

Assessing the Suitability of a Mobile Phone-Based Case Management System for  
Children in Adversity in Battambang, Cambodia

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Thesis submitted in partial fulfillment of  
the requirements for the degree of  
Master of Science in the Duke Global Health Institute  
in the Graduate School of Duke University

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ABSTRACT

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## **Abstract**

There are over 250 million children in adversity (CIA) globally; however, insufficient information on prevalence of CIA and their daily needs limits case management of this group by social welfare systems. Recently, mobile technology-based (mHealth) systems have been used successfully to extend health services and information to clients in hard-to-reach, under resourced areas. This study aimed to determine the suitability of mHealth systems for improving case management of CIA in Battambang Province, Cambodia.

Methods used included focus group discussions (FGDs), in depth interview and direct observation with government and NGO social workers, their supervisors and street-based CIA (10-17 years). Data on daily workflows, roles, responsibilities and case management activities of social workers were documented. Mobile phone ownership, use and attitudes among social workers were used to assess suitability of an mHealth tool in the Cambodian context. Daily life experiences and case management needs of CIA were documented.

Our data suggests that routine case management of CIA is limited by low capacity of social workers, logistical constraints, a burdensome paper-based data collection system, scanty resources and poor supportive supervision. All social workers participating in the study owned and used mobile phones, and enthusiasm for further

incorporation of these devices into daily work activities was high. Street children came from different situations of adversity, were underserved and had diverse case management needs such as referral to vocational programs, early intervention to prevent violence in the home and continuous follow-up.

An mHealth system could be developed to overcome constraints in case management of CIA by streamlining social worker workflows, facilitating timely data collection, and enabling continuous training of social workers. Such a system, implemented in conjunction with other initiatives to strengthen the social welfare system, could promote better case management for CIA in Cambodia, and globally.

## **Dedication**

This work is dedicated to *the children* and all the wonderful people in my life who have been more than excellent caregivers to me and others. I especially dedicate this to my mother who pushed me when I needed it and let me go when it was best for me. To my father, who always believes in me regardless of how tough challenges can be. To them I am truly grateful. I also dedicate this to FatFive, UChicago girls, the Villagers, Among and Waruiru, Yeukai, Linda De Flavis, Melissa Paddock, Lindsey McQuilkin, Christine Lee (thank you for reading my application essays and being a forever source of encouragement!), Benjamin George Carey, the Wrenchers of Todd, NC and T. Funke. Without you all I wouldn't be here.

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## List of Definitions

Adversity	Conditions of violence, exploitation, deprivation, neglect or danger resulting in negative impact on growth and development
Alternative care	Care provided for children whom the government determines do not have biological parents or suitable caregivers who can care for them appropriately
Child care institution	Institution for children, except for infants, until they graduate from high school, or are 15 or older and leave the education system
Children in adversity	Children aged 17 and younger in or out of families and exposed to deprivation or danger from violence, exploitation, abandonment or severe neglect
Double orphan	A child who lost both parents
Feature phone	Feature phones typically provide voice calling and messaging functionality, used to describe low-end mobile phones
Foster parents	Foster parents for children whom the government determines need specialized care, including children who have faced traumatic experiences caused by mental and/or physical abuse; children who have come
Group Home	Residential setting under the alternative care system designed to provide family-based care for five to six children
Information and Communication Technologies	Devices or applications used for communication such as phones, computers, satellites, Internet, electronic mail, etc.
Kinship care	Care from relative up to third degree relative, e.g. grandparents and older brothers and sisters, but not uncles and aunts
mHealth	An avenue of electronic health (eHealth) that uses mobile technology such as mobile phones and other wireless devices to extend health services and information
Needs	Things that are needed for basic human survival
Orphans	A child who has lost one or both parents
Single orphan	A child who lost one parent
Smart phone	A mobile phone with an advanced operating system, most have touchscreen interface, can run third-party apps, are camera phones, and have mobile broadband internet web browsing capabilities
Street children	Children below 18 years of age inhabiting the streets; children working on the streets; and the children of street families.

Vulnerable children

The encompass children in adversity, including all orphans and neglected, and abandoned children.

## List of Abbreviations

3G	Third generation mobile telecommunications
4G	Fourth generation mobile telecommunications
AC	Alternative Care
ART	Antiretroviral Therapy
BCC	Client education & behavior change
BEIP	Bucharest Early Intervention Project
CIA	Children in adversity
CWCC	Commune Committee for Women and Children
DOSVY	Department of Social Affairs, Veterans and Youth Rehabilitation (District level)
FGD	Focus group discussion
GPRS	General Packet Radio Service
HIV	Human Immunodeficiency Virus
ICT	Information and communication technologies
LMIC	Low or middle income country
MOI	Ministry of Interior
MOSVY	Ministry of Social Affairs, Youth Rehabilitation
NEHCR	National Ethics Committee for Human Research
NGO	Non-Governmental Organization
NCIATF	The National Multi-Sectoral Orphans and Vulnerable Children Task Force
NPA	National Plan of Action for Orphans and Vulnerable Children
CIA	Orphaned and Vulnerable Children
PDOSVY	Provincial Department of Social Affairs, Veterans, and Youth Rehabilitation
PLHIV	Person living with HIV
POFO	Positive outcomes for orphans
RCT	Randomized control trial
SMS	Short message service (text)
UN	United Nations
UNCRC	United Nations Convention on the Rights of the Child
UNICEF	United Nations Children's Fund



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## **Introduction**

*Globally, it is estimated that there are over 250 million children in adversity (CIA), including approximately 163 million orphans, 1.8 million children affected by sex trafficking or exploitation, 115 million child laborers and 2 million children living with HIV [1-4]. Improving health and wellbeing outcomes for CIA is an urgent—yet understudied and underfunded—global health need [1, 5, 6].*

Children in Adversity (CIA) are defined as individuals below 18 years of age experiencing vulnerability due to neglect, abuse and/or poverty [7]. CIA include children in or out of family care, who have lost one or both parents (single and double orphans respectively), are refugees, internally displaced, living with HIV/AIDS or living under guardianship of someone with HIV, child soldiers, abandoned or disabled.

### ***Need for enumerating CIA***

Knowledge of the number of CIA is critical for understanding CIA prevalence and estimating resources to meet their needs [1, 4, 8, 9]. In practice, CIA are an extremely challenging group to quantify, especially those situated outside family care and who do not live in institutions or community care. Challenges in tracking CIA include frequent migration, preference for hidden locations, lack of national identity documents like birth certificates, and inability to trace guardians, among other reasons [4, 5, 10-12]. As a result, these children are often not included in routine census efforts [5, 8, 10-13]. Furthermore lack of agreement regarding the definition of CIA across countries introduces additional barriers for identifying and quantifying this population. CIA

enumeration by child protection systems is weak in most developing countries [5, 10]. Data collection relies on processes such as national census which are conducted infrequently, randomized control studies and household surveys, which often only sample children in family care or in institutions. Other studies, done on a smaller scale, do not capture full extent CIA prevalence, diversity of risk factors resulting to their vulnerability nor their health and wellbeing [8, 10, 11, 13]. For instance, studies using capture-recapture sampling to identify street children for surveys often end up with small samples as this population is prone to avoiding recapture for various reasons including fear of criminalization [4]. Other problems with CIA data result from incomplete records, inaccurately filled forms, lost or damaged documentation on CIA [2, 4, 8, 14-16].

### ***Focus on Street Children***

Street children are particularly marginalized and underrepresented in national datasets of CIA and in adversity mitigation efforts [17-21]. It is estimated that there are more than 120 million street children across the globe [1, 9, 10]. UNICEF defines street children as follows: “ boys and girls for whom the street has become their home and/or source of livelihood, and who are inadequately protected or supervised by responsible adults.”[22]. Growing urbanization is anticipated to result in increased global populations of street children, especially in low and middle income countries as more CIA migrate to seek out employment opportunities [11]. However, street children are not exclusively in urban areas.

Literature shows that street children's vulnerability to poor health outcomes persists due to a combination of factors that leading to low utilization of available resources. An evaluation of 18 programs for street children found a common challenge in all the interventions reviewed: because of differences in street children's needs, case management was done on an ad-hoc basis, promoting implementation of non-standardized practices [23]. Furthermore, the report found that often, social care staff are not equipped to handle complex situations faced by street children, resisting the practice of meeting the children where they are to better understand their situation and encourage involvement care decisions. Negative peer pressure, a family history of drug addiction and strength of inhalants have been identified as barriers to street children accessing services specific to addiction cessation [24]. Conversely, positive peer influence and existence of positive family relations improve the likelihood of seeking help to curb drug addiction.

Looking at the role of knowledge, homeless youth in South Africa assessed to determine their awareness of support services reported that they knew and had utilized services for basic needs, but actively avoided rehabilitation, reunification and counselling opportunities [25]. This behavior was attributed to youth wanting to maintain their autonomy. Additionally, their success at developing coping mechanisms greatly increases their resilience to life on the streets. This example underscores the importance of early interventions to catch street children in phases where rehabilitation or reintegration into families is easier to initiate and more effective in the long run.

Other studies suggest the establishment of long-term programs focused on providing individualized case management informed by the stories of street children themselves, as poorly contextualized and sometimes forced rehabilitation has not worked in places like China, Brazil and South Africa [23, 26-29].

Limited availability of resources, particularly the lack of funds, creates a barrier to health access by street children [23, 30, 31]. Without regular income or sufficient, it is challenging for this population to access care in the moment of need. A study conducted among street boys in urban Kenya to understand their experiences of sexually transmitted infections and health seeking behavior found that lack of money resulted in delayed care seeking [30]. Surprisingly, despite impeded access to condoms or opportunities to learn about STI prevention, incidence of sexually transmitted infections among this group was low [30]. Noting the impact of stigma in reducing involvement in health education opportunities, promotion of one-on-one education and participation of individuals within the same social networks is recommended to address negative impact of stigma on health seeking behavior, while increasing awareness of health risks and extending access to preventative measures.

