are marginally higher than current efforts. Public health impact is moderately low

A social media campaign via Facebook is most feasible and has potential for the highest health impact.

	No Intervention (Current Status)	Option 1: Social Media Campaign Facebook Page	Option 2: Adolescent Health TV Series	Option 3: Adolescent Health Radio Series
Current/Expected Number of Adolescent Pregnancies	41,853	18,723	41,838	41,144
Estimated Number of Complicated Pregnancies	29,716	13,293	29,705	29,212
Estimated Number of Pregnancies Adverted Compared to No Intervention	-	23,130	15	709
Estimated Cost to Government* (USD)	$1,150,000	$550,000	$3,490,000	$1,360,000
Cost (Savings)/Pregnancy Averted (All Pregnancies)	-	($26)	$159,000	$298
Cost (Savings)/Pregnancy Averted (Complicated Pregnancies)	-	($32)	$17,374	$295

*Costs do not include additional costs associated with length of hospital stay for all deliveries. Costs only include program costs, ANC, labor & delivery, and post natal costs associated with pregnancy.

Feasibility assessment of policy options

	Option 1: Social Media Campaign: Facebook Page	**Option 2:** Adolescent Health TV Series	**Option 3:** Adolescent Health Radio Series
Operational feasibility			
Budgetary Impact			
Public Health Impact			

Highly feasible **Somewhat feasible** **Not very feasible**

Recommendations and next steps

Establishing Facebook page focused on adolescent sexual and reproductive health is both feasible and cost effective, it has the highest potentially health impact with the prevention of over 23,000 teen pregnancies. To implement, the budgetary impact provides a cost saving annually when compared to current intervention expenditures. This is a significant less costly option compared to other two policy options. Moreover, CSE content and information can reach to both in and out-of-school adolescent users. The Department of Public Health must work collaboratively with all stakeholders to develop a Facebook page and evaluation plan. An operation team with expert adolescent and reproductive health experience will be identified to manage the posts, answer questions, and develop content. Initial content will include short video clips on puberty changes, functions of reproductive organs, how to say no, and where to get and how to correctly use contraceptives. Quizzes will be posted weekly, and prizes will be given to the viewers who can answer correctly. Awareness campaign for the Facebook page will be developed to encourage use, especially for adolescents living in rural areas. Additionally, opportunities to provide edutainment series using Facebook can also be explored, because unlike costly primetime TV, video-based edutainment can be created and posted to reach audiences anytime in a day for very low-cost inputs.

Using Facebook for comprehensive sexual and reproductive education for adolescents has the highest potential public health impact per dollar invested. Well-developed content and reliable interaction between operators and adolescents will be essential for success.

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2017

Policy Briefs

Scale up Early Infant Diagnosis for HIV

Save Our Children

Key Messages

September 2017

- Early infant Diagnosis (EID)-testing of infants born to HIV infected mothers (HV exposed-infants) within 6 to 8 weeks of delivery is key to timely treatment initiation and improving infants' survival.
- Initiation of treatment for HIV infected infants within the first year of age reduce mortality by 76%.
- In Myanmar, 77% of HIV-exposed infants were not tested within the recommended period for timely identification.
- The current strategy of decentralized specimens' collection sites has not been effective in increasing the coverage of EID.
- In the absence of an effective strategy to early identify HIV infected infants and initiate treatment, 50% of them will die within the first year.
- Collection of blood specimens from HIV exposed- infants by basic health staff during the first postnatal care visit is a feasible and cost-effective intervention to improve EID coverage and facilitate early initiation of treatment for infected infants.

Problem Statement

Elimination of the mother-to-child (MTCT) of human immunodeficiency virus (HIV) is one of the global public health goals[1,2]. The scale up of Prevention of Mother-To-child-Transmission (PMTCT) of HIV has resulted in a significant decline in the numbers of infants born with HIV infection[3]. However, PMTCT strategy aimed not only at eliminating infections among children but also at improving the survival of infants born with HIV. Thus, a key component of PMTCT programs is to test infants born to mothers infected with HIV through polymerase chain reaction (PCR) testing at 4 to 6 weeks after birth (i.e., **early infant diagnosis [EID]**), and to start treatment promptly in those who have the infection, an intervention which reduces mortality by 76% [4].

In addition to the early start of treatment (antiretroviral therapy [ART]) and subsequent enormous reduction in mortality, EID offers substantial benefits to both HIV-infected and uninfected infants, families, as well as to PMTCT programs. First, with the expansion of PMTCT programs, the majority of infants born to HIV positive mothers (HIV exposed-infants) will be uninfected, thus, negative PCR tests in infancy will provide reassurance to families. Second, when HIV-exposed infants are raised by extended families due to maternal disability or death, caregivers may bond more readily to infants known to be HIV negative. Third, documented infant HIV status provides an opportunity for assessment of PMTCT program effectiveness. Fourth, accurate EID informs infant feeding decisions in settings where breastfeeding is recommended for improved infant health. Finally, diagnosis of HIV infection also permits discontinuation of postnatal ART prophylaxis, reducing the risk of drug-resistant virus associated with these drugs[3].

In Myanmar, as a result of the scale up of PMTCT program, the rate of mother-to-child transmission of HIV fell from 26% in 2009 to 11% in 2016 [5]. However, the low coverage of EID remains a major challenge for identifying infected infants. In its effort to scale up EID, the National AIDS Control Program introduced virology PCR testing technology in the year 2009. Due to the high cost of the PCR machine and limited number of trained staff, the technology is only available at the national health laboratories in Yangon and Mandalay. To facilitate collection of specimens from HIV-exposed infants, the National AIDS Program decentralized

specimen collection services through specimen collection sites in 2013. However, these sites cover only 74 (22%) out of 330 townships in Myanmar.

Furthermore, the number of infants born to HIV positive mothers (HIV-exposed infants) was estimated at 4,889 infants in 2016. Of which, 77% were not tested within 6 to 8 weeks after birth[6] due to lost to follow up (LTFUP) **(Figure 1)**. The rate of LTFUP is estimated to be 67% and 88% in townships with and without specimen collection services respectively **(Figure 2)**. This indicates that the strategy of decentralized specimen collection sites is not effective in achieving the desired outcome even in townships where the service exists. This can be attributed to a number of reasons: i) limited availability of the specimen collection sites[7]; ii) long distance of travel for mother reside within and outside townships where there are specimen collection sites[7]; iii) stigma or fear of mothers to disclose HIV status to spouse and families[7,10]; iv) high cost of transport; and v) lack of individual tracking system.

Of the 4,889 HIV-exposed infants in Myanmar, it is estimated that 11% (529) of them to be infected with HIV[5]. Among those estimated to be infected only 30 (6%) were identified within 6 to 8 weeks of age. In the absence of an effective intervention to identify those remaining infants and treat them, 250 (50%) of them will die within the first two years of life, of which,165 (33%) will die during the first year of life.

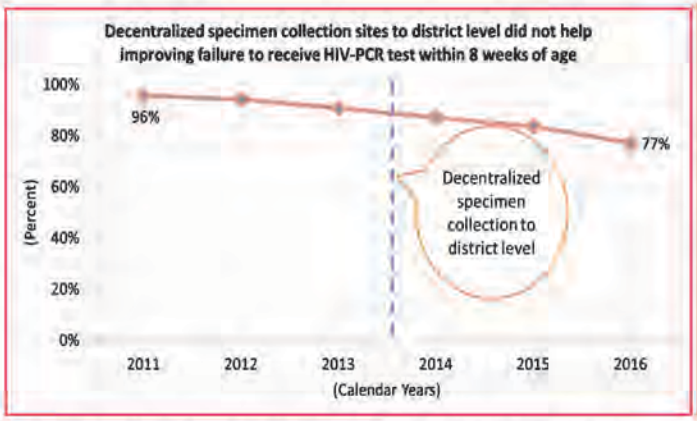

Figure 1: Trend of lost to follow up for EID (2011-2016)

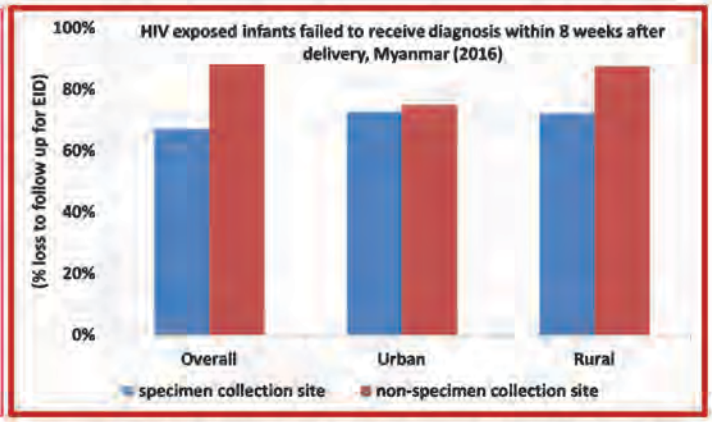

Figure 2: Rate of lost to follow up for EID by geography, 2016

What is the option?

- In order to identify infected infants as early as possible and facilitate timely initiation of treatment for HIV infected infants, the blood specimen collection services need to be easily accessible for all exposed infants. Policy option is to decentralize blood specimen collection for EID down to basic health staff (BHS) during postnatal care (PNC) visits.

  Decentralization of specimen collection of EID to Basic Health Staff

  What: An active specimen collection strategy through BHS collecting blood specimens[i] during the first post-natal care visits.

[i] *All BHS will be trained on special technique for specimen collection: plotting blood from the heel of infants onto the dried blood spot paper. The blood paper stands dried and sent to respective township health office where the township PMCT focal person sends the specimen to National Health Laborites for PCR testing.*

Why: The current strategy of passive specimen collection at district level has failed to improve EID coverage. It is time consuming and requires mothers to travel a long distance to specimen collection sites.

Operational feasibility: High. Building on the experiences of achieving tremendous improvement in testing pregnant women for HIV by basic health staff during antenatal (ANC) visits[6].It is feasible to train BHS to collect blood specimen from exposed infants as the procedure is simple and only need to collect infant blood from the infant's heel by puncturing with a sterile lancet.
Political feasibility: High. Myanmar has pledged not only to eliminate mother to child transmission of HIV but also to improve survival of both infected mothers and exposed infants through the implementation of sustainable community based services[8], the proposed policy option is highly in line with the political commitment.

	Baseline	proposed intervention
Expected number of specimens collected for EID within 8 weeks of age	763	2,151
Expected number of exposed infants diagnosed within 8 weeks of age	731	2,056
Expected number of infected exposed infants received ART within 18 months	40	113
Estimated cost for the intervention	$ 23,889 [a]	$ 108,332[b]
Cost per specimen collection	$ 31	$ 50

The total cost at baseline includes 6,500 $ for capacity building and 17,000 $ operational cost. The total cost with intervention[b] includes 52,000 $ for capacity building and 56,000 $ operational cost. The capacity building cost with the intervention is higher because 1,200 BHS will be trained annually on blood specimen collection procedure compared to only 74 BHS under the current strategy of district level specimen collection.

The estimated number of specimens that will be collected and the cost per specimen collected were based on the current post-natal coverage (PNC) of 52% [9]. If the PNC coverage increased to 90%, the number of specimens to be collected will increase from 763 at baseline (16% of exposed infants) to 3,274 (67% of exposed infants). This constitutes an increase by 330% from the baseline and 53% from the expected number of specimens to be collected with the proposed intervention. The increase in the number of specimens to be collected 2,151 to 3,274 specimens will result in a decrease in the cost per specimen collected from $ 50 to $ 41. This is because the cost per specimen collected is calculated by dividing the sum cost of the capacity building and the operational cost over the estimated number of the specimens to be collected.

Scale up Early Infant Diagnosis for HIV

Save Our Children

Recommendations and next steps

- The decentralized specimen collection for EID is cost effective and feasible in both political and operational stand points. The improvement in postnatal care coverage will even boost the cost efficiency.
- The National AIDS Program (NAP) will work closely with related programs (National Health Laboratory (NHL), Maternal and Child Health Care (MCH) to ensure that all required procedures are carried out in a cooperative and collaborative manner.
    - A standardized package of training materials for EID specimen collection will be prepared in close collaboration with the NHL. Clear flow chart and Video file showing the specimen collection procedure will be prepared and distributed during the trainings.
    - A plan of implementation will be developed in close collaboration with MCH to ensure the integration of blood specimen collection for EID into PNC service package.
    - The implementation plan with estimated cost will be submitted to the Ministry of Health and Sports for approval and budget allocation.
    - The implementation process will be closely monitored by the NAP.

Decentralization of specimen collection for EID to basic health staff is essential for ensuring early diagnosis and prompt treatment for infected infants

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Annex: assumptions

- A total of 8,000 BHS will be trained in the first year. This will be followed by a series of refresher training over a period of 10 years (one training session every 2 years). Of the 8,000 BHS trained on specimen collection in the first year, 20% will receive refresher training in the first session, 15% in the second session, 10% in the third session, and 5% in the fourth session
- For women who do not receive ANC services, HIV status will not be known. (HIV testing for pregnant women is done during the antenatal care visits)
- It is assumed that with the proposed intervention, blood specimens will be collected from 90% of exposed infants born from pregnant women living with HIV who received post-natal care. This is based on the achievement of more than 90% HIV testing coverage among pregnant women at ANC with the decentralized HIV testing services by basic health staff.
- It is also assumed that 98% of the collected specimens will be transported to the national laboratories of which 99% will be tested for PCR, and the sensitivity of the test is 98%.
  Based on the current accessibility to ART for HIV infected children, only 50% of infected infants receive treatment within 18 months of age. The estimated number of infected infants received treatment with the proposed intervention is based on current ART coverage for infants.

Home to Hospital: A Crucial Link to Avert Maternal Deaths in Myanmar

September 2017

Key Messages

- Myanmar has the second highest of maternal mortality rate in South East Asia.
- Maternal deaths mostly occur during delivery and postnatal period (71%) in Myanmar.
- The lack of timely access to care around child birth is the major contributor to maternal deaths.
- Two thirds of maternal deaths were related to delay in decision to seek care and one fourth to delay to reach care.
- Unaffordability of cost of delivery (48%) and inaccessibility to skilled birth attendants (37%) were the main contributors of lack of timely access to care.

Photo: MRH Division, MOHS,2014

- Providing financial support for emergency referral transportation and meal during delivery at public hospitals will be an option to significantly reduce maternal deaths by 38%.