Other issues that not only reinforce barriers to accessing support services, but also exacerbate efforts to enumerate street children are their reluctance to provide information about themselves in light of stigma and marginalization from the community; high mobility of street children migrating to look for jobs and avoidance of public spaces due to criminalization of loitering or begging. The inability to corroborate

data provided by street children also makes enumeration difficult and contributes to difficulties in maintain longitudinal surveillance of street children [12]. Furthermore, street children often lack official identification documents, such as birth certificates rendering them ineligible for government programs, limiting access to support services [32]. These challenges call attention to the role of social workers, giving emphasis to the potential of case management to remove barriers to accessing care and other services that could ultimately improve the wellbeing of street children.

### ***Addressing the Needs of Children in Adversity***

Programming for CIA has historically involved delivering direct support in the form of scholarships, cash transfers, and vouchers to access health services, feeding programs and occupational training [33-38]. Recently, there are more efforts to address health and wellbeing of CIA, including psychosocial support services for CIA caregivers [36, 39, 40]. In Haiti, caregivers and youth affected by HIV were recruited into a mixed methods study to assess practicality and benefits of psychosocial support groups for improvement in mental health. At the end of two years, the study showed both youth and caregivers experienced lower stress and depression levels, better integration into family and community life and increased optimism [41]. Successful delivery of long term support to CIA requires strong case management practices commonly the mandate of government social work programs [42]. However, limited resources and weak staff capacity cripple the efforts of many governments' social protection programs [43]. Case management, particularly of vulnerable populations, continues to face challenges

despite the existence of NGOs who are working to fill the gaps. Effectiveness of CIA interventions is affected by the absence of robust data and poor contextualization of interventions [9]. CIA programming, especially those led by country governments, often do not take into account the heterogeneity of this population [44]. For example, in Uganda, while family care is most preferable for many CIA, former child soldiers were better off placed in temporary institutions that could provide rehabilitation prior to reunification with their parents [2]. A large 5-country study conducted on CIA in Haiti, Kenya, Tanzania, Rwanda and Zambia to evaluate food security showed that food aid was effective in reducing hunger and malnutrition [33]. Slightly above 50% of those on food aid were food secure compared to 34% of those not on food aid. Additionally, the study noted a correlation between fear to disclose HIV status and higher frequencies of hunger. This exemplifies the need to incorporate measures to safeguard privacy and confidentiality of children who might exclude themselves from support programs for fear of stigmatization [33]. Other critical considerations include differentiating between the needs of boys versus girls and programming for very young, non-school going CIA versus school-going CIA or youth [44].

Successful delivery of long-term support to CIA by government social welfare systems requires strong case management practices [42]. In many cases, Limited resources and weak staff capacity cripple efforts to enumerate CIA and assess linkage to services and long-term follow up [43]. Despite efforts of NGOs who are working to close the gap between CIA needs and resources available to address them, poor coordination

and harmonization between different NGOs has led to the growth of siloed approaches, creating barriers to the establishment of a continuum of care for this population [44].

### ***mHealth Technology for Case Management***

In the last decade, mobile health (mHealth) systems have been developed and implemented in Asia and Africa for case management of vulnerable populations such as pregnant women, new mothers and children [45, 46]. MOTECH Ghana is an example of an mHealth case management tool for midwives and nurses [47, 48]. Ghanaian midwives have benefited from “Mobile Midwife” which uses sms or voice messaging to provide pregnancy related information to clients, to send appointment reminders and relay educational information on pregnancy. The nurses’ version called MOTECH Nurses’ Application includes data collection, registries and tracking functions to assist in surveillance and provision of timely care to newly delivered babies and their mothers. Like Mobile Midwife, the nurses’ application also generates alerts to inform health workers when a scheduled appointment is due or has been missed. Moreover, MOTECH Nurses Application removes the burden of report creation as the system is adapted to generate monthly reports, assisting nurses and their supervisors to keep track of health system and health workers’ productivity.

mUbuzima and RapidSMS Rwanda are two apps within one unique mHealth system in Rwanda that have), helped improve service delivery to expectant mothers, new mothers and their children [49]. RapidSMS uses sms messaging to collect data which is used to identify and assess risks, and determine appropriate responses [49, 50].



Like MOTECH Ghana, the system also sends reminder messages to community health workers (CHWs), alerting them when a woman is due for birth or is scheduled for an appointment. Different from MOTECH, RapidSMS alerts the CHW to organize ambulance transportation for expectant mothers. The second component, mUbuzima provides electronic data collection and transfer services that leverage interactive voice response to generate monthly reports based on detailed information about cases managed [49]. The data is shared at the local and national levels in aggregate form for easier visualization.

An essential feature of mHealth applications for case management is the ability to enumerate client populations. This not only improves case management by reducing barriers to health access, it also provides data needed to enforce health system accountability [51-55]. For example ChildCount+ is an mHealth app that has a registry whereby information on all pregnant women and children is entered to provide CHWs with data to on which they can base care decisions and deliver services promptly [56, 57]. The registry collects vital statistics, indicators from nutritional assessments of children below the age of 5 years, occurrences of illness and treatments, immunization records and details of antenatal and post natal care. ChildCount+ only requires a basic phone and the use of sms messaging to transfer information keeps the cost of the system low.

Moving forward, systems of enumeration should have better datasets that are dynamic enough to strengthen case management and facilitate decision making in the

present and future [55]. Ideal data should include regularly updated estimates of numerators and denominators within a given population; this necessitates closer surveillance of communities. Denominators describing vital statistics inform health systems on how to plan for the future while numerator statistics define the prevalence of an existing problem and identify priority areas for prompt intervention [55]. By registering all women of reproductive age, pregnant women and their children, an app like ChildCount+ provides a dataset that can be tracked over time to case management decisions and evaluate trends. A similar registry adapted for CIA populations could achieve the same; increasing the accountability of child protection systems and keeping an eye on population and community level progress over time.

Few specific examples of mHealth tools targeting CIA exist in literature most of which target HIV/AIDS orphans [46, 58-64]. All but one application was found in sub-Saharan Africa and, to our knowledge, there are no mHealth systems for CIA deployed in South East Asia. The Child Status Index and Community Case Management mobile app used in Malawi as well as the CUBS app used in Nigeria have successfully incorporated digitized forms into mobile phones for data collection [59, 64].

Improvements realized following integration of the apps into routine work include fewer errors in data, easier and faster data sharing and increase in rates of complete follow-up of CIA. The CUBS app specifically facilitated remote data collection and transfer, reducing the need for long commutes and ultimately lowering case management costs attributable to transportation fees [64]. mHMtaani is another case

management tool that incorporates real time data transfer but also facilitates cash transfers to community health workers serving CIA populations in slum areas to incentivize performance improvement [65, 66]. Lastly, the Mobenzi Child Profiling Survey app piloted in 2013 in Swaziland obtained data that was immediately used to budget for and target services to CIA [46]. The adaptability of the Mobenzi App lent to its expansion to Tanzania where it is also used for data collection [46].

In the mHealth arena are three factors that have contributed to the success of some of the CIA case management tools found in literature. They are accessibility of cheap and locally available mobile phones, presence of government support and suitable harmonization strategies to facilitate coordination of public and private sector players [58, 64, 67, 68]. On the other hand there are challenges to the success of these apps that may manifest in slow uptake of the technology or an inability to scale up including low literacy levels among social work staff, steep learning curves for certain types of technology, particularly smart phones, lack of funds for scale up, limited technical capacity to maintain the system, poor mobile phone coverage and unreliable electricity supply to charge phones [64, 69-71]. Challenges notwithstanding, the success of mHealth interventions can be achieved if proper attention is given to gaining a thorough understanding of the context in which the app will be applied.

### ***Framing the Project***

This study was motivated by the question: *would an mHealth tool be a suitable solution to address the challenges in case management of CIA experienced by social*

*workers in Battambang, Cambodia?* Study activities comprised phase 1 of a three-step process outlined in the *mHealth Planning Guide: Key Considerations for Integrating Mobile Technology into Health Programs* used for identifying information critical for making decisions about developing mHealth interventions [72]. Phase 1 concerns concept development where a problem for which an mHealth application would be a solution is determined. Phase 2 concerns solution design and testing and phase 3, the planning and implementation of the mHealth intervention. In this study, we sought to define CIA case management needs per the experiences of social workers in Cambodia by identifying constraints in current practices.

The overall goal of this project was to develop an in-depth understanding of where there is a need for an mHealth solution and whether mHealth would be appropriate to address the case management challenges identified. Findings are discussed in light of the BRIDGE criteria used for evaluation of suitability of mHealth interventions in other mHealth literature [73].

Formative research was completed in Cambodia, home to approximately 553,000 CIA [74, 75]. Using qualitative methods, the study sought to map daily workflows as well as identify challenges and opportunities for improvement in case management procedures undertaken by two groups of social workers: those who report to the Cambodian Ministry of Interior (Commune Committee for Women and Children (CCWC)) and those employed by local non-governmental organizations (NGOs) in Battambang. The study included members of the Child Welfare Unit of the Provincial

Department for Social Welfare, Veterans and Youth Rehabilitation (PDOSVY) in Battambang responsible for supervising child welfare activities in the province. The basic needs and daily life experiences of street children in Battambang, Cambodia were also assessed to identify opportunities for case management. The qualitative study addressed the following specific aims:

- 1) To document social workers' roles, daily workflows, information needs, and barriers to optimal delivery of care to CIA using field-based direct observations, focus group discussions, and in-depth interviews.
- 2) To document the life experiences and case management needs of street-based CIA using focus group discussions.

Details of study methodology, and results are presented in subsequent chapters.

The results of specific aims 1 and 2 are summarized in Chapter 1, presenting the Cambodian context for case management of CIA and trends in child adversity, policies to improve the conditions of CIA and obstacles in the child welfare apparatus. This chapter also includes details of study procedures and results of fieldwork done in Cambodia, a discussion of findings and recommendations for the future. Lastly, **Chapter 2** includes lessons learned during fieldwork and concluding remarks. Results are used to motivate the utility of an mHealth solution to address the constraints identified in the study

## ***Significance***

This is the first study that investigates the role that mHealth technologies may play in CIA case management in Cambodia. Findings from this study contribute to existing literature on social work and CIA in Cambodia and inform government strategy on organizing and deploying social workers given the widespread need for support services and case management. The use case scenarios developed from the study data can be used for training purposes or in the design of an mHealth application. The qualitative data highlights areas in which government can intervene by providing social worker training to improve efficacy. Information on the existing capacity for data collection and level of mobile phone competency will be the focus of future work to incorporate technology into capacity building initiatives for social workers.

## **CHAPTER 1**

### **1. Mapping Social Worker Workflows and Daily Needs of Street-Based CIA to Inform Development of a Case Management System for CIA in Cambodia.**

This chapter presents methods and results of a qualitative study that identifies challenges experienced by social work staff and street-based CIA. The results also provide details on the context of social care and mobile phone use among social work staff.

#### ***1.1 Background***

##### **1.1.1 Country Overview**

Cambodia is a low income country with 50% of its 14.8 million population below 18 years of age [76]. Despite the country's turbulent history, Cambodia has seen rapid social and economic growth in the past decade. Life expectancy, Gross National Income and Human Development Index increased from 56.2 years, \$797 per capita and 0.411 in 1995 to 63.6 years, \$2095 and 0.543 in 2012 respectively [75] [77]. However, despite this progress, poverty remains the primary cause of adversity in Cambodia. 41.3% of the population, most of which are women and children, survive on less than \$2.00 a day [76, 77]. UNICEF reports that "children are disproportionately poor, with over 50% in the bottom 33% of households"[78].

### **1.1.2 Children in Adversity in Cambodia**

Statistics on Cambodia's CIA indicates an estimated 553,000 orphans; more than 6000 disabled children; about 1.5 million children involved in economic activities; and over 250,000 children in forced labor [79, 80]. The birth registration rates in Cambodia are low, leaving many children ineligible for public benefits such as free healthcare or education [77], [78]. As a result, a large fraction of Cambodia's child population is at great risk of exclusion in current and future national development efforts.

Approximately 24,700 street children have been identified in Cambodia [75]. Found mostly in urban centers like Phnom Penh, Siem Reap and Battambang provinces, this group of CIA is most prone to trafficking, labor exploitation and sexual abuse and violence [20, 81, 82]. Growing CIA populations in towns along the western border with Thailand suggest that child migration and trafficking has increased over time [20, 83]. Policies to protect street children have yet to be specified. In fact, the Village and Commune Safety policy instituted in 2010 to lower crime rates in villages and communes has had negative impacts on street children [84]. Under this policy, law enforcement officers have imprisoned many street children and families in urban areas [20, 84]. Once in the legal system, street children often have no representation in the justice system which has yet to adopt procedures that cater to children and youth [85].

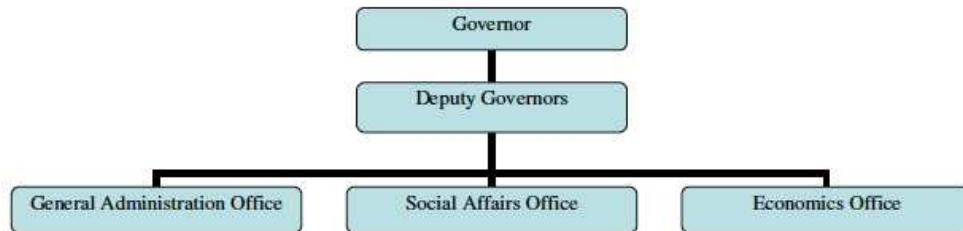
### **1.1.3 Organization of Child Welfare and Protection in Cambodia**

Following the decentralization of the Cambodian government, most child protection work in the country occurs at the subnational level (districts and communes)



and is conducted by the social affairs department of respective local government offices [15, 86, 87]. Figure 1 and 2 show placement of social affairs within provincial and district administrative structures.

The Ministry of Social Affairs, Veterans and Youth Rehabilitation (MOSVY) has primary jurisdiction over CIA care in Cambodia but the supervision of local government efforts in child welfare is under the Ministry of Interior. It is not clear how coordination occurs across these ministries [88]. MOSVY is responsible for registration and inspection of residential centers, monitoring the number of CIA in residential centers, training and keeping track of MOSVY and NGO social workers. MOSVY also supports 20 state-run orphanages [89]. At provincial and district levels, the Provincial Department Office of Social Affairs, Veterans and Youth Rehabilitation (PDOSVY) and Office of Social Affairs, Veterans and Youth Rehabilitation (OSVY) respectively coordinate MOSVY responsibilities.



**Figure 1: Organogram of Provincial Administration in Cambodia. The flow chart outlines the organizational structure of district government in Cambodia [86].**

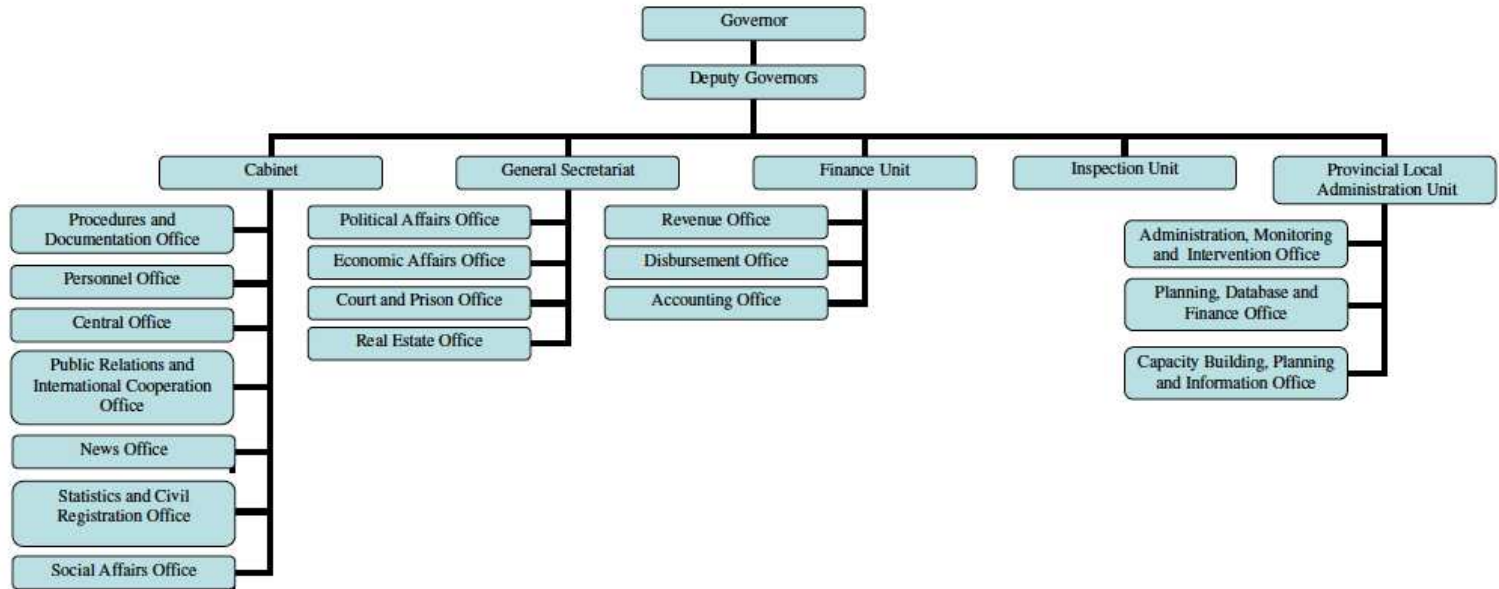
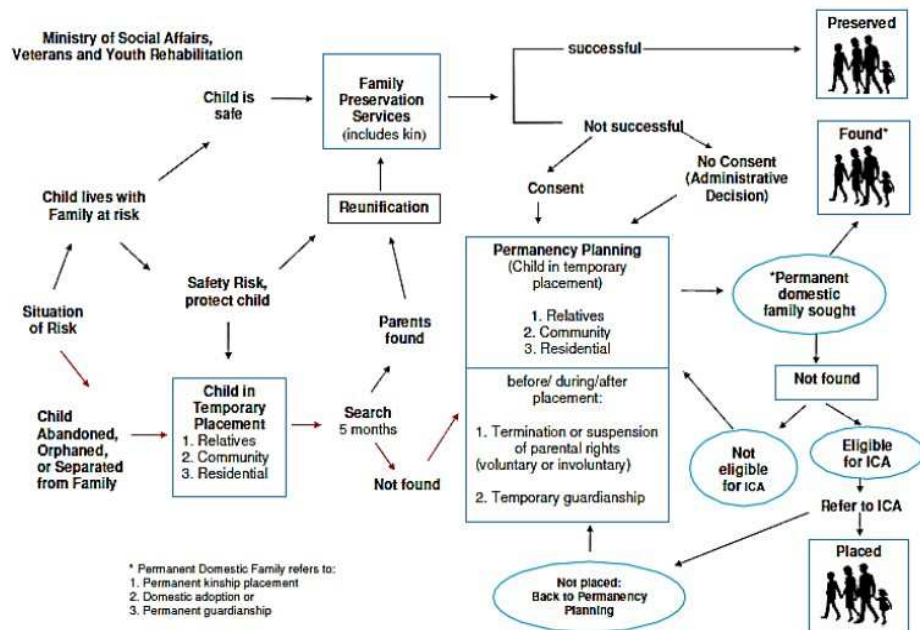


Figure 2: Organization of Provincial Administration in Cambodia. The flow chart outlines the organizational structure of provincial government in Cambodia [86].

The Policy on Alternative Care for Children provides guidelines for managing CIA and at-risk families, including guidelines for conducting risk assessment and risk-mitigation, family reunification, adoption and requirements for institutional care [89]. The policy prioritizes family and community based care over residential care options: it stipulates that residential care be considered as a last and temporary option for CIA [80]. Figure 3 presents a model for CIA case management based on the goals of the Alternative Care Policy [89]. The model seeks to guide case management practices towards finding family based care for CIA.