Problem Statement

Maternal deaths in Myanmar: the second highest in South East Asia

In spite of a recent decline in Maternal Mortality Ratio (MMR), Myanmar has failed to achieve 2015 MDG targets for maternal health and has one of the highest MMRs in South East Asia [1]. According to the 2014 census, MMR amounts to 282 deaths per 100,000 live births [2]. The analysis of annual Maternal Death Review revealed that the trend in number of deaths stays stagnant, hovering between 815 and 846 annually between 2014 to 2016 [3], and that lack of timely access to care (delay in decision making to seek care and delay to reach care) around child birth is the major contributor to those deaths. In 2016, 67% of maternal deaths were related to delay in decision to seek care and 25% were related to delay to reach care.

Who dies and why?

As per the 2016 Maternal Death Review, 66% of women whose cases were described had primary education and below, 86% were low waged workers or housewives and 74% resided in a rural area. MMR is the highest in the rural areas of Chin State, Ayeyarwaddy Region, Magway Region, Bago Region and Rakhine State [2]. Maternal deaths mostly occurred during delivery and postnatal period (71%) and most of them were due to direct obstetrics causes (71%). Although 70% of the death cases lived within five miles of health centers, the majority of the mothers died due to lack of timely access to care around child birth from skilled birth attendants and/or access to Emergency Obstetric Care (EmOC) at the time of obstetrics emergencies.

Reasons for lack of timely access to care

Concerns about the cost of delivery with skilled birth attendants (SBA) or delivery at hospitals and lack of referral support and emergency transport are the major factors influencing the lack of timely access to care. Based on studies done in Myanmar, unaffordability of cost of delivery (48%) and inaccessibility to SBA (37%) were the main reasons for not seeking skilled birth attendance [4]. On average, households earned 4,000 kyats per day. However, they had to pay more than 20,000 kyats for delivery with SBA at home and 100,000 to 150,000 kyats for normal delivery at various levels of government hospitals. This is compared to the average cost per delivery with unskilled attendant, which is 10,000 kyats. Catastrophic health expenditure was found among 13% of households where mothers underwent delivery with SBA, mainly by delivery at hospitals [5, 6].

Table 1. Out-of-pocket payments per delivery type (2017)

Delivery type	Out of pocket payment per delivery (kyats)	Equivalent in days worked (per average daily earnings)
Unskilled attendant, home	10,000	2.5
SBA, home	20,000	5
Normal delivery*, MOHS hospital	100,000-500,000	25-125

***absence of obstetric complications**

- The 2014 census mentioned higher maternal mortality among households without motorized transport (322 and 227 per 100,000 live births respectively) [2].

Actions taken and remaining gaps

With the aim of improving timely access to care, the 3MDG platform funded an emergency referral support program for child birth, which has been implemented in 42 townships in Myanmar since 2013. This program resulted in a gradual reduction in maternal deaths in targeted townships, from 155 per 100,000 live births in 2013 to 117 per 100,000 live births in 2016. Despite this success, this program covers only 13% of total 330 townships in Myanmar, and it will be phased out in 2018 [7].

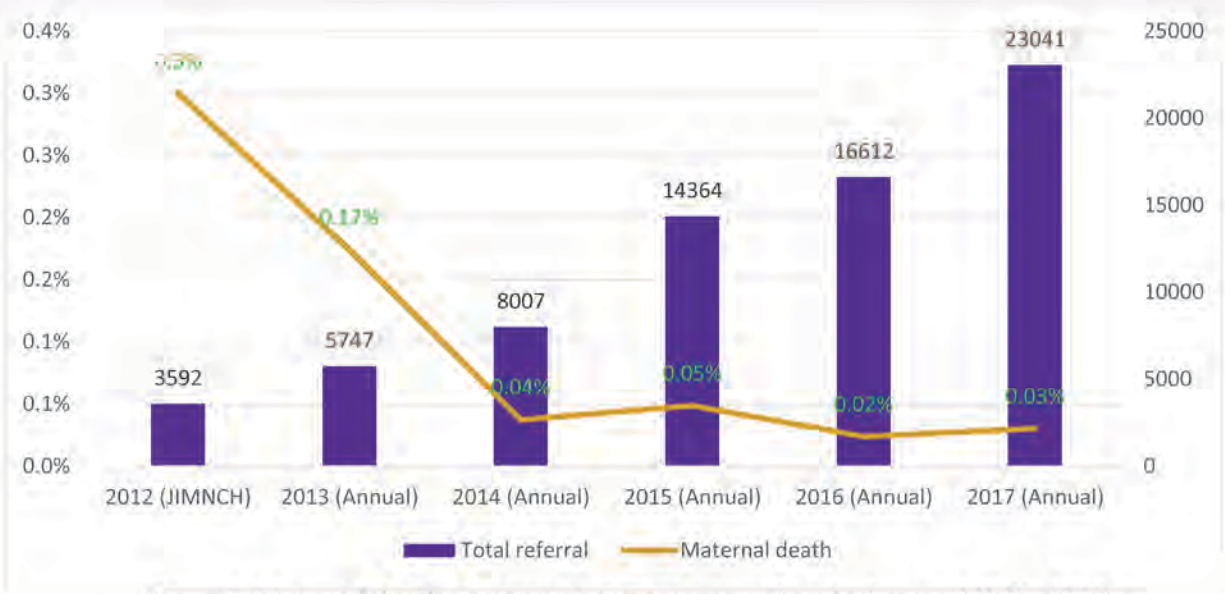

Figure 1. Maternal deaths among total emergency referrals. Source: MDG3, 2017.

A Maternal and Child Health (MCH) Voucher Scheme was piloted in two townships in Myanmar in 2011 to overcome financial barriers to access maternal and child health care. The program increased deliveries with SBA from 51% to 71% and had a 52% chance of being a cost-effective option to avert a daily-adjusted life year. However, the program was not extended nationwide due to financial constraints [8, 9].

Policy Options

Reaching-care support from home to health facility

Option 1: Financial support for transportation and meal

The first policy option is to provide mothers financial support for transportation to the health facility for delivery and meal cost during hospital stay through cash transfer mechanism. This policy option is expected to result in a 24% increase in facility deliveries, a 12% increase in emergency referrals among home deliveries with SBA, and a 38% reduction in maternal deaths per annum. (The average amount of financial support for transportation and meal per pregnant woman is US$ 35.)

Option 2: Incentive for skilled delivery, transportation and meal support

The second policy option is to provide the financial supports, as indicated for the first policy option, as well as a financial incentive of 20,000 kyats per pregnant mother for those who deliver with skilled birth attendants. This policy option is expected to result in 60% increase facility deliveries, 30% increase in delivery with SBA at home, and a 49% reduction in maternal deaths per annum.

Table 2. Policy options programmatic costs and effectiveness

Policy option	Additive programmatic cost (US$) per annum	Life-years saved	Incremental Cost effectiveness ratio (US$/Live Year Saved)
No Intervention	-	776	-
Option 1: Transportation and meal support	3,373,722	35,711	125
Option 2: Incentive to deliver with skilled birth attendants, transportation and meal support	15,527,212	10,858	1,018

*Less than GDP per capita> Highly cost-effective, Between 1-3 times GDP per capita cost>effective, More than 3 times GDP per capita> not cost-effective (GDP per capita in Myanmar for the year 2016-1275.02US$)

Recommendations and next steps

Although both policy options are effective, policy option 1 has lower programmatic costs and will result in more life-years saved. To implement the policy option one, we recommend the following:

- High level of commitment from the Ministry of Health and Sports and members of Parliament to ensure financial resource allocation;
- Interest and support from development partners;
- planning, implementation and evaluation of recommended policy option to be initiated in high MMR regions;
- implementation plan to include sustainability and exit strategy.

Therefore, the evidence indicates that alleviating financial barriers for timely access to care around child birth reduces maternal deaths effectively. Through providing financial support to mothers for transportation and meals related to delivery at hospitals, the subsequent mothers' lives saved will lead to healthier children and families as well as a better future of the nation.

Photo: MOHS , 2016

Photo: UNFPA, 2016

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Stop Measles: Extending vaccine reach to the needy

Key Messages

September 2017

- *Recent large measles outbreaks in remote area of Naga Land, peri-urban slums of Yangon and LaukKaing in Kokang self-administered areas*
- *Despite high national coverage of measles containing vaccines (MCV), disparity does exist*
- *Special efforts are needed to catch unimmunized children in hard to reach areas both geographically and socially to stop the outbreak and eliminate the disease*

- *Through the adoption of new policy interventions such as school entry check for immunization status with referral for required immunization, children from the most needed community will be protected against measles by increasing the coverage of MCV2 by 20 percent.*

Problem Statement

Large measles outbreaks occured in remote areas of Naga Land of Sagaing Region, peri-urban slums of Yangon Region and LaukKaing in Kokang self-administered areas of Shan State in 2016 and 2017. Total 274 cases with 21 deaths were detected in 2016 and 1,157 cases till 18 September 2017. Majority (82 percent) of them have never received measles containing vaccine (MCV).

Although the national coverage of MCV increases over years, the disparity does exist (Figure 1 & 2). In 2016, the reported coverage for MCV1 and MCV2 is 91 percent and 86 percent respectively. Despite the high national coverage, it is still low in conflict affected areas and geographically hard to reach areas of Kachin, Shan, Kayin and Rakhine States and Sagaing Region (Figure 2). Even in the high coverage areas of Yangon and Mandalay Region, there are pockets of unimmunized children especially in peri-urban slums and migratory population. Measles cases were detected in those areas with low immunization coverage in 2016 and 2017 (Figure 2).

Small scale supplementary immunization activities (SIAs) were conducted in response to those outbreaks. However, these SIAs are costly and add burdens to the health workers in those resource-constrained settings. In SIA conducted in one township of Naga Land, it costs around 17,000 US $ to reach 18,000 children to provide the operation support even without the cost of vaccines and other logistics. In very remote areas such as Naga Land, the case fatality rate is also high because of the limited access to the health services.

Stop Measles: Extending vaccine reach to the needy

Figure 1: MCV Coverage and Measles Cases Load from 1987 to 2017 in Myanmar

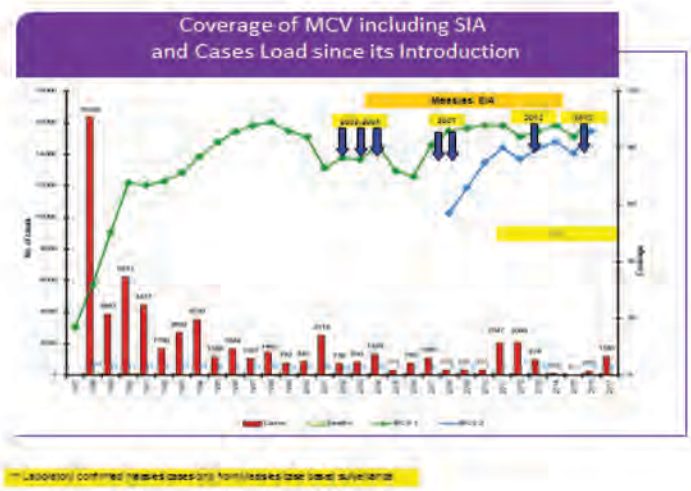
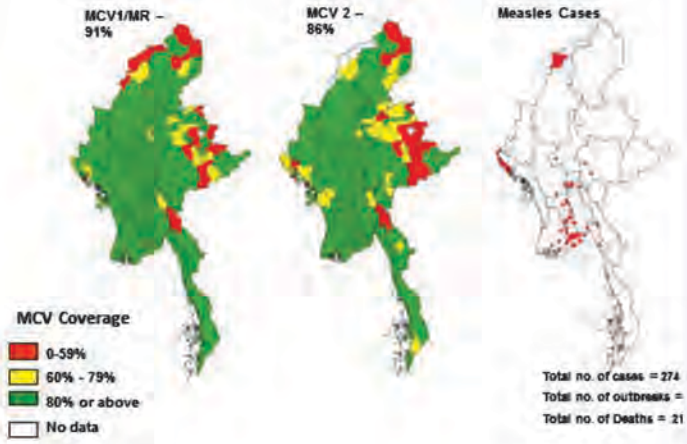


Figure 2: MCV Coverage and Measles Incidence by Township in Myanmar (2016)



In order to prevent outbreak and eliminate disease, MCV coverage needs to exceed 95 percent for both doses at the district level (1, 2). Despite the high national coverage in Myanmar, MCV1 was found to be stagnating around 85 percent over a decade (Figure 1) and the special efforts and strategies are therefore, needed to increase both MCV1 and MCV2 coverage and to reach the children across the country especially those from geographically hard to reach areas, conflict affected areas and migratory population from both urban and rural areas.

Currently the crash immunization activities are being conducted in geographically hard to reach areas by targeting all the unimmunized or under-immunized children who are under five years of age. The immunization services are provided in three consecutive months in a year when the weather is favorable. In the conflict affected areas, non-government controlled areas and self-administered areas, the immunization services are being provided through Ethnic Health Organizations and the technical and logistics needs are supported by Ministry of Health and Sports.

Special strategies are therefore, needed to reach the migratory population from both urban and rural areas.

Policy Options

The policy options aim to improve the MCV coverage by reaching additional children especially from the migratory population, those living in peri-urban slums and rural areas including geographically hard to reach areas. Policy options include (1) school entry check of vaccination status against measles and referring the unimmunized children to the health facility, (2) urban immunization project, and (3) recruitment of volunteers in rural areas.

Stop Measles: Extending vaccine reach to the needy

(1) School entry check of vaccination status against measles and referring the unimmunized children to the health facility

Children who go to kindergarten will be checked for vaccination status against measles and other diseases at the school entry and the unimmunized children will be referred to the health facility to get the needed doses. The verification will be done by checking the immunization card or recall of the caregivers if the immunization card is not available at the start of the intervention. With the commencement of the intervention, there will be more awareness to keep the card and the verification will be done by cards alone.

Since the school enrollment rate is high (86.4%) (3), it will provide a great opportunity to catch the missed children from both rural and urban areas including those from the migrant community.

The decision tree was used to estimate the effect of the intervention on MCV2 coverage in Nga Pu Taw township, Ayeyarwaddy Region where the coverage is low compared to other townships. MCV2 coverage will be 93.3 percent if 95 percent of unimmunized children is reached and 89.8 percent if 80 percent of the children is reached at school entry while the baseline coverage is 73 percent. Additional 1,134 children will be reached in the first case and 944 will be reached in the latter and the cost of reaching one additional child with MCV2 will be 23.64 US$ and 28.40 US$ respectively.

Feasibility - Moderate

The success of the intervention highly relies on the coordination and engagement with the Ministry of Education and the school teachers. Series of advocacy meetings and trainings to school teachers and basic health staff will help in clear identification of their roles and responsibilities in the intervention to improve the immunization coverage in the region.

(2) Urban immunization project

Children living in per-urban slums of Yangon and Mandalay Region will be reached through additional outreach sessions in the community. Some additional outreach sessions will be established close to the informal settlements in peri-urban slums and some sessions in user-friendly hours. To conduct additional outreach sessions, more midwives (MWs) needs to be recruited since they are main providers of immunization services in both rural and urban areas.