#### **1.1.4 Commune Committee for Women and Children and CIA**

Created in 2004 and nationalized in 2007 by MOI, commune councils and the Commune Committee for Women and Children (CCWC) were formed as part of the government's decentralization efforts and to increase focus on women and children's issues. The commune council comprises elected members led by the commune chief and his deputy. The council incorporates key people from the commune health centers, school system, police and a member of the CCWC. Currently more than 1621 CCWCs exist. The Focal Point for Women and Children, whose role is analogous to a social worker's operationalizes many of the local governments plans for providing social care to the community [87].



**Figure 3: Alternative Care Case Management Process Flow. MOSVY-Recommended action steps for child welfare and protection agents and actors [89].**

### 1.1.5 Challenges of CIA Management

Within the regional and local government of Cambodia there are no systematic efforts for identifying and tracking CIA [90, 91]. It is unclear how data from children in family or community care is captured, recorded and aggregated at the national level. Additionally, long-term follow-up of individual CIA is a challenge given that there is no unique way of identifying them. This limits national planning for CIA and the ability of social workers to provide support to these children. Specifically, without precise estimates of CIA and a detailed understanding of their needs, the government through MOSVY can neither conduct accurate needs assessments nor allocate resources

efficiently [91, 92]. While the issue of CIA care and protection is generally recognized by policy makers as important, the absence of data makes it hard to justify prioritization of CIA programs.

The Alternative Care Database (ACD) was created in 2007 to collect information on CIA living in residential centers [78]. This system helps the government keep track of CIA movements in and out of institutions. The same or a similar surveillance method has not been developed for children in non-residential care settings. Paper versions of ACD data fields are completed in various institutions, collected periodically by PDOSVY and sent to Phnom Penh where information is entered. Most data comes irregularly, and is incomplete [80, 93, 94].

Social work is a fairly new profession in the country so there are few social workers available compared to the need in the country [95]. Formally trained social work staff are even fewer [96, 97]. Reports indicate that the ratio of social workers to people per district is 2 social workers to 25,000 children [95]. Other challenges identified in literature are the presence of illegal or unsuitable residential care facilities, poor financing, and overreliance on unpredictable donations from international NGOs [98].

### **1.1.6 Mobile Phone Use in Cambodia**

Mobile phone use in Cambodia is widespread. There are 21.1 million mobile connections, including users with multiple simcards to take advantage of various voice,

SMS and data plans [99-101]. Simcard penetration is estimated at 138% suggesting that people own more than one simcard and/or phone [100]. Making calls and sending SMS messages are the most commonly used functions, however, growing numbers of users are gravitating towards internet use via mobile phone-especially the younger generation [99].

Metfone, Qb, Mobitel/Cellcard, Beeline, Smart Mobile, and Excell are the major mobile phone network providers [99, 100, 102]. 2G mobile phone networks (basic phones) are most common; 3G and 4G networks are present and strongest in the capital, Phnom Penh [103]. Other cities with strong 3G/4G coverage include Siem Reap, Preah Vang, and Battambang (see map in appendix A). Despite modest use of 3G/4G networks, the strong mobile phone penetration in Cambodia suggests that—over time—current 2G users will upgrade to more advanced networks (i.e. smart phone use will increase).

Approximately 1 million smartphones are bought by Cambodians each year [102]. In comparison, traditional feature phone sales average between 2 and 3 million [99, 102]. Nokia and Apple possess 8% and 20% market share respectively; Samsung leads the pack with 50% of smart phone market share while LG, Sony, Huawei each have 5% [99, 102]. An unexpected decline in sales was noted in the first quarter of 2014, compared to the same time period in 2013 when prices of smart phones rose as a result of an extra 10% tax charged to retailers [99]. Higher prices are reported to have

encouraged growth of the second hand phone market, illegal smuggling and travelling to neighboring countries to buy cheaper phones [102]. As mobile phones in Cambodia becomes more sophisticated, it is likely that phone owners too will adapt and learn to use more complex functions built into newer phone models.

## **1.2 Methods**

### **1.2.1 Setting and Study Procedures**

The fieldwork took place in Battambang Province, Cambodia. Although largely rural, the province has growing urban and peri-urban settlements. The city of Battambang within Battambang Province is the second largest city in Cambodia and has the second highest population nationally. Battambang Province is home to 20% of the country's street children, with most of them concentrated in Battambang town [20]. The province borders Thailand to the west and thus sees significant traffic from locals, including CIA, migrating for better job opportunities across the border.

The research study was designed as a cross-sectional qualitative study. Study subjects were drawn from residents of Battambang Province using purposive sampling. A summary of sampling methods and target sample size by data collection method is provided in Table 1.

All study activities were conducted in collaboration with research staff from Development for Cambodian Children (DCC), a local NGO based in Battambang. Prior to commencement of the study, the research team was trained in all study procedures.

**Table 1: Study procedures. Summary of data collection methods, sampling strategy and sample size.**

Method	Sampling strategy	Target Sample Size
Field based participant observation	Purposive sampling	5 CCWC social workers 5 NGO social workers
Focus group discussions		10 CCWC social workers 10 NGO social workers 10-30 street-based OSC ages 10-17
In-depth interview		1 provincial DOSVY officer
Document review	-	-

#### 1.2.1.1 Subject Population and Target Enrollment

We targeted CCWC social workers working with local commune councils in the study area. Only social workers with specific responsibilities in providing care and support services for CIA were sought. Additionally, eligible CCWC social workers had to have at least one year of experience working with CIA within Battambang.

The study identified NGO-based social workers selected from a list of individuals and institutions with a pre-existing relationship with DCC. NGOs were contacted based on proximity to the DCC office and availability of up to date NGO



contact information. The selection of NGO social workers was limited to those employed and paid by local NGOs, including orphanages and other organizations that provide social services and support to CIA. Only NGO-based social workers with at least one year of experience working with CIA within Battambang were enrolled. For both social worker groups we aimed to consent up to five individuals each.

Secondly, the study sought a PDOSVY staff that had to be an intermediate or upper level staff at Battambang's PDOSVY office, (local representatives of the national MOSVY office). Only PDOSVY officials holding a supervisory role and who had held the same position for at least one year were targeted. Only one PDOSVY official was recruited.

Lastly, the study targeted street-based CIA between the ages of 10 and 17 years if age who were either permanently or temporarily living on the streets. Siblings were not excluded from the study. We aimed to enroll and consent thirty street-based CIA.

#### **1.2.1.2 Participant Recruitment**

Participants were recruited strategically from their homes, places of work or recreation, and for street children, from the most frequented streets within each respective commune in Battambang.

CCWC & NGO social workers and PDOSVY were recruited from a list of names of those with pre-existing relationships with DCC. Individuals were contacted by phone

or through visits at their homes or places of work to introduce the study and establish eligibility. Qualifying participants were given an invitation card with the research staff's contact information, pre-determined date and venue of the focus group discussion. The PDOSVY official alone was asked to select time and suitable location for the interview.

Recruitment of street-based CIA was done with the help of a CCWC social worker who self-identified as having significant experience working with street children. The CCWC social worker was trained on recruitment procedures, which included explaining the purpose of the study, expectations for participation and answering any questions that the children had before further screening. Eligible children were asked to meet at a location well-known to them and thereafter, they were transported to the town commune hall on the day of the study for the focus group discussion.

### **1.2.1.3 Data Collection**

Data was recorded by audiotaping, note taking and photography where permitted. A summary of methods used is provided in table 2.

NGO and CCWC focus groups were conducted separately. Each focus group lasted for two hours and followed semi-structured interview guides. The focus group discussions were conducted at a local commune office meeting room for CCWC social workers and at one of the participating NGO's conference rooms for the NGO social workers. All

discussions were conducted in Khmer. The study team adopted a 'small-group within a focus group' approach. In brief, participants were randomly selected into three different groups where they were provided with a set of questions to guide the small group discussion for an hour.

Each group was provided with pen and paper for participants to write down summaries of their responses. Questions were open ended and were adapted from the NGO ICT and e-Readiness Self-Assessment Tool, Social Workers' Self-Efficacy Assessment, Child Status Index and the Standard Protocol for Mapping the Data and Process Flows of Community Health Workers (CHWs) [68, 104-106]. Examples of questions included "What are some of your roles and responsibilities?" and "Can you tell us how you collect information for your job?" In the second hour, a representative from each small group presented their summaries to the larger group. An opportunity was given to other social workers to comment on specific questions and issues that arose. The social workers' written summaries were also collected for translation.

Direct observation was conducted to obtain information about social worker's workflow, including organizational structure, communication flows, enumeration and re-integration tools and practices, referral systems and data collection methods, forms and fields. A direct observation guide was developed and used to organize the note

taking process. The guide outlined prompts to guide note taking such as ‘how is the workday structured?’, ‘what services does the social worker provide?’ among others.

**Table 2: Summary of specific objectives, data collection methods, expected outcomes and study instruments used in the study**

<b>Methods</b>	<b>Expected Outcome</b>	<b>Study Instruments</b>
<p>Direct observations of CCWC and NGO-based social workers</p> <p>Focus group interviews with CCWC and NGO-based social workers</p>	<p>Detailed workflow map including information on</p> <p>Organizational structure</p> <p>Communication practices</p> <p>CIA enumeration practices</p> <p>Linking CIA to care through referrals</p> <p>Details of data collection methods, forms and data fields</p> <p>Details of reporting mechanisms and report structures</p> <p>Description of current challenges in providing effective, quality care to CIA</p>	<p>Direct observation field guide</p> <p>Social Worker Focus group guide</p>
<p>Focus group interviews with CCWC and NGO-based social workers</p>	<p>Description of phone ownership, use of phone features (calling, SMS, mobile web), current phone usage if any for work and ability to troubleshoot phone software and hardware issues</p>	<p>Social Worker Focus group guide</p>
<p>Focus group interviews with street CIA</p>	<p>Description of daily life activities, needs and challenges (nutrition, general health, shelter and safety concerns, labor)</p>	<p>CIA Focus Group Guide</p>
<p>In-depth Interview with PDOSVY staff</p>	<p>Description of organizational and supervisory structure, existing data collection methods and opportunities for advancing to digital models of recording information.</p>	<p>Interview guide for PDOSVY participant</p>

Social workers were consented prior to direct observation, and were tracked individually for one workday each from 8am to 5pm, taking a break for lunch between 12noon and 1:30pm. Government-mandated data collection and reporting forms were collected from various sites visited, as were photographs, where permitted.