One Nigerian study found that the additional outreach sessions increased the immunization coverage by 42 percent from the baseline to reach the targeted 95 percent.(4) The data was used to predict the effect of the intervention on MCV2 coverage in Hlaing Thar Yar Township, Yangon Region. In this area, one MW has to cover over 28,000 people which is much higher than the national average of one MW per 3,861 people (Source: Annual EPI Evaluation, 2016). MWs will be recruited till the MW to population ratio is 1 to 10,000 which is recommended for urban areas. The operational support will be provided as well to compensate the cost of travel and the extra working hours.

However, inaccurate denominator is a big problem in Hlaing Thar Yar Township because of large number of migratory population in the informal settlement. Some of them are not counted during the estimation of the target population at the end of the year and the MCV2 coverage at the baseline might be overestimated. Therefore, additional 20 percent was added to the denominator due to 20 percent difference between census data and population data counted by the public health department (Source: Annual EPI Evaluation, 2015), and then the baseline MCV2 coverage became 76.6 percent which seems to reflect the actual coverage in the township. The MCV2 coverage will be 84.3% by reaching the additional 1,002 children through the intervention. The cost for each additional child to get MCV2 will be reduced to 28.5 US$.

Feasibility - High

The additional outreach sessions will bring the services closer to the community and the user-friendly hours will help the availability and accessibility of vaccination services to those who need them most. Recruitment of additional MWs and operational support for the outreach sessions will enable them to conduct more user-friendly sessions though their salary will increase the cost of the intervention.

(3) Recruitment of volunteers in rural areas

In rural areas including geographically hard to reach areas, the volunteers will be trained to assistant the MWs in preparing the list of eligible children in their villages and surrounding areas including those from the migratory population. The volunteers will be used for tracking of dropped out and identification of left out children in the community as well and they will be supported by providing incentives in-kind. Since the volunteers know the community better, they will be able to find the children which were not on the registers of the MW before and help them access the services.

If there is volunteer (Auxiliary MW (AMW) and/ or Community Health Worker (CHW)) in the village, they will be trained accordingly to assist MW on immunization. In villages with no existing volunteers, new ones will be recruited.

One Ghanaian study has shown that the intervention where the volunteers were used to make home visits and referring the children to the clinic increased the immunization coverage by 71 percent from the baseline to reach the targeted 95 percent (5). The data was used to predict the effect of volunteers on MCV2 coverage in 25 low performing townships of Sagaing Region and it was found that the average MCV 2 coverage of those 25 townships will be 90.9% after the intervention while the baseline is 86.7%. Additional 3,039 children will be reached with MCV2 through the intervention. The cost for each additional child to get MCV2 will be 65.3 US$.

Although the intervention seems to be costly, there will be other benefits from the intervention such as getting all the other vaccines from the national schedule and getting them in timely manner.

Feasibility - High

The attrition rate of the volunteers is usually high in Myanmar (around 20% each year for AMWs (6) and 15 – 20% for CHWs (7)) since they mostly work on voluntary basis. Therefore, they will be provided with incentives in-kind to reduce the attrition rate and the newly recruited volunteers will be given priority to be trained as AMW or CHW.

Table 1: Effect of each policy option on MCV2 coverage and its cost

Policy Options / MCV2 Coverage	School Entry Check	Urban Immunization Project	Volunteers in rural areas
Baseline	73%	76.6%***	86.7%
After Intervention	93.3%* and 89.8%**	84.3%***	90.9%
Cost per additional child to get MCV2	23.6$* and 28.4$**	28.5 $***	65.3$

*If 95% of unimmunized children is reached through the intervention

** If 80% of unimmunized is reached through the intervention

*** Additional 20% children were estimated and added in the denominator for migrant population

Recommendations and next steps

The policy options are intended to supplement each other and will be conducted simultaneously to reach children from both rural and urban areas especially to those from migratory population. Although these options aim to improve MCV2 coverage, the children will get extra benefits from the interventions such as getting other vaccines in a timely manner.

For each policy option, it will be carried out in one or two pilot townships and can be modified accordingly depending on the findings from the pilot.

For school entry check of immunization status, the advocacy to Ministry of Education will be conducted first and after that, the trainings will be conducted so that the intervention can be started at next year school entry time in June and July 2018.

For the urban immunization projects and recruitment of volunteers in rural areas, the activities such as proposal development and submission to the Ministry of Health and Sports and recruitment of MW and volunteers after

the proposal approval, will be initiated in early quarter of 2018 with the commencement of GAVI Health System Strengthening Grant 2 in Myanmar in 2018.

Although the MCV1 and MCV2 coverage increases over time, additional efforts are still needed to reach children from different regions of the country, especially those with limited access to health services. In order to halt the disease and eliminate it from the country, the aforementioned activities need to be initiated very soon to reach each and every child in the country with MCV regardless of their place of residence.

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Healthy Students Today, Healthy Community Tomorrow

September 2017

Key Messages

- In Myanmar, Health Promoting School program has been initiated since 2006, but there is increasing prevalence of risky behaviors among 13-17 year students according to GSHS 2007 and 2016.
- Program could not function well to reach the maximum standard. Only 38% of schools (17,100/45,000) are implementing complete Health Promoting School activities (all nine components) as of HMIS 2016 data (Health Information Management System, 2016).
- It has been already documented that strengthening health promoting school activities can contribute reducing health risk behaviors among students such as use of tobacco (20.9% Vs 17.2%) (Lee et al. 2006), attempted suicide (1.51% Vs 0.7%) (McMahon et al. 2017), and physical inactivity (23% Vs 13%) (Colin-Ramirez et al. 2010).
- Although creating enabling environments for Health Promoting School is much costly in implementing compared to awareness raising, it can contribute not only smoking risk but also other risk factors such as mental health problem and physical inactivity.
- It is recommended that strengthening health promoting school activities nationwide by providing enabling environments should be prioritized.

Problem Statement

Risky behaviors in young people can lead to negative consequences not only at the present stage of age but also in later adult life. Terzian et al., 2011 proved that engaging in risky behaviors in school life can effect on their education goals, social life and can develop social, behavioral, physical and mental health problem later in life. For example, drinking alcohol at young age can lead to heavy drinking in adulthood and negative health consequences (Terzian et al. 2011).

Between 2007 and 2016, Myanmar Global School-based Student Health Survey showed that there is increased risk behaviors including using smoked and smokeless tobacco, drinking alcohol, bullying, eating

unhealthy foods and drinks, increasing prevalence of overweight and increasing mental health indicators among school students aged 13-17 (Myanmar GSHS, 2007 & 2016).

Although those health-compromising behaviors among students can be influenced by various determinants, there has been already documented that health promotion through schools can effectively encourage the children to adopt healthy behaviors and reducing the health-compromising behaviors (Hung et al, 2014). In Myanmar, Health Promotion in Schools has been implemented since 1996 with the concepts of WHO School Health initiative and the program has tried to cover all Basic Education Schools throughout the country in 1996. However, only (38%) of the schools are implementing complete Health Promoting School Program as of HMIS 2016 data (Health Information Management System, 2016).

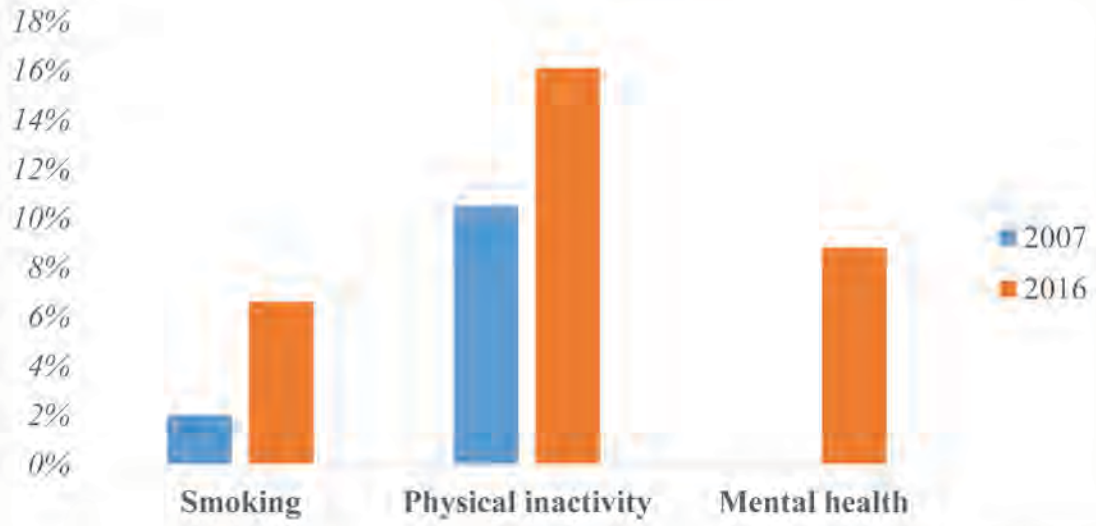

Fig: Increasing trend of risk behaviors among 13-17 years between 2007 and 2016
(Ref: Myanmar Global School-based Student Health Survey 2007 & 2016

Policy Options

In order to reduce the risky behaviors among students, Health Promoting School coverage should be increased by creating enabling environments and introducing education sessions with incentives. Although there are many risk behaviors that need to be focused, smoking is accepted as the most hazardous behavior and described in the following policy options.

(1) Creating enabling environments for Health Promoting School in order to achieve good performance of health promoting school activities

What: Making positive changes in school's physical environments by establishing School Health Committees, providing of basic necessities including safe water, sanitary facilities, school buildings, emergency medical services, and healthy school canteen, developing tobacco, alcohol, and drug free environment, and delivering school medical service with good referral, counseling, and social support.

Why: Health status, healthy knowledge and social well-being of Myanmar students mainly rely on health promoting school program since there is no specific health care program for them. According to the reference, school-based interventions can reduce 30-70% of tobacco use among students.

Feasibility: Medium. Since 17% of total population in Myanmar is occupied by students, creating enabling environments for each and every student may be costly. However, comprehensive health promoting school in well established environments can improve the health status as well as healthy life styles among students.

(2) Introducing targeted risk reduction education sessions with incentives (Award)

What: Promoting healthy life styles among students by conducting specific risk reduction health education sessions with well-trained school health teams or teachers.

Why: Although life skill education has already included in the school curriculum, assessment of health knowledge among students based on life skill education revealed that only half of them has good knowledge. Hence, regular specific risk reduction health education sessions should be introduced to existing school health education system. It is proved that school-based risk reduction education session can reduce 3-5% of risk behaviors among students (Bond. L. et al. 2004)

Feasibility: Medium. Targeted risk reduction education sessions might be competed with existing formal teaching sessions form Ministry of Education and lead to inefficient intervention.

Cost Effectiveness

	Creating enabling environments for Health Promoting School	**Introducing targeted health education sessions**
Targeted number of people	594,000	594,000
Estimated reduced students who smoked	105,300	126,900
Estimated cost	297,894,570 USD	1,793,620 USD
Cost per student to prevent use of tobacco	265 USD	14.13 USD
Intervention Cost per student	33 USD	0.2 USD

***National data extrapolated from School Health Division of Ministry of Health and Sports, Myanmar School-based Students Health surveys (2007 & 2016), and Basic Education department of Ministry of Education.**

Sensitivity Analysis

Policy option (1) Creating enabling environments for Health Promoting School in order to achieve good performance of health promoting school activities		
Intervention	Estimated reduced students who smoked	Cost per student to prevent use of tobacco
Current estimates	105,300	265 USD
Lower Boundary	162,000	172 USD
Upper Boundary	48,600	574 USD
Policy option (2) Introducing targeted risk reduction education sessions with incentives (Award)		
Current estimates	126,900	14.13 USD
Lower Boundary	179,100	10 USD
Upper Boundary	72,900	24.6 USD

Recommendations and next steps

- Although creating enabling school health environment is much costly in implementing compared to awareness raising, it can contribute not only smoking risk but also other risk factors such as mental health problem and physical inactivity.
- Moreover, a healthy, safe, and supportive learning environment enables students, adults, and even the school as a system to learn in powerful ways.
- In order to reduce health risk behaviors among students, health promoting school activities should be intensified by creating enabling environment.

Intervention process

- Specific intervention strategies should be designed to protect or improve the following components of the school environment: nutrition and food safety; water quality; air quality; sanitation facilities; transportation; waste; facilities design, construction, renovation and maintenance; grounds; hazardous materials storage; pesticide use; and purchasing.
- Each plan may also include an educational strategy, addressing important problems and prioritizing needs through researches and should include a financial analysis estimating the cost of goal attainment, and potential sources of funding or voluntary service and materials.
- Responsible parties may include Ministry of Education, Ministry of Health and Sports, local governances, parliamentarians, administrative authorities, media, and parent-teacher association. Specific individuals should be assigned responsibility to develop and implement components of intervention plans.
- Each plan should include criteria for evaluating progress and goal attainment.

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Avoidable Deaths among Heart Attack Patients – Related to Pre-Hospital Delay

Key Messages

September 2017

- People are dying and living with serious complications because they are not aware of warning signs of heart attack, if present.
- Patients would go to the hospital more quickly for proper care if they notice the warning signs of heart attack at the onset.
- ***Public awareness raising*** will help patients recognize the signs and symptoms of heart attack more easily and arrive earlier with less avoidable deaths.

Problem Statement

Problem to address: Avoidable deaths among heart attack patients, in Myanmar

Primary cause considered: Pre-hospital delay, i.e. patients are delayed in seeking care at hospitals upon onset of heart attack signs and symptoms

Background Information

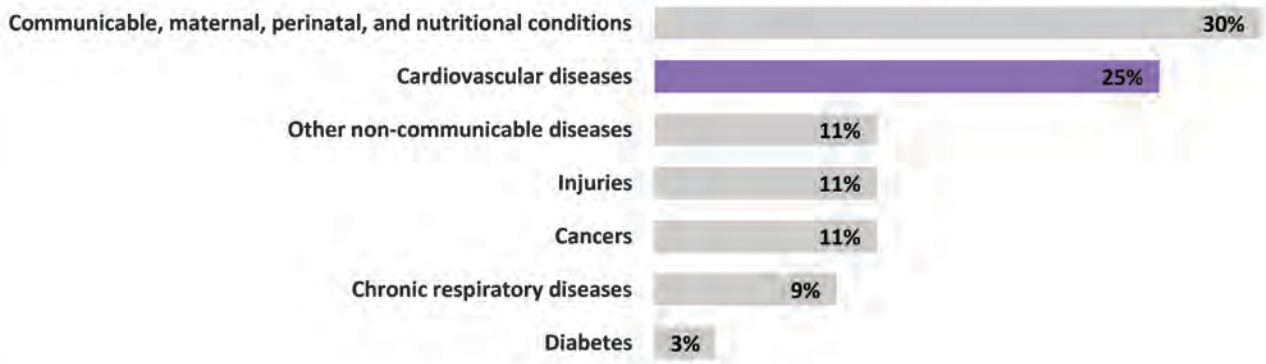
Global and national burden of cardiovascular diseases (CVD)

CVDs include heart attack and stroke; they are one of 4 dominant contributors to non-communicable diseases (NCD) morbidity and mortality.[1] The other 3 include cancers, chronic respiratory diseases, and diabetes.

Each year, 17.5 million people die of CVD; an estimated 31% of all deaths worldwide.[2] More than 75% of CVD deaths occur in low- and middle-income countries (LIC); and 80% of all deaths are due to heart attacks and strokes.[2]

A 2014 WHO NCD country profiles showed approximately 3 out of 5 deaths were due to NCDs and a quarter of all deaths were due to CVD, in Myanmar – Figure 1.[3]

Figure 1: Proportional mortality in Myanmar - percent of total deaths (N = 441,000), all ages, both sexes.[1]



Results from the ***National Survey of Diabetes Mellitus and Risk Factors for Non-communicable Diseases in Myanmar*** showed among 40 to 64 years old 12% have a 30% risk of CVD within 10 years or have existing CVDs. Yet, only 1.1% regularly take aspirin to prevent or treat heart disease.[3] In addition, 7.3% of respondents reported having a history of heart attack, chest pain from heart disease, or a stroke.[4] A 2017 study found the prevalence of possible heart attack in the community is 9%, among those 40 years of age and older, in Myanmar.[4] Further according to annual Myanmar hospital statistics, an average of 14% of heart attack patients died from 2011 to 2015.[5]

Economic burden of cardiovascular diseases

As of 2010, the economic burden of NCDs are $ 6.3 trillion (2010 USD) and expected to rise to $ 13 trillion (2010 USD) by 2013.[6] Their economic burden makes NCDs the second leading risk to global economic growth.[7] Evidence shows every 10% rise in NCD-linked mortality decreases economic growth by 0.5%, with a projected economic output loss of $ 56.7 trillion (2010 USD) over the next 20 years— almost half of which (46%) will occur in low- and middle-income countries (LMICs), like Myanmar.[6,7] For example, the average cost of inpatient visit for CVD, in LMICs, was $ 8,800 (2012 USD) with a range of $ 455 to $ 22,500.[8] The highest costs were related to more severe conditions with complications, longer hospital stays, and surgical interventions.[8]

Yangon General Hospital Case Study

A 2015 review of the clinical outcomes of heart attack patients from Yangon General Hospital revealed 860 heart attack patients were admitted to the hospital, 129 (15%) of which died.[9] Further, most patients experienced pre-hospital delay i.e. they were delayed in seeking treatment at a hospital.[9] Delays ranged from 1 to 360 hours after symptom onset – Figure 2. 387 patients (45%) experienced 12 hours or more of pre-hospital delay; among these patients 89 (23%) died and (166) 43% survived with serious complications, such as heart failure and arrhythmia – Figure 3.[9]

Figure 2: Most heart attacked patients experienced pre-hospital delay at Yangon General Hospital, in 2015.

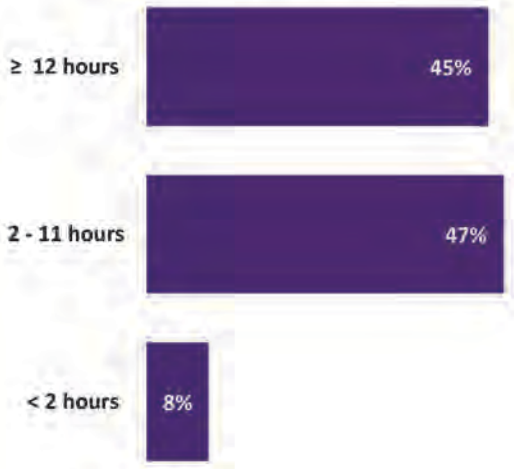
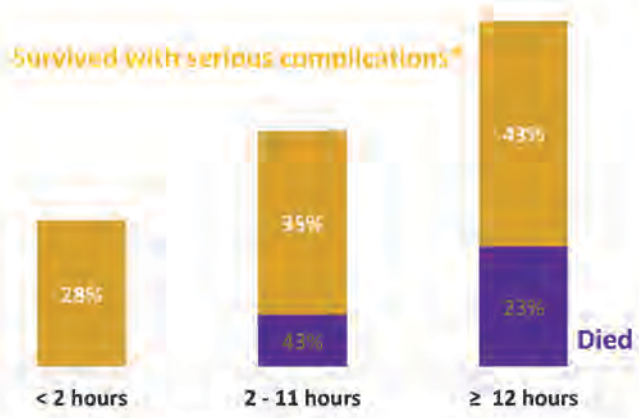


Figure 3: Complications and deaths increased with pre-hospital delay, among heart attack patients at Yangon General Hospital, in 2015.



*heart failure and arrhythmia

Possible causes of pre-hospital delay for heart attack patients

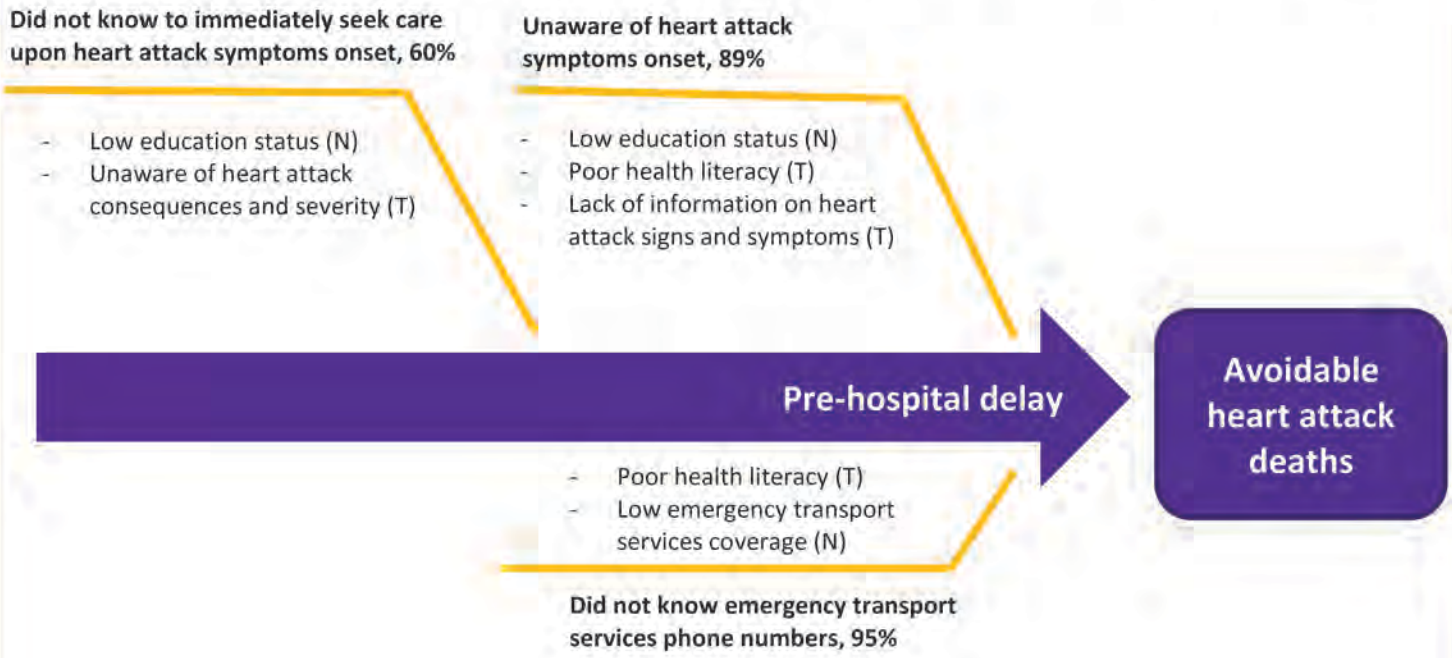
The findings from Yangon General Hospital are like the evidence from a systematic review of the literature from 1960 to 2008. The findings show heart attack patients do experience pre-hospital delay and the factors associated with the length of pre-hospital delays were sociodemographic characteristics, medical history, and clinical presentations.[2] A study from Mumbai also showed the major factors for pre-hospital delay are patient lack of awareness or misinterpretation of symptoms and low transportation access to healthcare facility.[3] Evidence suggests decreasing pre-hospital delay for heart attack patients would improve health outcomes and reduce costs.[4]

Root cause analysis of pre-hospital delay, among heart attack patients in Myanmar

To explore the reasons for pre-hospital delays, 100 surviving heart attack patients with complications, admitted at Yangon General Hospitals from March to November 2015, were interviewed about whether they experienced pre-hospital delay. If yes, what the reasons for the delay were.

Symptom onset unawareness is one of the drivers of pre-hospital delay among heart attack patients.

- 89 out of 100 patients were unaware of their heart attack symptoms onset
- 60 out of 100 patients did not know to immediately seek care upon heart attack symptom onset
- 95 out of 100 patients did not know the phone number for emergency transport services



Policy Options

- **Public awareness campaign about heart attack signs and symptoms (feasible)**
- **Emergency transport services notification system (not feasible)**

Heart attack signs and symptoms – National public awareness campaign

The public awareness campaign was chosen from the two policy options, because it is operationally and politically feasible. Establishing a notification system for emergency transport services might not be operationally and politically feasible, now.

Target audience: All people with heart attack risks and their caregivers

Policy option delivery mechanism: TV and radio broadcasting, and print media Ads – for at least 5 years

Funding sources: Governmental budget (Ministry of Health and Sports - MoHS; and Ministry of Information - MOI) and donor supports

Evidentiary support:

- Both feasible and cost-effective[10]
- Half avoidable deaths among heart attack patients [9,10]
- Educate patients on the signs and symptoms of heart attack[10]
- Inform patients to seek care immediately when having heart attack signs and symptoms [10]
- Estimated net one-year cost is MMK 655 million for whole country (12.8MMK per person cost)

Political feasibility:

- NCDs are recognized public health priorities; they are included in current (2016) and future (2017 – 2021) National Health Plans
- In early 2015, a dedicated NCD Unit was established under the MoHS' Department of Public Health
- Strong coordination between MoHS and MoI exist

NCD Unit stakeholder engagement to implement action plans:

- Senior leadership from MoHS
- Senior leadership from MoI
- Regional and local government authorities
- Regional and local public health departments
- Clinicians and hospital staffs from all hospitals in Myanmar
- NGOs and potential donors

Recommendations and next steps

- MoHS needs to identify number of new hires and their salaries for the policy implementation
- MoHS must review all developed public campaign materials, such as messaging for pamphlets, TV and radio broadcasting, and print media Ads
- NCD Unit will conduct stakeholder engagement, and work closely with health literacy promotion units and cardiology department professionals
- NCD Unit and MoHS additional secure funding from donors

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Turning the Tide: Task Sharing to Increase Access to Adolescent Sexual Health Services in Myanmar

Key Messages

September 2017

- Childbirth at an early age is associated with negative health consequences for both mothers and babies.
- In spite of the risk, the adolescent fertility rate in Myanmar has doubled in less than a decade from 17 to 36 per 1,000 livebirths from 2007 to 2015.
- Adolescent pregnancies are more frequent among poor, uneducated and rural adolescents.
- Strategies are needed to ensure that services are accessible to adolescents in need.
- Integrating community health volunteers, i.e. auxiliary midwives (AMW), into the adolescent reproductive health (ARH) program, by providing trainings and supports to currently functioning AMWs, is the most cost-effective option to reduce inequities in access to services and thus negative health consequences for adolescents.
- The program can be more effective if it can be jointly implemented with other public health programs that have an aim to increase coverage of AMW.

Poor reproductive health outcomes of adolescent pregnancies

Childbirth at an early age is associated with negative health, social and economic consequences for both mothers and babies regardless of whether the pregnancy is planned or unplanned, or whether childbirth takes place within or outside marriage [1]. Myanmar is not an exception [2, 3 & 4].

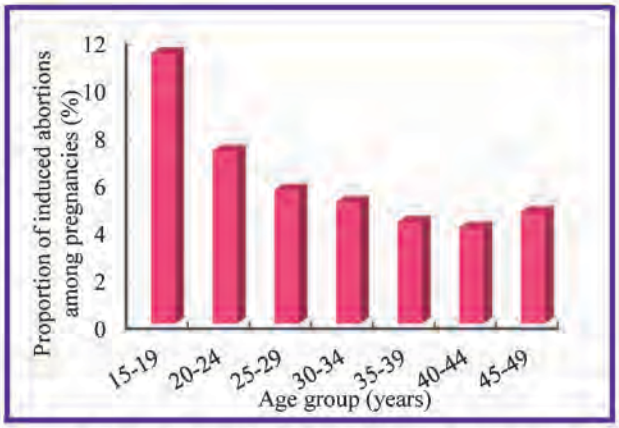


Figure: Induced Abortion among ever married women by age groups (2007 FRHS)

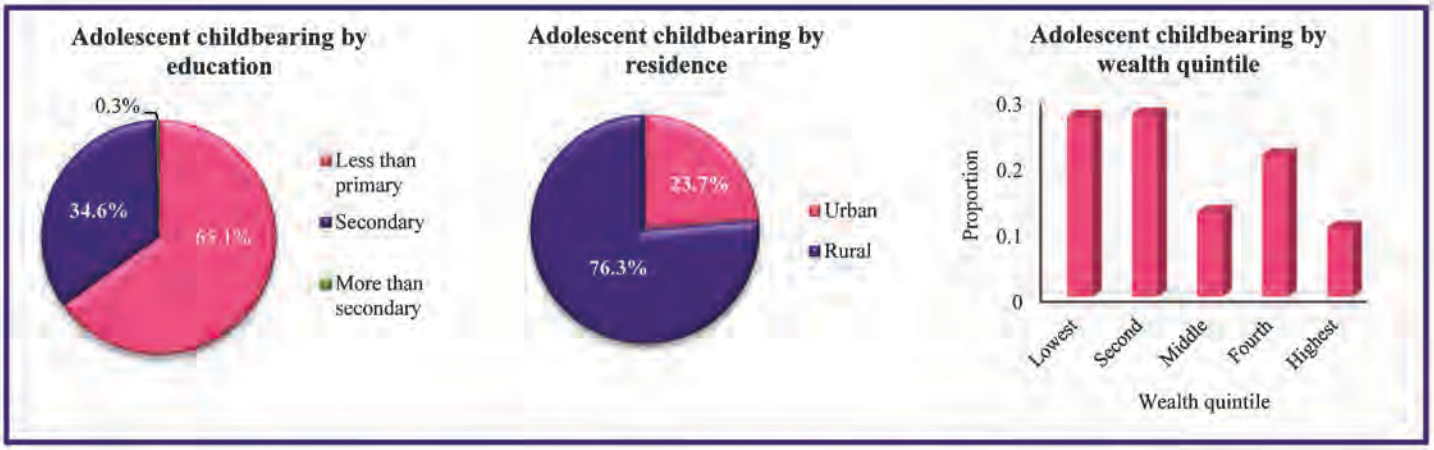
Doubling adolescent pregnancy rate in Myanmar

In spite of the risks, the adolescent fertility rate (age specific fertility rate [ASFR] of women aged 15-19) in Myanmar has increased two-fold within less than a decade, from 17 per 1000 live births in 2007 [5] to 36 per 1000 live births in 2015 [6].