We conducted an in-depth interview with one PDOSVY staff lasting two hours. The interview guide consisted questions covering the following thematic areas: human resources for CIA care; PDOSVY roles and responsibilities, social worker workflow, supervision and reporting structures, information needs and capacity of existing information systems, challenges in data collection and transfer, level of support for mobile phone use in general and for CIA care; reporting tools and requirements; and readiness for adoption of mobile health (mHealth) technology for CIA care and care of street children. These areas were identified after synthesizing information presented in the validated NGO ICT and e-Readiness Self-Assessment Tool and the Standard Protocol for Mapping the Data and Process Flows of Community Health Workers (CHWs) [104, 105].

For street-based CIA, the focus group discussion was divided into gender-based small groups. In this session, writing of summaries by participants was not incorporated. The discussion lasted an hour and a half. Each group had one DCC research team member to provide probes and questions adapted from the Child Status

Index [68]. Examples of questions included “Why are you living on the streets?” “How do you get your food?” “What kinds of food do you eat?” and “In what ways have social workers helped you?” Other questions probed for descriptions of daily life activities, needs and challenges in accessing nutrition and health services, shelter, labor and safety concerns.

### **1.2.3 Ethical Considerations**

Study protocols and instruments were approved by the Duke University Institutional Review Board and the National Ethics Committee for Health Research in Cambodia. All study instruments and consent forms were developed in English at a third grade reading level, translated into Khmer by the study’s local supervisor from DCC and then back translated to English for fidelity. All adult participants provided verbal consent to participate in the study. Street children were taken through a verbal assent process. Assent was provided in the presence of a local social worker per recommendation from Cambodia IRB. No identifying information from participants was collected and the team was provided with resources to detect and address potential discomfort of participants during the study. All names included in the results section are fictional to protect the identity of participants. Data collection for all participants was a one-time event, except for a follow-up meeting with the PDOSVY, which was granted upon the study team’s request. All adult participants were compensated with \$5 for

their time and to cover transportation costs to the location of the focus group discussion. The children were provided with fruits, snacks and a hygiene packet containing soap, a towel, toothpaste and a toothbrush for their participation.

#### **1.2.4 Analysis**

All audio data and field notes collected in Khmer were transcribed and translated to English for analysis. Data analysis was conducted using inductive thematic analysis approach to avoid over interpretation of the information presented in the transcripts [107]. Coding was done iteratively as follows: transcripts were read first to gain a sense of the narratives permeating the data. A second, more intensive read through of the transcripts was done to identify key ideas present in the data and an outline of potential nodes for coding created. Information analyzed included field notes, information from debrief sessions and topic headings written down by the study participants during the focus group discussions. They were: needs, challenges, case management procedures, roles and responsibilities, mobile phone use, social workers' information needs, data collection, reporting structures, existing technology operations and infrastructure, perceived barriers to technology use, and organizational structures. A third and final reading was done and the codes adjusted one last time. After the third read, codes were assigned to the data to cluster data that described the same topics,

emphasized the same point or shared the same meaning. Only one coder was involved in this process. All coding procedures were done using NVIVO 10 [108].

Forms and documents collected during direct observation were decomposed and information categories tabulated in Microsoft Excel spreadsheets to summarize types of data fields, connections across documents and proportion of unique versus non-unique fields. The data collected in the study was used to develop the following outputs: vignettes, use cases, workflow maps and data field summaries.

## **1.3 Results**

### **1.3.1 Sample Characteristics**

Nine female CCWC social workers with an average of 10.3 years (+ 3.9) of experience working with CIA participated in the focus group. All the CCWC had at least a high school education and could read and write in Khmer. CCWC social workers were only responsible for service delivery their respective communes.

Five social workers (three male and two female) from various NGOs with ages ranging from 21 years to 58 years (average of 39.6 years) also participated. Three of the five social workers had or were in the process of obtaining a university degree. NGO social workers' jurisdiction extended beyond communes in Battambang to those in other provinces.



Five CCWC social workers and one NGO social worker were studied during direct observation. Two NGO social workers previously selected at random from focus group participants declined to participate in the direct observation due to CIA safety and confidentiality policies of their NGOs. However, one social work supervisor from those NGOs agreed to meet with the research team to answer questions about the workflow of the social workers whom he supervised.

From the street-based CIA population, seven boys and two girls participated in the study. The boys were between 13 and 17 years of age while the girls were 10 and 14 years. Of the boys, two had attended school up to grade 1, three up to grade 3 and two up to grade 4. Both girls and three of the boys could read and write 'a little bit'. We did not reach the maximum number of street – CIA participants proposed in the study protocol because the CCWC social worker assisting the study team to identify eligible children was unable to locate and consent enough participants within a 3-week period set aside for this purpose. In the end, 10 street-based CIA were enrolled but on the day of the study, one of the children (a girl) opted out of the study without an explanation.

One PDOSVY official was recruited for the study but we did not collect any identifying or demographic information from this participant. Table 3 summarizes the study's sample characteristics.

**Table 3: Participant characteristics. Summary of sample size, gender breakdown and average age by participant type.**

Participant Type	Total (N)	Male (N)	Female (N)	Average Age (Years)
CCWC Social Worker	9	0	9	58 (SD: 2.96)
NGO Social worker	5	3	2	39 (SD: 13.32)
Street-based CIA	9	7	2	14 (SD: 1.87)
PDOSVY Representative	1	1	0	-
<b>Total (N)</b>	<b>24</b>	<b>11</b>	<b>13</b>	<b>-</b>

### **1.3.2 CCWC Perspectives**

#### **1.3.2.1 Roles and Responsibilities**

CCWC roles and responsibilities were many and extended to populations other than CIA. Study data showed that apart from direct case management of CIA, CCWC provided counseling and psychosocial support for families with reported cases of violence, substance abuse or sexual abuse and conducted data collection. The following quote exemplifies the range of responsibilities discussed:

*“We attend monthly meeting with CCWC Provincial level, CCWC, Quarter Council group and participate to resolve the conflicts like family fighting, land conflict. We participate in workshops with partner organizations and in 3 month meetings with organizations for conflict, sexual violation, sex trafficking. We community educated about diarrhea, pneumonia, sanitation, child labor, child right, accident of giving birth, family fighting, sex traffic, mother and baby health. We make friendly speak after birth delivering and HIV persons, collect CIA data, make interview with CIA of which refer to Organization Center and make friendly speak with family who is fighting and family who are sex violating. We go to discuss and exchange the ideas in the base to find the people’s*

*problems and needs... we help to do Quarter Investigation Plan, search the partner organization to support CIAs and make list CIA and vulnerable family and help to resolve their problems and needs.” – CCWC social worker*

The direct observation corroborated this information and exemplified how poverty works to increase vulnerability. For example, CCWC social workers were seen providing information on how to get help in the event of a pending eviction and a referral document to access health services at one home. Figure 4 presents the scenario where this is observed.

**Soun Ley is a middle-aged mother of three currently living with her in laws 20 minutes from the town. She has lived there for eight months but is now facing eviction from her father in law's compound where she shared a one-roomed shack with her new born baby, an eight-year old and twelve-year old girl.**

**When we arrive with the CCWC social worker, Soun Ley is squatting at the gate holding her baby in her lap. She tells us she is sick with gestational diabetes and is in need for new accommodation. Her father in-law had decided that he would no longer offer her a place to live since her husband was working and earning an income in Thailand. She says she doesn't know what to do and that she first needs a referral to go and visit the 'big' hospital in Siem Reap. The CCWC writes her a note and gives her money for her trip. She asks her to send word afterwards. CCWC promised she would help her find a new home soon.**

**Figure 4: Soun Ley's Scenario describing social worker's referral process at a home visit.**

### **1.3.2.2 Workflow**

Although CCWC workday officially began at 8am, they did not keep a defined schedule for their work. Study data showed that CCWC conducted work on an ad-hoc basis, with their activities depending on individual CCWC's motivation, and type and timeliness of CIA information received. Factors such as long commutes to visit CIA and

reliance on commune supervisors to make decisions on cases affected how much work case CCWC could complete in each workday.

CCWC described details of their workflow as follows: once social workers receive enough information on a case, they commute to villages to visit CIA or at-risk families needing support. The social workers conduct initial assessments by filling out MOSVY first response and family assessment forms. If a child is in serious trouble, for instance in the case of suspected violence or sexual abuse, the CCWC will try to find a temporary living situation for him/her. If the situation does not warrant emergency relocation, the social workers conduct the rest of their visits, completing all necessary documentation before returning to the commune office to file their paperwork and discuss cases with respective commune chiefs. The commune chief determines next steps in the case management process. Once a suitable intervention is identified and if the CCWC are unable to implement the intervention themselves, they will fill out referral forms to send to NGOs, requesting their assistance on behalf of the child. The social worker is then required to make copies of all documents filled before submitting them to the commune government office and PDOSVY. Once a CIA case is passed on for referral, no follow up is done. On the other hand, if CCWC are able to provide what is needed by the child, they will document their action and make a plan to follow up at a later time.

Figure 5 presents a workflow diagram compiled from observation of CCWC over a period of one work day for each individual. This map excludes CCWC activities that did not focus on CIA case management. However, it is important to note that we observed case management activities interspersed by CCWC required meetings and workshops. For instance at one observation event, the CCWC social worker had to postpone CIA home visits to attend the inauguration of a cash transfer program officiated by the governor. The CCWC had been in charge of identifying families qualifying for the cash transfer.

Regarding workflow, CCWC highlighted concerns over long commutes, data collection challenges owing to unreliable data sources and cumbersome paper forms for data collection.

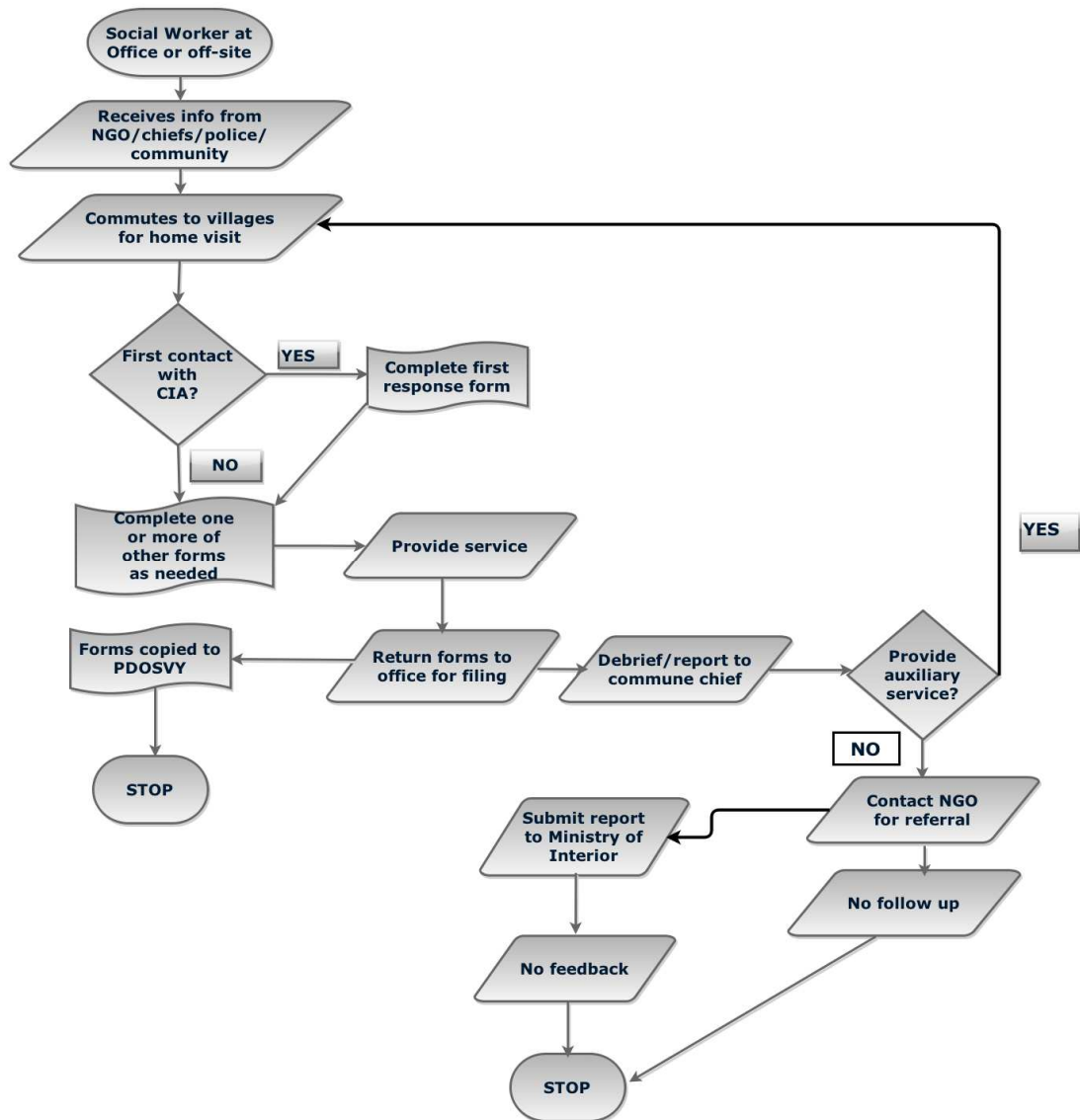


Figure 5: CCWC workflow. Schematic diagram showing CCWC social worker's observed workflow based on CIA case management activities.

### 1.3.2.3 Data Collection

Compliance with data collection procedures was varied and the overall attitude towards data collection responsibilities was negative. The CCWC complained about the

forms being too many and lacking funds to make new copies of the forms whenever they ran out. Furthermore, during direct observation we observed a social worker complete a home visit without filling out any forms. In a separate observation event, a different CCWC was seen writing information in a small notebook rather than using designated forms.

#### **1.3.2.4 Reporting and Supervision**

CCWC reporting was done at daily, weekly and monthly meetings. They reported most frequently to their respective commune chiefs. Commune chiefs and the municipal governor supervised CCWC. CCWC social workers had no official reporting document to outline their activities so all reports to commune chiefs were given verbally. At these meetings CCWC presented CIA cases and actions taken. If commune chiefs were unavailable, reporting was postponed. Reporting procedures at the provincial administrative level entailed sharing of case management forms with the governor. Meeting with the governor were less frequent, and typically held only once a month. Beyond the municipal level, we did not learn of other supervisory or reporting activities associated with CCWC social workers. Lastly, we noted during field observation that CCWC had assistants who reported to them on a weekly basis, providing verbal updates on cases in the community.

### **1.3.2.5 Collaboration**

CCWC participants in their focus group described a child protection system in which several actors work together to care for CIA. One CCWC gave the example that when in need of healthcare, CIA could access health services with help from various people. The quote below exemplifies this:

*“If CIA are sick or injured CCWC and relatives or partner organization sent them to Provincial Referral Hospital.” – CCWC Social worker*

Additionally, during direct observation we saw evidence of this collaboration when a CCWC and NGO social worker conducted a home visit together. The visit was conducted in the early afternoon at the home of a woman whose husband had been accused of perpetrating sexual abuse. The visit lasted approximately 45 minutes and began with the social workers collecting information about the wellbeing of the rest of the family. They then began inquiring about the case, taking notes as they received information from the woman.

### **1.3.2.6 Mobile Phone Use**

Regarding mobile phone use, we learned that all CCWC participating in the focus groups had their own phones and did not share them with anyone. Most phones were of the Nokia brand. When asked about smart phones, the CCWC spoke emphatically about them but stated that except for one of their colleagues, the rest did not know how to operate them. They also stated that smart phones were unaffordable



saying, “we want to use smart phone but we have no money.” The CCWCs most frequently used cell phones to make calls and found it challenging to use other functions. One CCWC’s explanation highlights this.

*“We meet some challenges such as we don’t know to check phone numbers, to receive calls, send messages, to check account balance, to save the contacts and sometimes we do not have enough money to insert money in the account.”- CCWC Social worker*

Later we learned that these difficulties are partly attributable to the CCWC not knowing how to read the Roman alphabet.

When asked about the potential uses of mobile phones for their work with CIA, CCWC noted that the technology could be beneficial for keeping in touch with CIA but worried problems could arise if CIA changed contact number or if they lost their phones. Nonetheless, the study data indicated an awareness of the benefits of mobile phones for CIA case management, especially for improving communication and the potential to develop and maintain relationships with CIA. Other concrete uses discussed during the focus group are included in the quote below:

*“Mobile phone is good for working with CIA. If they have a modern mobile phone they can insert and store the data, image and can determine the location that CIA lives. It makes the work faster.” – CCWC Social worker*

Table 4 below summarizes information on mobile phone use compiled during baseline data gathering session before the focus groups commenced to add to observations on CCWC mobile phone use.

**Table 4: CCWC & PDOSVY mobile phone use. Key summary data on mobile phone use from 10 CCWC and 1 PDOSVY official.**

<b>Probe</b>	<b>Options</b>	<b>n (%)</b> <b>Total = 10 social workers</b> <b>and 1 PDOSVY official</b>
Cell phone type	Basic phone with call and sms function	9 (81.8%)
	Feature phone	1 (9.1%)
	Smart/touch screen phone	2 (18.2%)
Cell phone use	Calling	11 (100%)
	Receiving calls	11(100%)
	Sending sms	3 (27.3%)
	Receiving and reading sms	3 (27.3%)
	Check email	1 (9.1%)
	Browse the internet	2 (18.2%)
	Use Facebook/WhatsApp/other	1 (9.1%)
Cell phone for work activities	Yes	11 (100%)
Advantages of cell phone	Used for scheduling meetings with CIA , chiefs, other NGOs or passing on invitations to events to the same	

### **1.3.3 NGO Perspectives**

#### **1.3.3.1 Roles and Responsibilities**

NGO social workers' roles and responsibilities were few and focused only on the care of CIA. The following primary tasks were highlighted: relationship building in

communities and across institutions, conducting needs assessments, family plans, referrals and follow up of CIA, data collection and reporting. One NGO social worker expounded on her role as follows:

*“Our role is to build the relationship with communities, base authorities, concerned NGOs in his/her target area to collect the general information related to education, health, commune plan, statistic of people and OVCs. We also do family plan...child need assessment to know what problems the child has. If our organization has the service that the child need we help them, but if our organization does not, we sent them to partner organization...” –NGO Social Worker*

This quote highlights collaborations across organization to facilitate referrals for CIA.

#### **1.3.3.2 Workflow**

Although NGOs operated independently, there was a general consensus in their discussion about daily work activities. From the data provided by NGO social workers, we learned that work is organized by case plans to guide case completion. A typical day went as follows: social workers working at residential centers begin their day at 8am by inspecting the hygiene of CIA sleeping quarters, health of children or the children’s academics. In non-residential centers, social workers begin by commuting to CIA homes to conduct visits. They fill out the appropriate government forms per case management procedures. In most cases they will have additional forms specific to their organizations. Afterwards, the NGO social workers return to the NGO office and continue following

their case plan. In some cases, another designated staff member is responsible for data entry, freeing up the social worker for additional case work. We observed a computerized database for CIA records at one of the NGOs and learned that only one person at the organization was trained to use it.

During the focus group, NGO social workers explained that in emergency situations, it was difficult to follow the typical case management procedures. For example in the case of serious injury or sickness, the social worker may set aside all other cases and required procedures to call the supervisor for additional support to address the issue promptly. Figure 6 represents a workflow diagram created from observing NGO social workers.

Speaking to constraints in the workflow, NGO social workers discussed examples of challenges attributable to long commutes for home visits and explained that in rainy seasons, follow-up in remote areas rarely happens. They also pointed out difficulties in collecting all the information required by MOSVY forms.