Low contraceptive use among adolescents

While contraceptive use is one of the key proximate determinants of adolescent fertility, there is a lower level contraceptive use among girls aged 15-19 (6.3%) and higher unmet need for family planning among married girls in the same age (18.9%), compared with women aged 20-24 that are 26.7% and 13.5% respectively [6]. While contraceptive use of adolescents is constrained by many factors, including service-related factors, individual factors and social and cultural factors, limited access to contraceptive services is the crucial factor for vulnerable adolescents who are poor, uneducated and living in rural areas. More than half of girls aged 15-19 years who have begun childbearing had less than a primary level education (64.9%)

and were in the two lowest wealth quintiles (55.1%); and approximately two-thirds (76.3%) were living in rural areas [6].



The policy options to reach vulnerable adolescents through service delivery

The integration of an appropriately designed community health worker (CHW) program into family planning services is one of high impact practices to reach services where adolescent pregnancies are high, access is low, and geographic or social barriers to use of services exist. CHW programs have proven positive impacts of increased contraceptive use in resource-limited settings [7]. Out of 56 studies from low- and middle-income countries, approximately 93% indicated that CHW programs effectively increased the use of modern contraception and 83% reported an improvement in knowledge and attitudes concerning contraceptives [8]. A significant increase in the regular contraceptive use and condom use was also found among sexually active unmarried youth who were reached through a CHW program [9].

Integration of Auxiliary Midwives (AMW) in ARH program

Sharing tasks with AMW in provision of adolescent friendly reproductive health services can promote use of contraception among adolescents by reducing inequities in access to services. This policy can be implemented by providing AMW with on-job comprehensive ARH trainings and by incorporating the contents in the routine AMW curriculum. However, it is vital that the approach is context-specific and well-designed because the magnitude of program impact varies depending on the context and design of the program [7].

Policy options recommended for prevention of adolescent pregnancies are:

Option 1	Provide ARH trainings and supports to existing AMWs (48% coverage of rural villages) [§]
Option 2	*Option 1* + expand AMW program coverage (96% coverage of rural villages)
Option 3	Provide ARH training and supports to existing AMW from 50 townships selected* (33% coverage of rural villages) [§]; or

Option 4	*Option 3* + expand AMW program coverage in the 50 selected townships to nearly full capacity (96% coverage of rural villages)

§ The geographic coverage of AMWs in rural areas is currently 48% of all rural village, which is calculated dividing the number of currently functioning AMW by the number of villages, assuming that one AMW is working at one village.

**Township selection was made based on the following information: townships that are included in National Health Plan 1st (2017-18) and 2nd (2018-19) year, township's ASFR (greater than 40 per 1000 live births), availability of AMW in the area, and number of target population (i.e. female adolescent population) (more than 1000 in the township)* [10].

Health and economic impacts of integrating AMW in the ARH program

	No action	Option 1	Option 2	Option 3	Option 4
AMW coverage	48%	48%	96%	33%	96%
Additional pregnancies prevented	-	805	3,219	55	323
Cost to prevent a pregnancy	-	3,033*	4,318* (758) §	4,978*	9484* (1713)§

*Cost in US$ (1 US$ = 1,350 MMK) that includes training cost, implementation cost, cost for recruiting new AMW;
§Cost if there is no cost for recruiting new AMW for the program.

Among the four policy options, *Option 1* is the most cost-effective option and it feasible to implement for reaching reproductive services to adolescents in need. However, if this AMW program can be implemented together with other programs that will recruit new AMW, *Option 2* (expand the program the whole country) is the most cost-effective program among all four options.

Recommendations and next steps

In order to implement this strategy, the Ministry of Health and Sports must provide the necessary resources and support the program. The Maternal and Reproductive Health Division must develop an AMW training guide and manual and IEC materials for adolescents reproductive and sexual health, including services access, contraception use, gender equality, and healthy relationships. The Health Literacy Promotion Unit must review, approve and test these materials.

To maximize the cost-effectiveness, it is recommended to implement the program in collaboration with other public health programs that plan to improve the coverage of AMW. To ensure the program success, it is critical to engage adolescents in designing and implementing the program.

The cost effectiveness analysis for this policy includes only adolescents aged 15-19 due to the limited availability of data for very young adolescents (10-14 years) in the country. However, it is recommended the program spans the age group from 10 to 19 years as barriers to access to service for very young adolescents are greater to that of their older peers.

Recommended program elements

Based on the factors contributing to success and failure experienced by other countries [7], the following program elements are recommended as follows:

No	Program elements	Description
1	Recruitment and eligibility of AMWs	Select local young women who have completed secondary level of education and have an interest in adolescent and reproductive health issues
2	Training and refresher training	Include adolescent reproductive health, provision of adolescent friendly services, contraceptives, side effects and management of side effects in trainings
3	Incentives	Providing incentives to retain AMWs: certificates as a means of visible recognition of their contributions; small gifts, such as a back pack or T-shirt; and transportation cost for reporting
4	Logistics supply	**IEC materials**: provide regular supply of information, education and communication (IEC) materials focused on adolescents SRH and contraception **Contraceptive commodities**: support AMW with a variety of contraceptive methods, such as condoms, pills, subcutaneous depo and emergency pills
5	Links to the formal health system	**Referral**: establish a well-defined referral linkage with facility-based family planning services **Reporting**: engage in regular reporting system
6	Supervision	Provide regular supervision by supervisors (MW), focusing on performance evaluation and feedback rather than data collection

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A Helmet Protects your Head

Key Messages

September 2017

- Road Traffic Injuries (RTA) are the leading cause of injury and responsible for 69% of all deaths due to injury.
- Motorcycle injuries attributed to 71% of all RTA.
- 62% of head injuries were due to motorcycle accident.
- Only 11% of head injured motorcyclists wore helmets although, percentage ranged 48-51% among all motorcyclists.
- A policy option of Public Education Campaigns for wearing helmets is a highly feasible one to reduce head injuries due to motorcycle accidents.

Problem Statement

Nearly two-thirds of all head injuries in Myanmar is due to motorcycle crashes

Unintended injuries are a major public health problem globally. About 5.8 million people die each year as a result of injuries and accounts for 10% of the world's deaths(1). Among all types of injuries, road traffic injuries are the leading cause of death with 24% of all injury deaths(1). The mortality due to RTAs is the highest among young people aged 15-29 years accounting for 1.25 million deaths-more than from violence, HIV/AIDS and malaria(2). These deaths are projected to climb from the 9th to 5th overall leading causes of death between 2013 and 2030 globally(3).

Myanmar is one of the countries with high burden of injuries in South East Asia Region and it is the third leading cause of death contributing to 13.4% of total mortality(4). Among all types of injuries, road traffic injuries (RTI) contribute the greatest proportion (52%) in Myanmar(5). Per capita road traffic death was 20.3 per 100,000 population in Myanmar (3), making it one of the deadliest in the South East Asia region. RTIs cost 5% of the gross domestic product in 2015 and caused a significant economic burden to victims and their families (3). On average, it is estimated that a hospitalization related to a RTI head injury costs 1.7 to 5.8 million US$ per year in Myanmar. In 2016 Injury Surveillance Six Month Report, 71% of road traffic deaths in Myanmar are related to motorcyclists(5). It is also estimated that head injuries are attributed to 78% of deaths related to motorcycles(6). Among them, Only 11% of head injured motorcyclists wore helmets(6). The number of registered motorcycles in 2014 was about 4 million and they account for 86% of vehicles in Myanmar. Therefore, motorcycles are the primary mode of transport for the majority of residents in Myanmar(3).

Helmets aim to reduce the risk of serious head and brain injuries by reducing the impact of a force or a collision to the head. Helmet can reduce the risk of head injuries by 69% and death by 42% (6). However, helmet wearing rate is 48-51% in Myanmar(3). There is a national motor cycle law (2015) that applies to all motorcycle drivers and passengers and they must wear motor cycle helmet to be fastened. This law does

not refer to cycle helmet standard. The effectiveness of helmet legislation in reducing head injuries also depends on the quality of helmets worn(3). Head injuries seem to occur more frequently and are more severe for riders who wear a non-standard helmet than those who wear a standard helmet(6). Moreover, the use of poorly fitting helmets is widely reported in many developing countries(6). WHO also strongly recommends that a comprehensive program that sets and enforces mandatory helmet legislation is effective in increasing helmet wearing rates and thus reducing head injuries and fatalities(7).Therefore, it highlights the need of promoting community awareness and law enforcement for wearing standard or good quality helmet use in Myanmar.

Policy Options

In order to reduce ongoing deaths and serious head injuries, we must increase the use of standard or good quality motorcycle helmet. This includes increased enforcement, public education campaigns and government subsidies to offset the qualified helmet.

1. Increased police enforcement

What: Increased random police check point for wearing helmet. Levy fines nearly 80% of monthly income on motorcyclist who do not wear helmet.

Why: The existing helmet law has relied heavily on police enforcement and high fines for its success in ensuring that > 90% of motorcyclist wear helmets.

Feasibility: Medium. This would require more manpower.

2. Public education campaigns for wearing helmets

What: Create a campaign to educate the public on the dangers of not wearing helmet that will play on TV, Radio, journal and newspaper. In Myanmar, TV, radio and print media are among the top channels Myanmar citizens access information. Fifty-six percentage get access to information through TV program while 41% get information from radio and 25% from journals(5).

Why: Danger of not wearing helmet not currently understood by the public

Feasibility: High. This builds on the MOHS's significant experience conducting campaigns.

3. Government enforces production of qualified helmet

What: Responsibility of Ministry of Industry for regulation of enforcement of qualified helmets

Why: The Quality of helmet is the most cost effective way to reduce fatalities due to motor cycle crashes.

Feasibility: Low. There is no law which refers to helmet standard.

A Helmet Protects Your Head

Cost effectiveness of increased use of helmet by a comprehensive program that enforces increased use of helmet

	Total Cost per Person to Society of Severe Head Injuries
Without Increased Helmet Use	US$ 711.00
With Increased Helmet Use	US$ 239.41
Cost Saving per Person for Head Injury Avoided by Increasing Helmet Use Intervention	US$ (683.46)

Recommendations and next steps

The recommended policy option includes a comprehensive program that increases police enforcement, raises public education for wearing helmets through community campaigns and advocacy to Ministry of Industry for qualified helmets. The next steps for policy implementation will be as follows:

- Policy advocacy to the Ministry of Health and Sports for endorsement of public education campaigns
- Operational planning of public education campaigns will be structured with the guidance and technical support of division of health literacy promotion unit.
- Involvement of local and regional administrative departments for public awareness campaigns will be ensured.
- Policy advocacy to the Ministry of Home Affairs for increased police enforcement
- Policy advocacy to Ministry of Industry for regulation of production of qualified motorcycle helmet

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Tip of the Iceberg: Injury Burden Under-reported in Myanmar Hospitals

Key Messages

September 2017

- Motorcycle crashes are major cause of head injury in Myanmar (62%).
- Percentage of injury data recorded at hospitals is low (55%).
- Improving data quality leads to greater health and economic impact.
- Better data, better interventions, better outcomes

Myanmar is a country with high injury burden

Myanmar is among countries in the South-East Asia Region with high injury burden. According to current data, there are 76,643 injury cases and 1,830 deaths due to injury occurring annually[1]; contributing 13.4% of total mortality in Myanmar. Information on injuries and deaths due to injuries are primarily collected from hospital surveillance reports. Analysis of data from these reports indicates that injuries are the third leading cause of death in Myanmar and road traffic injuries are the most common cause of injury among all injuries. In the 2016 Myanmar National Injury Surveillance report, road traffic injury cases accounted for 52% of all injuries[2] admitted to five sentinel surveillance hospitals and 69% of deaths due to injury were from road crashes[3]. For injuries due to road crashes, motorcycle crashes were the greatest proportion, with 71% of crashes occurring on motorcycles among all road traffic crashes. Motorcycles are the primary mode of transportation in Myanmar accounting for 86% of total registered vehicles in 2014[4]. Motorcycle crashes are the leading cause of head injuries with 62% of head injuries due to motorcycle crashes according to Myanmar national surveillance report 2016.[2]In 2013, the estimated medical expenditure for head injuries due to motorcycle crashes ranged between 5.2 - 62.4 million dollars excluding secondary health cost and GDP lost.

Head Injury Surveillance Data Needs Improvement

Although current surveillance data indicates head injuries as a major road safety concern, the availability of reliable quality data on injury-related mortality and death is insufficient. The estimated versus reported number of deaths due to injury is likely to be under numerated. The percentage of all recorded injury cases among total injury cases admitted to the five sentinel surveillance hospitals was 55% [5]. In Myanmar, injuries admitted at sentinel surveillance hospitals, through the Modified Trauma Registry Form (MTR), are often incomplete and not consistently recorded. The behavioral risk factors associated with motorcycle crashes and injuries are often not completed in the MTR. A review of MTR records for one sentinel hospital site in Nay Pyi Taw revealed that only 12.5% of MTR forms were recorded for seat belt risk behaviors, approximately 0.7% recorded information on helmet risk, 0.1% recorded information for mobile phone use risk, and 4.4% of forms recorded information on alcohol risk for all recorded road crash injuries in 2016.[5] The completion rate of severity (GCS Scale) in modified trauma registration regarding injury cases is about 34%.

Additionally, information for external cause and circumstances of injury are not reported in the Hospital Management Information System (HMIS). Due to under reporting, the true severity and burden of injuries is unknown. In the absence of quality and timely injury data this constitutes a major barrier to establishing effective injury prevention policies and programs in Myanmar.

The low completion rate highlights a major gap that needs to be improved in injury data recording and management in medical record systems at the hospital, especially for head injury cases admitted to hospitals. Without improvements in the data quality, resources may be used for interventions that will yield less than expected impact on injury prevention such as improving helmet use or helmet quality policies, enforcement of drink-driving regulations, etc. Improving the quality of MTR and HMIS data will lead to more informed decision making and improved resource allocation.