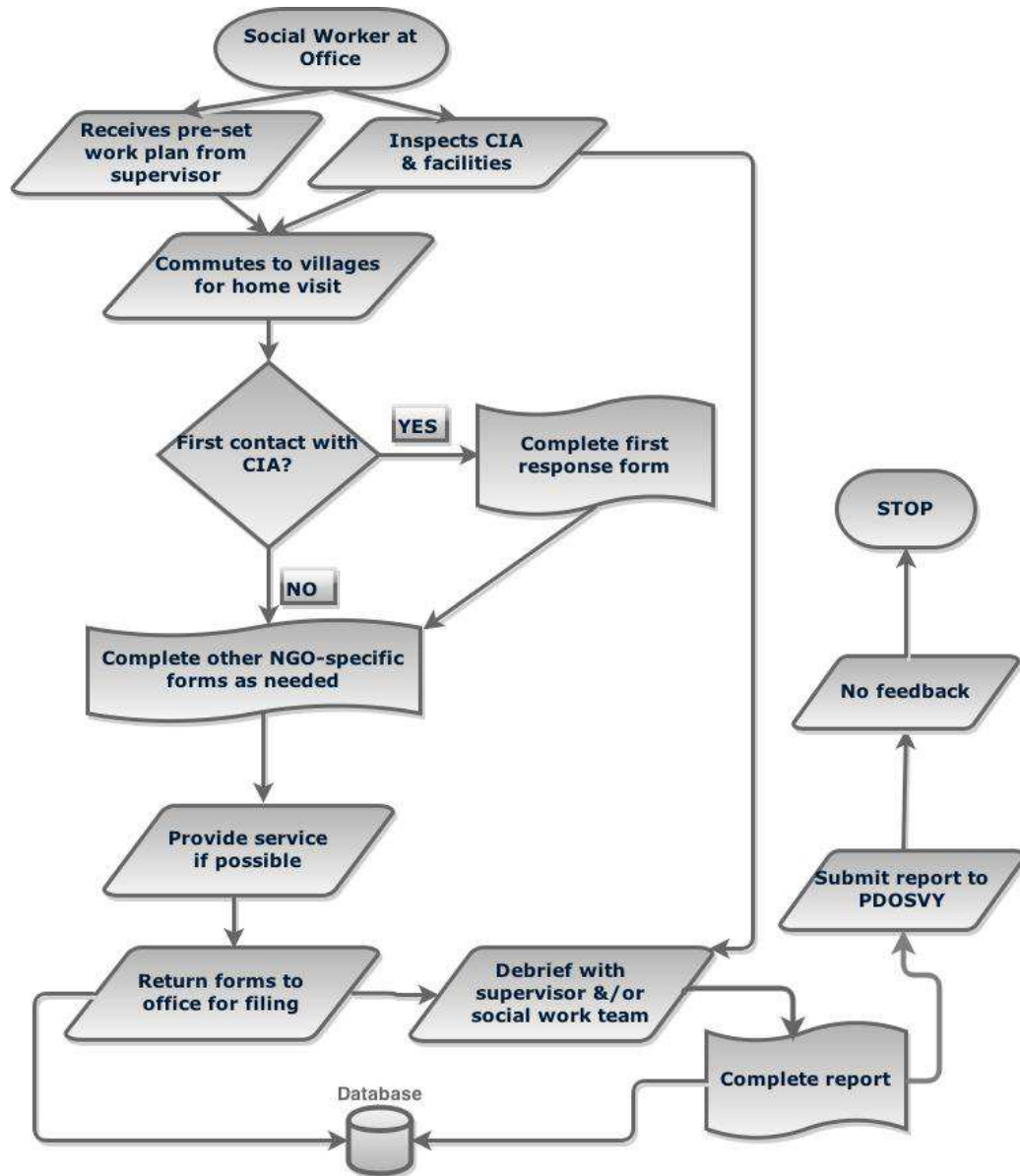


Figure 6: NGO social worker workflow. Schematic diagram showing NGO social worker’s observed workflow based on CIA case management activities.

### 1.3.3.3 Data Collection

Study data showed that NGO social workers like their CCWC counterparts, collected data using paper forms. Besides required government forms, the NGOs had developed their own forms. In the discussion, the NGO social workers highlighted seven case management forms that they considered most important for their work. They were first response, family needs assessment, child plan, child referral, case note, child case study and case closure forms. In some cases computers were available for data processing and storage as seen in the quote below:

*“In the office we enter the data, data means all information that we have collected, we enter the data into the computer or write on the papers and put into the file for keeping as document” –NGO Social Worker*

The NGO social workers commuted long distances to collect data. Success of data collection activities were dependent on the availability of an informant, the accuracy of the informants' story and sometimes, the relationship the NGO social worker had with the community members and leaders. In the event of sensitive cases that could result in stigmatization, like in situations of drug use, child exploitation, HIV/AIDS or sexual violation, the NGO social workers experienced additional challenges obtaining the correct information and protecting the privacy of CIA and their families. When data was collected in the field, it was often hard to find a safe place to discuss these issues.

#### 1.3.3.4 Reporting and Supervision

NGO social workers discussion on reporting practices revealed a practice that required submission of paper reports to immediate supervisors and meetings. Each NGO had unique reporting instruments. Furthermore, social workers were assigned a specific number of cases and were required to clock in and out before and after visits. In emergencies, NGO social workers explained that they all used their mobile phones to contact supervisors. One NGO social worker expounded on this with some detail in the quote below:

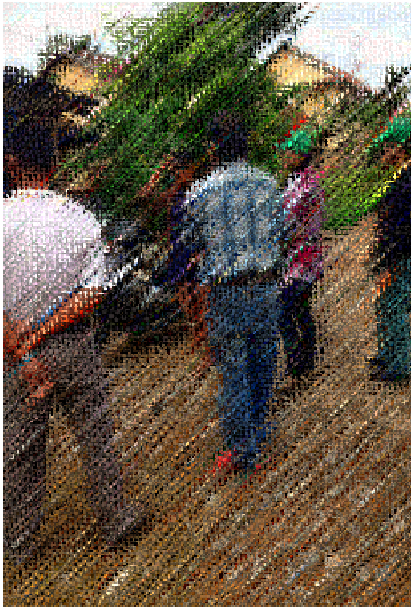
*“The strategy of giving or receiving information is the meeting, by weekly or monthly writing, but the urgent case should call by phone or direct contact. The most important is we can keep the report in the computer.”- NGO Social worker.*

Reports were directed to department supervisors who in turn reported to NGO directors. Periodically, these institutions created semi-annual summary reports for the PDOSVY which were delivered in hard copy formats. The following quote indicates the frequency of reporting of NGO social workers signifying the importance of reporting and supervision in the context of NGO social workers’ work.

*“We have team work weekly meeting report, monthly report, trimester report, semester report, 9 months report and annual report for sending to supervisor.” -NGO social worker.*

### 1.3.3.5 Collaboration

NGO social workers provided evidence of collaboration with CCWC. In the focus group we learned that they sometimes work with CCWC social workers to complete case management. During direct observation we confirmed this at a home visit conducted by a team of CCWC and NGO social workers. The purpose of the visit was to gather more information about a case of sexual abuse and convince the mother to pursue legal action against the perpetrator of the abuse. This example underscores the role of social workers as advocates for CIA. Figure 7 presents a summary of the interaction.



**Srey Noch is a young mother of five living in a shun area in Battambang. Her eldest daughter is 12 years and a beneficiary of NGO Y's educational scholarship fund. Recently the CCWC received information that Srey Noch's husband who works in Thailand but comes back regularly, had raped the girl.**

**The CCWC and NGO social worker visited Srey together to discuss the case. Their goal was to collect more information and convince Srey to report the issue to the police. When the social workers brought up the case, Srey was visibly scared and tears streamed down her cheeks as she explained that she knew what was going. She was afraid to report her husband. He was her only source of income. Srey shared that she loved her children but that life had been very difficult. They were currently living in someone's veranda. The social workers encouraged her and promised to provide additional support including legal services, if she decided to report the case.**

**Figure 7: NGO-CCWC collaboration. This scenario summarizes a home visit conducted by a team of two NGO and CCWC social workers at \*Srey Noch's home.**

\*Name is fictional to protect participant's identity



### **1.3.3.6 Mobile Phone Use**

All NGO social workers had mobile phones and were aware of its usefulness in improving communication. They identified other functions apart from calling and sending sms messages as seen in the following quote:

*“The mobile phone is easily used to communicate, in this question we see they write sms, voice, and internet... most of all that we use and we can set up calendar, appointment in the mobile phone and we use by this system.”- NGO social worker*

NGO social workers noted that mobile phones and other technology could make case management processes faster and more efficient. Additionally, the NGO social workers noted that with passwords, data collected on mobile phones can be kept safe. However, they acknowledged that a lot of skill was required to successfully incorporate mobile phones into case management practices.

## **1.3.4 PDOSVY Perspectives**

### **1.3.4.1 Roles and Responsibilities**

Study data shows that PDOSVY responsibilities were primarily to train and supervise social workers, particularly those affiliated with NGOs. The PDOSVY monitors all NGO activities and evaluates them once a year. Beyond that, PDOSVY official collects reports from these institutions to keep track of the number of children going in and out of them. Additionally, the PDOSVY official trains social workers and

commune governments in Battambang practices to improve child protection. The PDOSVY official does not supervise CCWC. He explained:

*“CCWCs are not under the line of Social Affair, they are under the line Interior Ministry or Ministry of Rural Development, and they report to their line or report Provincial Office.” – PDOSVY official*

A critical part of PDOSVY’s job is to train social workers on best practices for enumeration. He voiced concern about poor knowledge-transfer despite attendance to training sessions. The PDOSVY had noticed that even after training, data collection procedures were still not being followed by social workers.

#### **1.3.4.2 Data Collection**

Data collected by the PDOSVY was in summary form and did not mirror the breadth of information captured in MOSVY required forms. The PDOSVY report form contained a summary of the number of children in institutions by year and by gender. Figure 8 shows the hand written chart with organization names and space to complete summary statistics from year 2011 to 2014.