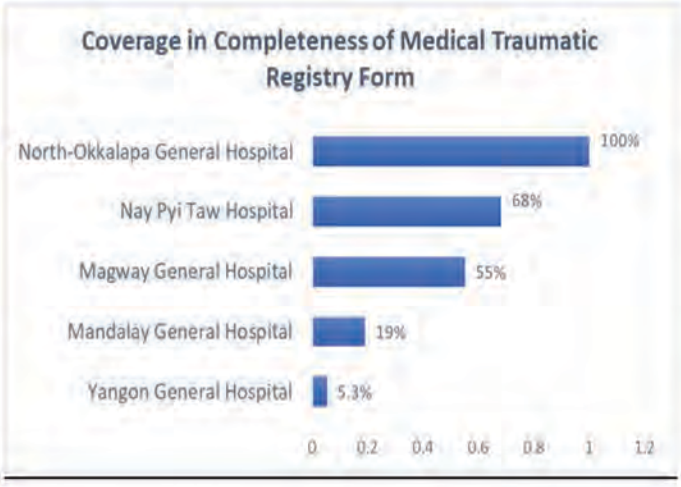

Fig-1: Coverage in Completeness of Medical Traumatic Registry Completeness (2016)

Risk Factors	Completeness
Seat-belt	12.5%
Helmet	0.7%
Mobile Phone	0.1%
Alcohol	4.4%

Fig-2: Completeness of risk factors in Medical Traumatic Registry (2016)

The root causes of poor data collection, especially Modified Trauma Registry, are identified as lack of awareness of importance of data among hospital administration, weak data management guidelines, lack of data quality standard, assurance and supervision system and low capacity of staffs (i.e., medical recording technicians, nurses, clerks etc.) regarding routine data entry, collection and quality check.

A staff taking history for MTR form filling at Nay Pyi Taw 1000 bedded hospitals

Policy Options

In Myanmar, low awareness of the importance of data among hospital administrative staff and poor administrative engagement in medical recording, and low compliance on form completion are the main issues surrounding under reporting of head injuries and lack of quality data.

The World Health Organization's guidelines for improving data quality note ways to overcome problems of poor data collection. These include review of data collection forms, staff requirements and training, and standards and checks[6]. To improve data quality in Myanmar, we must engage hospital administration, engagement and re-training of staff on roles and responsibilities, improve data quality assurance and monitoring.

1. **Engagement of hospital administration:**
   - **What:** Engagement meetings to highlight the importance of data quality and monitoring for decision making in public health will be conducted at central level, state and regional levels to engage medical superintendents and hospital administrators at different levels of hospitals for importance of quality data, implementation of standards, enforcement and compliance, and evaluation measures.

     Why: Engaging hospital administration is a crucial step to promote data quality. Accurate, accessible, and timely health care data play a vital role in the planning, development and maintenance of healthcare services. Hospital administrators are key stakeholders responsible for ensuring data quality from the hospital. Engagement should involve all senior level staff in addition to hospital administrators to provide enforcement of standards and daily data quality monitoring.[6,7]

   - **Feasibility: High**. Currently, the ministry is promoting hospital based data recording system and quality data at different levels of hospitals in Myanmar.

2. **Engagement and re-training of staff:**

   What: Revising guidelines and standards of data collection for hospital staffs will be developed. It may be necessary that the MTR form will need to be redesigned to accommodate more accurate and timely data entry. Empowering and capacity building trainings for existing medical recording staffs and healthcare providers will be conducted at 15 states and regions. Specific staff members should be assigned to audit aspects of the documentation process for continued accountability and routine checks.[7] A comprehensive training program on documentation practices and guidelines for junior staff will be developed with the support of senior level staff and hospital administrators.

   Why: Hospitals staffs, including medical doctors and nurses, are involving in routine data collection at hospitals. They are not properly briefed or informed about importance and standards of hospital based data collection. It is important to involve staff in the generation of solutions to improve data quality standards and staff performance.[7] This corresponds to the needs of staff to have accountability and control of their work.[7]

Feasibility: Medium. It would be challenging to follow the standards of data collection especially in resource limited settings. The limited time availability of hospital clinical staff and high budget for the training will be a constraint to the ministry to conduct the trainings throughout the countries amidst other competing prioritized capacity building trainings for hospital staffs.

3. **Improve data quality assurance and monitoring:**

What: With standards in place, procedures relating to data collection and monitoring data quality will be carried out on a routine basis. Routine visits to hospitals for data quality monitoring by qualitative and quantitative analysis of hospital data records will be conducted. A data quality assessment team (3 members) consisting of senior and mid-level officers from state and regional health departments will visit at least one time a year to every hospital in their respective states and regions to assess and assure data quality. Within each hospital an on-going assessment plan will consist of assigning roles to senior level staff members to audit specific aspects of the documentation process to assure completeness and accuracy. Measures for implementation and guidelines for monitoring will also be included.

Why: WHO recommends regular monitoring of data quality at hospital settings especially in developing countries. Assigning focal person or establishing a quality review committee at state and regional level for data quality check, quality control and providing feedbacks to the stakeholders are recommended by WHO for assuring data quality in hospital settings. Currently, the ministry lacks quality assessment plan and regular monitoring mechanism for data quality assurance.

Feasibility: **Medium.** There have already been competing prioritized tasks for senior level officials of state and regional department of health.

	Administration Engagement	Staff Engagement	Data Quality Assurance and Monitoring
Political feasibility			
Operational feasibility			

Highly feasible Somewhat feasible Not very feasible

Programmatic Cost for Each Policy Option

Policy Option	Programmatic Cost (US$)
Option 1: Engagement of hospital administration	$ 34,765
Option 2: Engagement and re-training of staff	$ 201,705
Option 3: Improve Data quality assurance and monitoring	$ 100,100

Costs are calculated for annual expenses nationwide for all levels of hospitals.

Recommendations and next steps

The policy recommendation is all three options, implemented in three phases.

The steps outlined for policy implementation are as follows:

Phase 1: Engagement of Hospital Administration

- Buy-in political commitment by top-level management of the ministry to support the policy implementation
- Engagement with hospital administration to understand the importance of quality data for decision making
- Engagement of hospital administration and senior level staff to develop guidelines and protocols for quality data and performance indicators to routinely monitor data quality

Phase 2: Improve Data Quality Assurance and Monitoring

- Development of training materials for hospital staffs, determine roles and responsibility
- Establishment of a data quality review committee at different levels of hospitals

Phase 3: Engagement and Re-training of Staff

- Implement guidelines and protocols for improving data quality standards

Even the slightest improvement on data quality has the potential to greatly impact injury prevention and intervention outcomes. For example, a 10% increase from the current completeness and accuracy rate on injury reports could provide a better understanding of the true burden of head injuries and the role of helmet use on severe head injuries in Myanmar. If quality data from the injury reports suggests that interventions are needed to promote correct helmet use among motorcycle riders, then the potential

impact of such an intervention could lead to better health outcomes and lives saved. The potential economic impact could lead to additional cost savings in allowing for fewer head injuries and lower medical expenditures annually for head injuries. The table below highlights the economic impact of promoting helmet use to prevent severe head injuries due to motorcycle crashes. The cost savings are the savings to society due to reductions in severe head injuries and treatment of non-severe head injuries. It highlights the differences in economic impact based on data quality. Due to poor data quality, the potential loss in cost savings could be up to 1.5 million dollars or more annually.

Example of potential cost benefits of improving helmet use due to improved data quality for head injuries

Cost savings for all head injuries using CURRENT injury data to promote helmet use	**$10,791,209**
Cost savings for all head injuries with a 10% improvement in injury data quality to promote helmet use	**$12,416,180**
Cost difference between current and improved (10%) data quality and helmet interventions	**$1,624,971**

Authorities at all levels of hospitals should be concerned about poor data quality and the impact it has on the quality of health care and health promotion interventions. Accurate, timely and accessible hospital data play a vital role in the planning development, allocating of resources where they are needed most and maintenance of health care services and preventive interventions at an optimal level. Better data leads to better decisions which lead to better health outcomes.

Contributors

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- **Thazin Myint, Deputy Statistical Officer, Nay Pyi Taw 1000 bedded hospital, Myanmar.**

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4. Road Safety in South East Asia Region 2015, WHO 2016
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2016

Policy Briefs

A Silent Killer is Among Us:

A Case to Reduce the Burden of Hypertension in Myanmar

November 2016

Key Messages

- **One out of ten deaths in Myanmar is attributed to hypertension.**
- **37% Myanmar people are not aware of hypertension and its consequences.**
- **56% of people known to be hypertensive are not on appropriate antihypertensive medications.**
- **More than half of heath facilities are not staffed with trained health care providers who can diagnose and manage hypertension in accordance with WHO guidelines.**
- **Raising awareness via mass media campaigns and appropriately training health care providers on detecting and managing hypertension would reduce the negative consequences of hypertension.**

Problem Statement

Hypertension (defined as mean systolic blood pressure (SBP) of ≥140 mmHg and a mean diastolic blood pressure (DBP) of ≥90 mmHg) has been identified as a leading risk factor for mortality worldwide [1]. Globally, the overall prevalence of hypertension among adults was around 22% in 2014 and it is estimated to cause 9.4 million deaths annually [2]. In the South East Asian Region, 25% of the adult population is hypertensive and 1.5 million people die annually due to hypertension [4]. Hypertension is a primary cause of cardiovascular diseases (CVD) and hypertensive kidney failure [3]. However, hypertension is the most modifiable risk factor for CVD and premature deaths (i.e., the years of potential life lost before age 68) [5]. Those with untreated hypertension have higher risks of CVD than those on treatment. Thus, prevention, detection, treatment, and control of hypertension are critical to reduce deaths and other serious consequences of the disease [6]. Unfortunately, people live for years without ever knowing they have hypertension, and thus possibly causing damage to their heart and vital organs.

In Myanmar,NCDs contribute to over 60 percent of all deaths, with one third of NCD deaths attributed to hypertension [7]. According to a recent STEP-wise approach survey conducted in Myanmar, about 25% of population aged between 25 to 64 years are suffering from hypertension (i.e., 6 million). In Myanmar, the diagnosis and treatment of hypertension are provided free of charge in all public health facilities. However, according to the survey, 56% and 9% of those previously diagnosed with hypertension were not on any antihypertensive medication or were taking only herbal medicine, respectively.

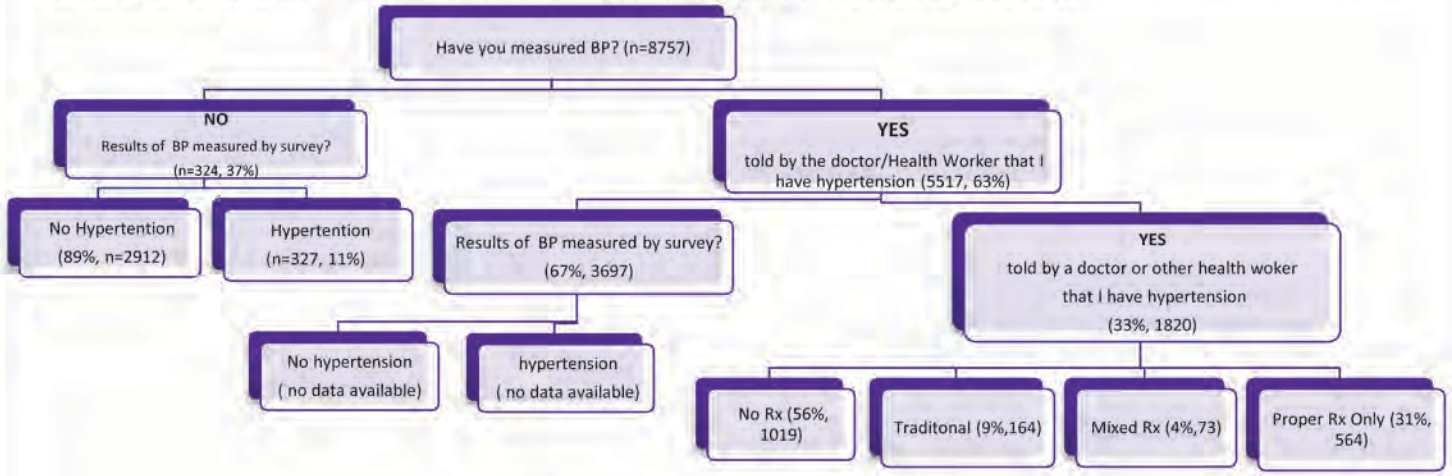

Figure- Problem Identification Flow Chart

Source: 2014 STEP Survey, Myanmar

In addition, 37% of the survey population has never had their blood pressure ever measured. Among the unmeasured population, 11% are found to be hypertensive. This indicates the need for awareness and knowledge about hypertension among the general population and health care providers. According to Myanmar's nation-wide Service Availability and Readiness Assessment (SARA), drugs and tools for diagnosis and management of hypertension are available in more than 90% of all health facilities. However, there is a shortage of trained staff to diagnose and manage hypertension. Only 3% of private and 47% public health facilities are staffed with health workers who can diagnose and manage hypertension. [8]

The World Health Organization recommends that all patients with stage 2 (SBP 160-179 / DBP 100- 109 mmHg), stage 3 (SBP ≥ 180 / DBP ≥110 mmHg) or stage 1 with co-morbidities (SBP 140-159 / DBP 90-99 mmHg with Diabetes, end stage renal diseases, congestive heart failure, previous stroke, atrial fibrillation, myocardial infarct and severe obesity) should receive antihypertensive medication.

Health education and scale up of service readiness and availability of trained staff to detect, treat and control high blood pressure are urgently needed to curb hypertension and its progressive effects.

Policy Options

In order to reduce the burden of hypertension and improve health seeking behavior, the public needs to be aware of hypertension and its negative consequences and the need to measure their blood pressure. There is also a need to underscore the importance of regularly taking appropriate antihypertensive treatment as prescribed by formal health care providers. In addition, readiness and availability of health facility to diagnose and manage hypertension should be scaled up.

Option 1: Awareness-raising activities about hypertension and its consequences

What: Introduce health education activities regarding importance of measuring blood pressure and taking regular treatment via pamphlets and mass media to increase awareness within community.

Why: Almost 4 in every 10 of the population have never measured their blood pressure. Awareness raising activities will inform the public about the importance of regularly checking their blood pressure. A study in Bangladesh documented that awareness of hypertension and treatment seeking behaviors improved by 33% after hypertension awareness intervention. [9]

Feasibility: High. Currently, health education programs are broadcast in television, local FM radios and newspapers. However, the program on hypertension was prepared long time ago and needs to be updated. The frequency of broadcasting is needed to be increased.

Estimated costs:

Cost of Policy Option	*Policy Option 1*
Estimated Direct Implementation Cost	*USD 500,000**

**MOHS and WHO Biennium Work-plan Budget estimation*
Cost of policy option 1 includes that production of health education sessions and massages on private and public mass media.

Option 2: All health care providers must be trained on diagnosis and management of hypertension in accordance with WHO guidelines

What: Train health care providers of all level of health facilities to be capable of diagnosing and managing hypertension in accordance with WHO guidelines.

Why: More than half of the health care facilities in the countries are not staffed with health workers who were trained in diagnosis and management of hypertension in accordance with WHO guidelines.

Feasibility: High. The guidelines are ready. Training of trainers should be first conducted at central level and the trainers will conduct multiplier trainings in all 330 townships. However, it would be costlier and need more resources than awareness raising activities.

Cost of Policy Option	*Policy Option 2*
Estimated Direct Implementation Cost	*USD 1,660,000**

*MOHS and WHO Biennium Work-plan Budget estimation
Cost of Policy Option: *The cost of the second policy option is based on the average cost of a 2-day one-time training of treatment guidelines at township level. The average cost of a training in a township is US$ 5000 and it is calculated for 330 townships nationwide in a year.*

Feasibility

	Policy Option 1	Policy Option 2
Operational Feasibility	HIGH	SOMEWHAT
Political Feasibility	HIGH	HIGH

Recommendations

Both media campaign and scaling up of the readiness and availability of health facilities are operationally and politically feasible.

To implement the first strategy, messages about hypertension need to be included in the current ongoing health education programs. The Ministry of Health and Sports (MOHS) should collaborate with the Ministry of Information and private media to review and update the existing health education program.

As for the second option, series of training of trainers should be conducted at the central level of MOHS, followed by multiplier trainings at township level healthcare providers in all 330 townships.

The simultaneous implementation of both policy options will improve the health seeking behaviors of the community as well as the skills of all health care providers on diagnosis and treatment of hypertension. Therefore, prioritized budget resources is necessary for implementation of both options.

Contributors

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Every Child Counts:

Improving Access of Internal Migrant Children to Immunization in Myanmar

November 2016

Key Messages

- Childhood immunization is considered as the most cost-effective strategy to prevent specific communicable diseases and outbreaks.
- Every child has the right to immunization.
- In Myanmar, 22.5% of internal migrant children received zero doses of any vaccine compared to only 8% of children in the general population.
- Lack of knowledge among internal migrants about their right to immunization is the main reason for low immunization coverage.
- A combination of strategies is needed to ensure that internal migrant children get immunized. Awareness raising through radio message and use of Maternal and Child Health (MCH) handbook in the absence of EPI card will bring the positive impact.

Problem Statement

Internal migrants (those who move from one place to another within their country for better economic opportunities) are an expanding population of growing health importance[1]. There are approximately 750 million internal migrants worldwide[1]. Because of their mobility, delivering health care for this type of population can be challenging for health systems, especially in resource-limited settings[2]. One of these challenges is reaching children of migrant population with Expanded Programme of Immunization (EPI) services. The main barriers identified globally for reaching migrants are geographical barriers, inconvenient scheduling, and lack of information about migrants in health registers[3]. However, in Myanmar, the findings of a qualitative study showed that the reasons for this low coverage among internal migrant children are the followings:

- Internal migrants moving from place to place;
- Internal migrants not getting information about the date and place of EPI;
- Internal migrants thinking that they were not eligible to receive EPI at their currently living villages;
- Midwives did not provide EPI for internal migrants children if they could not identify which does to be given (i.e. if there is no immunization card)

[1] Awoh AB, Plugge E. J Epidemiol. Immunization coverage in rural–urban migrant children in low and middle-income countries (LMICs): a systematic review and meta-analysis, *Community Health* 2016;70:305–311.

[2] Saw Saw and et.al. Role of voluntary health workers for maternal and child health of migrants in Bogalay and Mawlamyingyun Townships, Myanmar (2014) (unpublished report)

[3] WHO. Immunization in Practice: A practical guide for health staff—2015 update

These conditions may increase the incidence of vaccine-preventable diseases and eventually outbreaks[4].

In Myanmar, the proportion of internal migrants gradually increased from 10% in 1991 to 14% of total population in 2007 and an analysis done in 2013-2014 indicated that nearly half (48.7%) of formal sector workers in Myanmar had been migrating within the country[5]. A 2014 study conducted in two Myanmar townships (Bogale and Mawlamyinegyun) among 493 internal migrant mothers with children under 2 years old revealed that internal migrant children have less access to EPI compared to general population. According to the study, 22.5% (111/493) of migrant children aged 1 to 2 years received zero doses of any vaccine included in EPI[6] compared to only eight percent of children in the general population received zero dose[7].

Childhood immunization is recognized as a cost-effective public health intervention to prevent specific communicable diseases[8]. The GAVI Alliance stated 1.5 million children die every year due to vaccine preventable diseases[9]. In Myanmar, two measles outbreaks occurred during the past 5 years, with the latest one occurring in 2016 and resulted in 20 children deaths. Three dimensions of Universal Health Coverage (UHC) are population coverage, service coverage and financial coverage. If Myanmar is to achieve its target of Universal Health Coverage by 2030, innovative ways to improve access of internal migrant populations to EPI services must be implemented[10].

Policy Options

To reduce inequity in accessing health care by migrants, we must develop an innovative strategy for migrant children to receive EPI services that address identified barriers. Policy options include (1) raising awareness of EPI services through FM radios, (2) making use of maternal handbook by internal migrants and Basic Health Staff (BHS).

[4] Julita Gil Cuesta and at. El. Measles Vaccination Coverage Survey in Moba, Katanga, Democratic Republic of Congo, 2013: Need to Adapt Routine and Mass Vaccination Campaigns to Reach the Unreached, PLoS Curr. 2015 February 2; 7: doi: 10.1371/currents.outbreaks.8a1b00760dfd81481eb42234bd18ced3

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[9] GAVI. Keeping children healthy, Vaccine alliance Progress report 2015 (http://www.gavi.org/progress-report/)

[10] Myint Kay Thi. Measles vaccine drive launched to stem Naga outbreak. *Myanmar Times Journal* Tuesday, 09 August 2016 (http://www.mmtimes.com/index.php/national-news/21840 measles-vaccine-drive-launched to-stem-naga-outbreak.html)

(1) Raising awareness of EPI for migrants through FM radios

WHAT: Broadcast key messages of EPI through FM radios. Key message should inform internal migrant caregivers about their child's eligibility for EPI at any point of health service delivery, the importance of keeping immunization record/MCH handbook, and date and time for EPI activities and benefits.

WHY: Studies showed that FM radio is an effective channel to deliver health messages especially for working population and it is affordable. About 62.4% of the rural community suggested radio announcements as an effective way of providing health education. Possession of FM radio for individual use was 52.3% and 84% listened to FM frequencies. An Indian study found polio immunization coverage increased from 50% to 57% (7% increase) after mass media campaign. The current health education programme uses radio to announce EPI activities. However, there is no information about eligibility of internal migrant children for EPI wherever they go.

FEASIBILITY: Medium. This intervention needs collaboration of private sector (FM Radio station) to broadcast key messages at the most listened time and frequently. However, there is existing programme "Community on Air" which is like a consortium of mass media which agrees to deliver health education message free of charge. Therefore, there will be no additional cost for this intervention. However, it is expected that more internal migrant mothers will come to BHS to get EPI after awareness raising. Then additional vaccines would be required for internal migrant children. However, we do not have data to estimate number of internal migrants in the country. Currently, EPI vaccines are provided by GAVI Alliance and UNICEF.

(2) Use of Maternal and Child Health hand book

WHAT: Distribute Maternal and Child Health (MCH) Handbook for migrant mothers and encourage BHS to record EPI information in the handbook. In addition to EPI information, it consists of pregnancy record, delivery information, and child growth records.

WHY: A study in Myanmar found one reason for missing EPI in migrant children was not having an EPI record. Currently, EPI are recorded in a vaccination card which is likely to be lost compared to a MCH handbook. Published studies showed that there was strong relationship between use of MCH handbook and knowledge of mothers on AN care, danger signs and child health. A study in Bangladesh showed increase in knowledge of mothers on vaccination (from 5.7% to 32.4%) and improve their practice for vaccination of children (from 1.5% to 8.3%) after introducing of MCH handbook[5].

FEASIBILITY: High. Currently, MCH handbook is distributed and used for maternal health and it contains a section for recording EPI information. It also can be utilized as a health education tool. There is enough MCH handbooks printed and there will be no additional cost. To use the MCH handbook as a comprehensive tool for MCH and EPI, it is necessary to establish coordination among three programmes (Maternal and Reproductive Health Programe, Child Health and Development Programme, and EPI Programme). It is expected that more migrant mothers will come to BHS to get EPI service after awareness raising. It will take about 5 minutes for BHS to explain about how to use MCH handbook to internal migrant mothers. Therefore, it will not need additional human resources for delivering and informing about MCH handbook to internal migrant mothers.

Recommendations and next steps

Several reasons contribute to the problem of low immunization coverage in internal migrant's children. Some of these reasons are related to internal migrants and others lay within the health system. Internal migrants need to be aware of their right to receive health services including EPI services at any point of service delivery in Myanmar, and health care providers need to know the vaccines provided to children and how it correspond to the EPI schedule. Thus, implementation of more than one strategy is needed to ensure that internal migrants have access to EPI services. The use of radio messages and the MCH handbook are recommended.

To implement the first strategy, the Health Education division should review the existing health messages delivered through FM radio and ensure that internal migrants are targeted. An agreement should be made with FM radios "Community on Air" to increase the frequency of the message.

For the second strategy, all stakeholders (EPI Division; Maternal and Reproductive Health Division; Child Health and Development Division; and Health Management Information Division) should agree to use MCH handbook to document EPI schedule in the absence of the EPI card. Health care providers must officially be informed to use the MCH handbook to document vaccination but still accept and use the vaccine card as needed.

Universal health coverage will not be a reality unless all categories of the population, including those hard to reach internal migrants, have access to health services.

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Don't Miss any Fever Case for Malaria Testing in Myanmar

Key Messages

November 2016

- Early diagnosis and treatment (within 24 hours of onset of fever) is one of the main strategies to eliminate malaria in Myanmar by 2030.
- WHO recommends that all febrile cases should be tested for malaria in Malaria endemic areas.
- However, the current NMCP guideline stated that malaria should be suspected only in patients presented with fever, chills and/or rigors.
- A recent survey showed that 70% patients with fever had not been tested for malaria and of those who got tested, 52% had the test after 24 hours
- As such, many malaria cases may be missed and treatment will be delayed.
- Updating the current malaria case definition in line with the WHO recommendation is a way forward to achieve EDAT.

Problem Statement

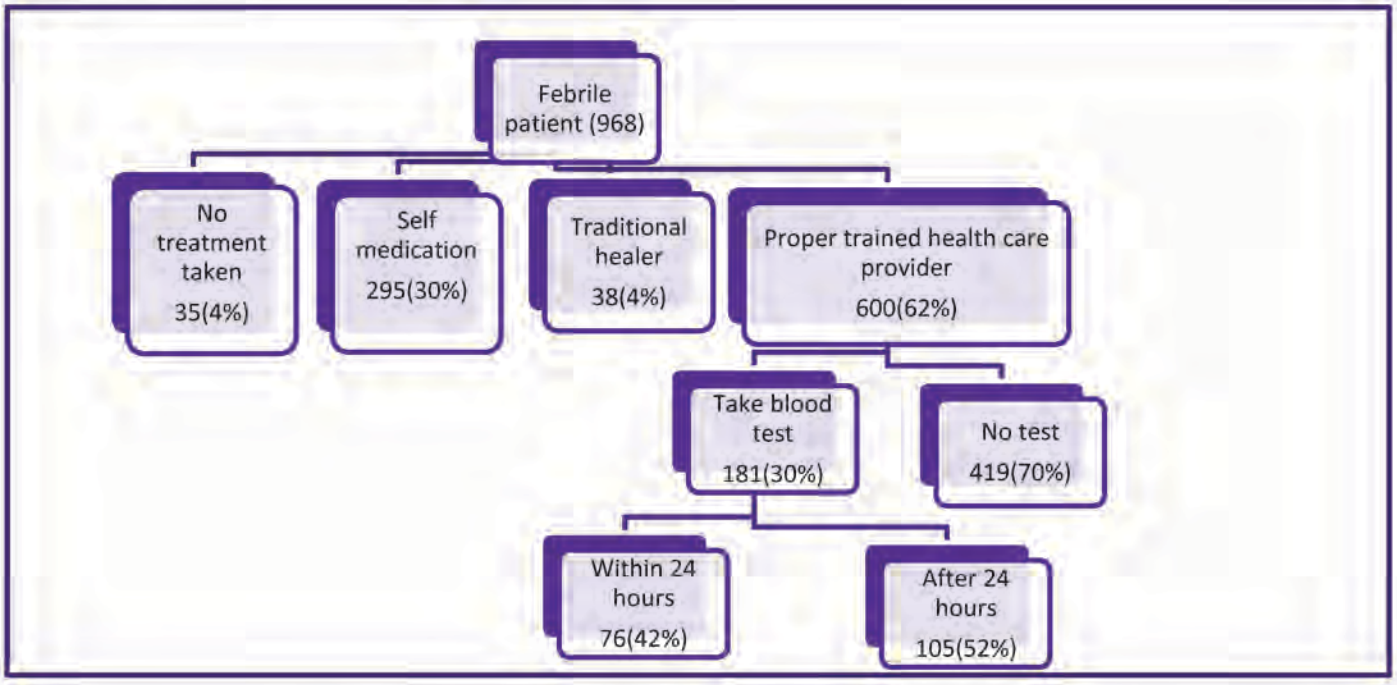
Malaria is a major public health problem with an estimated 214 million cases and 438,000 malaria-related deaths in 2015 globally [1]. In the South East Asia (SEA) region, there was 1.6 million confirmed malaria cases and 812 malaria-related deaths in 2014[1].

Myanmar has the highest burden of malaria in the Greater Mekong Sub-region (GMS) with an estimated, 152,195 malaria cases and 92 malaria related deaths in 2013 [2]. In line with GMS plan for the elimination of Plasmodium falciparum by 2025 and all malaria cases by 2030, the National Malaria Control Program (NMCP) in Myanmar has set a target to reduce malaria transmission to less than 1 case per 1000 population by the year 2020 [3]. One of the main strategies to achieve this target is early detection and appropriate treatment of confirmed malaria cases within the first 24 hours of the onset of fever (EDAT) [4]. This implies that all suspected cases must be tested for malaria using smear microscopy or rapid diagnostic test (RDT).

In malaria-endemic areas, the World Health Organization (WHO) recommends that malaria should be suspected in any patient presenting with fever [5]. However, the current NMCP in Myanmar recommends that malaria should be suspected in patients complain of fever, chills and rigors [6]. In 2014, a malaria

community based survey conducted in 284 endemic areas of Myanmar revealed that 70% of patients presented with fever to formal health care providers (e.g., doctors, nurses, and midwives) did not have their blood tested for malaria. **Figure 1**.This increases the risk of missing malaria cases and, thus, not providing them with an effective treatment. To eliminate malaria, any malaria case should be effectively treated to break the cycle of human-to-mosquitoes-to-human transmission. In addition, the survey also found that of those who had their blood tested for malaria (30%), 52% had the test after 24 hours of onset of fever,which further delays initiation of an effective treatment among confirmed cases [4]. The reason for this is unknown and merits further investigation. Treating PF infected patients within 24-48 h after onset of fever is likely to prevent further transmission.Effective action to update the definition for suspected malaria cases in line with the WHO recommendation is needed to be early diagnosed and treated all malaria cases within 24 hours if Myanmar is to reach its goal of eliminating malaria by 2030. Similarly, strategies to improve health seeking behavior of patients with fever are needed.

Figure 1: Health seeking behavior and current practice of testing for malaria among patients presented with fever in Myanmar



Source: 2014 Malaria community based survey in Myanmar.

What are the options?

In order to improve the access to early diagnosis and appropriate treatment (EDAT) in Myanmar, we must change a definition for suspected malaria cases in line with the WHO recommendation in national malaria treatment guideline and increase community awareness through public education campaign. Policy options include change in a definition of suspected malaria cases in new national malaria treatment guideline and public education campaigns.

***Option 1:* Change a definition for suspected malaria cases in new national malaria treatment guideline**

- **What:** update the national definition for suspected malaria in the new national malaria treatment guideline and manuals for Basic Health Staffs (BHS) and volunteers.
- All patients with fever should be suspected for malaria and tested using RDT or microscopy within 24 hours.
- **Why:** WHO recommends that in malaria-endemic areas all patients with fever should be tested for malaria. The current national recommendation is that all clinically suspected cases should be tested for malaria. This is rather unclear and leaves the decision to suspect malaria to the care provider judgment. It does not explicitly mention when malaria should be suspected.
- **Feasibility:** High. The NMCP is currently revising the National guidelines for diagnosis and management of malaria. This will provide an opportunity to update the definition of a suspect malaria case according to the WHO recommendation.

Option 2: Public education campaign for EDAT in malaria control and elimination

- **What:** Awareness raising campaign to encourage patients to seek health care from trained health care providers within the first 24 hours of onset of fever. That will play on radio, TV and in pamphlets.
- **Why:** Seeking health care within the first 24 hours of fever will contribute to EDAT.
- **Feasibility:** Medium. MOHS has some experience on public education campaign for malaria prevention by PSI, an INGO in Myanmar. However, NMCP has less experience on that and we still need time and resources to conduct such campaign.

Recommendations and next steps

Updating malaria case definition in the national malaria treatment guidelines is politically and operationally feasible. The new case definition should be included in the training manual for BHS and community Malaria Volunteers (CMV). This change will align the national guidelines with WHO recommendation for malaria diagnosis in malaria endemic-areas and place Myanmar on the path to eliminating this disease. The Department of Medical Research should work closely with NMCP, DOPH, DMS and TSG to update the case definition for malaria in the new national malaria treatment guideline. Further research is needed to assess i) the expected increase in workload resulted from applying the new case definition, and ii) the number of additional staff needed.

Testing all fever cases for malaria will ensure that no malaria cases will be missed. This will improve EDAT, and contribute to the current efforts to eliminate malaria in Myanmar.

Contributor

- **Dr. Thae Maung Maung, Research Scientist, Department of Medical Research, MOHS.**

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6. Myanmar Malaria Guidelines

Appendix

Ministry's Lead

Aye Aye Sein
Deputy Director General (Administration/Finance)
Department of Public Health, Ministry of Health and Sports
Ministry's Lead for Data Impact Program of Bloomberg Data for Health Initiative, Myanmar

Daw Aye Aye Sein is the Deputy Director General (Administration & Finance) of Department of Public Health, Ministry of Health and Sports. She is the country lead for Data Impact Program of the Bloomberg Data for Health Initiative in Myanmar. The Data Impact Program of Bloomberg Data for Health Initiative is a collaboration among the Ministry of Health and Sports, the Vital Strategies and US Centers for Disease Control and Prevention. The program aims to promote effective use of existing data for decision making and evidence based policy making and leverage capacity of mid-level officers of the ministry on critical appraisal of data for decision support. She leads and oversees the capacity building trainings and workshops of DIP in Myanmar to align with the aims, objectives, priorities and needs of the Ministry and Bloomberg Data for Health in Myanmar. She was graduated with M.Sc. (Computer) from the University of Computer Sciences, Yangon and Master of Primary Health Care Management from the Mahidol University in Thailand.

National Facilitators

Dr. Khin Thet Wai
Director (Retired), Consultant
Department of Medical Research, Ministry of Health and Sports, Myanmar

Dr. Khin Thet Wai is currently serving as an Expert under Ministry of Health and Sports, Myanmar after her retirement as a Director, Department of Medical Research. She is a medical doctor and has attained her Master degree in Public Health from Institute of Medicine 1, Yangon and has a second Master degree from Institute for Population and Social Research, Mahidol University, Thailand. She is a dedicated public health researcher who has an expertise in epidemiology and health policy and systems research. Over the past 10 years, she has participated in numerous research projects related to health systems strengthening particularly in areas of prevention of dengue transmission, malaria in

mobile/migrant workers, neglected intestinal helminth infections and access to essential health services. In her capacity, Dr. Khin Thet Wai is one of the mentors in the National Courses on Structured Operational Research Training Initiative (SORT-IT) funded by WHO-TDR in Myanmar since 2015. Also, she is one of the national facilitators in Data to Policy Training in collaboration with Vital Strategies, Bloomberg Philanthropies and CDC, United States. She is one of the Scientists of WHO-TDR Global, Regional Network on Asian Schistosomiasis and other Zoonotic Helminths (RNAS+), National Immunization Technical Advisory Group (NITAG) and a vice chair of Research and Development Technical Strategic Group under Myanmar Health Sector Coordinating Committee. She is also serving as a member in Ethics Review Committees of Department of Medical Research and University of Public Health, Myanmar. Her strong interest in 'Implementation Science' leads to serve as one of the national facilitators in the 'Implementation Research Proposal Development Workshop' December 2017 in Myanmar supported by WHO-TDR. She has authored and coauthored over 40 international and national publications and serves as an Associate Editor at BMC Public Health and BMC Health Services Research Journals and as an Academic Editor at PLoS ONE journal.

Dr. Saw Saw
Director (Socio Medical Research)
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Dr. Saw Saw is a Director (Socio Medical Research), Department of Medical Research, Ministry of Health and Sports, Myanmar. She is a medical doctor and underwent training in PhD in Public Health at the University of Melbourne with WHO-TDR support and got the degree in 2007. Because of a remarkable output of her PhD study, she received Head of School Award for Excellence in Knowledge Transfer in Doctoral Research from Melbourne School of Population Health in 2008. In 2007, she worked as as a short term National Consultant for TB at the WHO Representative Office to Myanmar. She is a core member of TB Technical and Strategic Group. She received Best Paper Awards for Health Systems Research and Best poster Awards at Myanmar Health Research Congresses for her outstanding research works. She is actively involved in providing research capacity building to service programmes and implementing partners. Her research interests are health systems and policy research, tuberculosis, maternal and reproductive health and health literacy and communication. Dr. Saw Saw is an expert member of WHO-TDR Global. As WHO-TDR alumni, she obtained Impact Grant from WHO-TDR to introduce Structured Operational Research Training Initiative (SORT-IT) course firstly in Myanmar in 2015 and now involving as national

mentor/facilitator. She is also one of the national facilitators in Data to Policy Training in collaboration with Vital Strategies, Bloomberg Philanthropies and CDC, United States. She is also a course coordinator and national facilitator for 'Implementation Research Proposal Development Workshop' in collaboration with WHO-TDR Regional Training centre, Gadjah Mada University, in December 2017 in Myanmar. She is serving as an associate editor of BMC Public Health and has authored and co-authored over 50 national and international publications. Some of her research works can be found at http://www.who.int/tdr/news/2014/Making-her-way/en/.

Professor Ko Ko Zaw
Professor and Head
Epidemiology Department
University of Public Health, Yangon

Dr Ko Ko Zaw is Professor and Head of Department of Epidemiology at University of Public Health, Yangon. He received his training in epidemiology and biostatistics from Boston University, USA and PhD (Public Health) from University of Public Health, Yangon. Previously he was appointed as Deputy Director and Head of Epidemiology Research Division, Department of Medical Research and he has been actively involved in many surveys on cardiovascular diseases, non-communicable diseases and vital statistics. He had been the main investigator in the NCD risk factors survey (STEPs survey), Myanmar in 2009 and 2014. He is working as a member of Institutional Review Board (UPH_IRB).

Country's Lead Senior Technical Advisor

Dr. Mohammed Khogali, MBBS, MPH, PhD
Senior Technical Advisor, Vital Strategies
He is a Senior Technical Advisor of Vital Strategies and the country focal for Data Impact Program of Bloomberg Data for Health Initiative in Myanmar. He has over 10 years of experience in public health programs and public health research. Prior to joining Vital Strategies, Mohammed served as a Senior Operational Research Fellow at Médecins Sans Frontières in Luxembourg, where he, through the operational research and training initiative (SORT-IT) led by the WHO-TDR, supported countries to undertake operational research projects in accordance with their own priorities. He has published over 50 papers in operational research and also mentored several colleagues in Africa, Asia, Europe and Latin America. He earned his MBBS from the University of Khartoum, his master's degree in Public Health from the Institute of Tropical Medicine in Belgium and his PhD degree in Operational Research from the university of Radboud in the Netherland.

Course Facilitators and Mentors

Dr. Michael Washington, PhD, MS
Health Economist, US CDC
He is a **health scientist in the Health Economics and Modeling Unit at Disease Control and Prevention, United States**. He did a Prevention Effectiveness fellowship with the CDC and graduated with MS and PhD degrees from the University of South Florida. He works for decision tree modelling and cost effectiveness evaluation for public health intervention at US CDC. He is also the team lead of US CDC for Bloomberg Data to Policy Initiative.

Dr. Julie Harris, MPH, PhD
Epidemiologist, US CDC
Dr. Julie Harris obtained her PhD in microbiology from Columbia University in 2005 and her MPH in epidemiology and biostatistics from The Johns Hopkins University in 2007. She has worked as an epidemiologist at the U.S. Centers for Disease Control and Prevention since 2007 in foodborne diseases, mycotic diseases, parasitic diseases, and in training and teaching epidemiology. She has published more than 40 first-author papers and currently works for the Workforce Institute Development Branch as an epidemiologist.

Mine Metitiri, MPH, MSc, CPH
Program Officer, Vital Strategies
She is **a senior program officer of the Vital Strategies**. She has a 7 years of policy analysis, data management and analysis experience in public health programs in the United States and several developing countries. She is a fellow of National Board of Public Health Examiners, USA, and graduated with MPH and MSc degree in social science from the University of South California and Emory University in the US.

Katrina Hann, MA, BSc
Consultant, Public Health Professional
She is a public health consultant focusing on reproductive and maternal health, infectious disease control and public health awareness of public health programs in the United States, United Kingdom and several African countries. She is also a senior health systems technical support for Special Program for Research and Training in Tropical Diseases mentors for global health capacity building programs: SORT-IT epidemiological and operational research, Data to Policy economic analysis and policy brief development, executive and research leadership for health systems research organization and strategic groups.

Manjunath Shankar, MBBS, PhD
Health Economist, US CDC / Community Medicine
Manjunath Shankar is the Head of Department of Community Medicine at CARE Hospitals Hyderabad, India. He did his MBBS from the Bangalore University, India and Masters in Health Administration from Tata Institute of Social Sciences, India. He completed his Doctorate Studies in International Health at Johns Hopkins School of Public Health, Baltimore. He joined Centers for Diseases Control and Prevention, Atlanta as a Prevention Effectiveness fellow in 2010 and then continued as Senior Service fellow till 2017. He has over 14 years of work experience in International Public Health and has worked as a consultant and health economist for different entities in various capacities. Currently he is managing the CARE Rural Health Mission which is serving 124 villages, the Non-Communicable Diseases Program of CARE Hospitals and the research initiatives of CARE Foundation.

Dr. Kwame Nyarko, PhD
Health Economist, US CDC

Kwame Nyarko is a health economist and an educational consultant with the Centers for Disease Control and Prevention Foundation. He performs economic analyses of infant and childhood conditions and policies, and teaches health economics courses globally. Previously, Kwame was an analyst with Credit Suisse, where he carried out fixed income and equity research. Kwame holds a PhD in Health Policy, with a concentration in health economics, from the University of Iowa.

Dr. Kristina Rabrison, DrPH, MS
Health Economist Analyst

She worked as **a Health Economist Fellow at the United States Center for Disease Control and Prevention**. She has a thorough expertise and skills in health system research. She is also a graduate of Steven M. Teutsch Prevention Fellow. She was graduated from University of Kentucky and Jackson State University, Mississippi, the United States.

Country Coordinator

Dr. Tay Za Kyi Win is a Country Coordinator of Data Impact Program, Bloomberg Data for Health Initiative in Myanmar. He has been working as a Country Coordinator and Consultant for Vital Strategies in collaboration with the Ministry of Health and Sports Myanmar since 2016. He is responsible for supporting coordination, planning and implementation of capacity building trainings such as Data to Policy trainings and workshops for MOHS officers in Myanmar.

He graduated with a MBBS Degree from the University of Medicine Magway in 2009 and with a MPH degree with specialization in Health Policy, Management and Community Health Practice from the University of Texas, School of Public Health, USA. He is also Certified in Public Health by National Board of Public Health Examiners, USA. He is also a Fulbright Alumnus.

Dr. Myint Htwe, the Union Minister of Health and Sports attended the presentation session of 2017 D2P Policy Briefs on 13th August 2018 at Hilton Hotel in Nay Pyi Taw

The Union Minister of Health and Sports and the senior officials attended the presentation session of 2017 D2P Policy Briefs on 13th August 2018 at Hilton Hotel in Nay Pyi Taw

Dr. Thar Tun Kyaw, the Permanent Secretary of the Ministry of Health and Sports, and senior officials of the ministry attended the presentation session of 2nd session of D2P Training in October 2018 at Hilton Hotel in Nay Pyi Taw

Senior officials of the Ministry of Health and Sports, international and national facilitators, course instructors and participants at the opening of 2018 Data to Policy Training (6th to 17th August 2018)