#### **1.3.4.3 Reporting and Supervision**

From the interview we confirmed that the PDOSVY official reports to the national MOSVY office in Phnom Penh. We observed and obtained a copy of a form used to collect data for estimating the number and gender of all children living in a given residential institution and the number of staff available to care for them. We also

obtained a copy of a form used to collect data to show movement of CIA in and out of residential institutions.

**Figure 8: PDOSVY CIA\* Summary Data. This is a photograph of a hand-drawn data summary table observed at PDOSVY office.**

\*image modified to conceal identifying information (names and contact information of CIA institutions)

#### 1.3.4.4 Collaboration

The PDOSVY official provided a big picture view of the social welfare system. He described a social welfare system that relies on collaboration of different parties. He emphasized a strong commitment to, and co-dependence of the government and NGOs.

*“All NGOs is Social Affairs partner, I don’t leave NGOs and NGOs also can’t leave Social Affairs.” – PDOSVY official*

Other arms of government are also involved in the relationship that the PDOSVY official described above. They include 'social affairs' department, 'women affairs' department and the ministries of health and education. Collaborative relationships were useful for sharing information on CIA with needs and services available. Apart from the statement above, we did not find any evidence of a systematic coordination mechanism to harmonize the efforts of PDOSVY, CCWC and NGO social workers.

#### **1.3.4.5 Mobile phone use**

During the study we only observed two smart phones among the social work staff, one of which belonged to the PDOSVY (the other belonged to a CCWC social worker). We learned from PDOSVY that smart phone use is limited by high costs of the handsets. However, it is the preferred phone of choice for the younger population who access social media applications or use the Internet. Additionally, large screen, Samsung galaxy phones were growing in popularity in the area. The PDOSVY expressed his support for the use of mobile phones in his work. At the same time he highlighted the societal view of smart phone ownership and the challenge of acquiring one in the following quote:

*"I would be excited to use a mobile phone for work. It will help me look more important.... It is good but we have no money to buy the modern mobile phone because their prize are high even though the organization buy for us" -PDOSVY Official*

### **1.3.5 Data Field Analysis**

We collected 34 forms listed (in appendix B) used for documenting different stages of CIA case. 27 of these were forms used to document CIA personal information and services provided. The other seven forms are used for documenting adoption procedures.

From the 34 forms, 361 total fields were identified with 220 unique fields, indicating data duplication occurs across the remaining 141 non-unique fields. Of the 361 fields, only 12.5% measured CIA wellness indicators. Less than 1% of the data fields in the 34 forms reappeared in MOSVY reports. None of the forms outlined required fields nor contained a protocol or instructions on form completion for social workers reference.

We identified several fields for recording information on CIA wellbeing. For example, the family assessment form outlined a wellbeing index scored on a sliding scale from 1 to 4. Measures outlined were child's health, safety, family stability, defend and care, intimacy between child and caregiver, education level, availability of resources, level of community support.

Several data fields that overlap between the service delivery forms and the new MOSVY alternative care database form were noted: they are child name and child code number, child's data of birth, sex, and place of birth. Of these, child name and child code

number could be useful for connecting the records completed for an individual child.

Table 5 summarizes key information gathered from the document analysis.

**Table 5: Data field summary. Summary of field types and some interesting characteristics**

<b>Data Field Summary</b>		
<b>Total Fields</b>	361	<b>Percentage of the total # fields</b>
<b>Unique Fields</b>	220	61%
<b>Non-Unique Fields</b>	141	39%
<b>Fields recording aspects of wellbeing or health</b>	45	13%
<b>Most Frequent Field Types</b>	Name fields, address fields, caregiver information, date of birth	
<b>Examples of fields collecting data on aspects of CIA wellbeing or health</b>	Wellbeing index child history, birth delivery method, weight at birth, drug and alcohol use history, lab reports, weight, nutrition information, immunization status, language development, emotional development, disabilities, health situation, description of intervention	
<b>Fields Connecting Data Across Forms</b>	Child code number, Name of Child, Name of caregiver	

### **1.3.6 Street Children’s Experiences and Needs**

Street-based CIA in the study had varied experiences. For instance, one child had been living in an institution for three years before escaping and another lived at home with her family but worked on the streets in the afternoon. Some children were in the

street to escape violence or 'drunken fathers' at home; others were on the street because their parents migrated to Thailand and had never returned. To make a living or obtain food, all the children worked small jobs washing dishes or picking trash, or begged in the streets. All of those who were permanently on the streets slept by the river and sought the protection of peers or trusted adults whenever they were faced with threats. The older boys were less worried about safety explaining that "if they are same size like me, I fight back." However, the street children's reliance on self-defense to protect themselves in threatening situations only worked if the threat was from another child. The following quotes exemplify how street-based CIA manage on a daily basis.

*"I spend my day to beg the pennies, collect recycle thing, find vegetable and meat or fish on the morning at the market, collect the drink cans at the married open shed-wedding-, at night gather up the meal that left over from the guest at the restaurants or make the sign for the guest cars when they finish eating and go back home for money distribution from the guests. For the left over meals I put in sack pocket and find the place outside the restaurant and share with colleagues. I spend my day some time at market, sometime at the married open shed, at night I spend my time at restaurants." – 17 year old male CIA*

*"When I have the money I buy food and when I have no money I beg from people or ask for the left over from the guest." – 14 year old Male Street based CIA*

*"They go to pagoda for begging the money when it has the ceremony there. They go there when there is a party or to beg for money, but not at night unless there is a ceremony. I think the street children are not safe. They are afraid of strangers"- female street-based CIA answering question about the boys' experience on the streets*

*"Half month ago, I was fighting by the other street children. I escape and enter the shop for help from shop owner." – 11 year old male CIA*

The street children did not explicitly state their needs. However, from the discussion we inferred that reliable sources of food, protection from threats, vocational training to prepare them for the future and community support, were some of the things they needed to improve their wellbeing. We also learned that the street-based CIA had access to safety nets available in the commune, accessible to them through an 'IDPoor card'. This card is an official identification document that certifies one's eligibility for government support in the form of vouchers to access healthcare (except medication), education scholarships and food aid. The following quotes provide examples of what street-CIA can access from NGOs and shows how the IDPoor card can be used:

*"CCWC makes schedule to go to see NGO\_A. We get school materials from NGO\_A one time per year. NGO\_A provide breakfast and the rice sometime. NGO\_B provide a bicycle when they finish school. They get IDPoor card at the rail way station (the meeting). NGO\_C provide materials for school once a year. She tells us to ride the bicycle to the center." – Female Street-based CIA*

*"When I am sick the other boys take care of me. Sometimes I can get IDPoor to go to the hospital."-14 year old male CIA*

Based on information shared by the street children, we developed composite stories and created vignettes presented in figure 9 and 10 to highlight challenges they experience and opportunities for intervention. For example for Sokchea, the first opportunity for case management could have been while he was still living at home and being subjected to abuse by his alcoholic stepfather. For Marina, the risk of sexual exploitation in the context of the streets or in any future engagement with KTV work



could be mitigated by providing educational opportunities or psychosocial support to guide her away from the streets or seeking jobs at a KTV. Marina could also be referred to short term job training sessions to equip her with other marketable skills which could help her acquire a job in the future.



**Sokchea left home at 12 years of age after his father died and his mother remarried. He was driven out after his alcoholic stepfather would not stop beating him. He travelled from Kampung Cham to Battambang where he lives on the street. He is now 17 years and prefers life on the street to when he was living in an orphanage. Sockchea begs for leftover food from tourists money, only manages to eat one meal on many days. He sleeps by the river, has contracted malaria and been hospitalized for a month. He is sometimes involved in street fights and suffered broken bones many times. He wants to become a car mechanic but has no one to provide reference for the job. For now he is ok with the small cleaning jobs he gets. He also enjoys being a stronger boy-because all the younger children ask for his protection.**

**Figure 9: Vignette of \*Sokchea’s experience on the street. This is a vignette created from composite stories from street-based CIA describing a typical life and issues that could be targeted for case management.**

\*Name is fictional to protect participant’s identity



**Veasna is 14 years old. She works on the streets but lives at home with her parents. She describes a life of heavy responsibilities beginning at a young age. At home she works a lot, cooking, cleaning and caring for her seven siblings. On the street she washes dishes and picks trash. Some mornings she also goes to school. She has come to know some of the NGOs in the area that assist vulnerable children. When asked about her needs, Veasna says she needs money for her poor family. She has no concerns about her health or safety and she likes living at home. She says she eats well and regularly enough. She is only fearful sometimes when she has to go to the streets at night. In the future Veasna wants to work as a KTV girl. For fun, she sometimes inhales glue.**

**Figure 10: Vignette of \*Veasna's experience at home and on the street. This is a vignette created from composite stories from street-based CIA describing a typical life and issues that could be targeted for case management.**

\*Name is fictional to protect participant's identity

From the data we learned that street children are rarely targeted for CIA services. In fact, all the examples discussed in focus groups and children visited during direct observation involved other classes of CIA and not street children. Social workers also informed us that NGOs with residential facilities avoid enrolling street children because of behavioral problems, especially those related to violence and drug abuse. One social worker illustrated this through a quote where she linked street children's exposure to glue sniffing and subsequent criminal activity.

*“Child drug use is a problem. This kid has a problem to communicate. They are trapped and some kid use drug like sniff glue and become the thief.”-45 year old female NGO social worker*

Study data indicates that at the provincial level, little is known about the needs of street children. The PDOSVY official when asked about street children said he ‘did not know about them’. When pressed further to discuss services available to them, it emerged that he had little knowledge of street children’s needs and deferred to what was available in NGOs. The PDOSVY’s response was as seen below:

*“I don’t clearly understand about this. Currently there is NGO\_Y who work on this case; they collect children to put in the house.”-PDOSVY Official*

### **1.3.7 Thematic Analysis**

The following nodes were created based on themes identified in the transcripts: challenges/barriers, information needs, internet use, technology use, needs, organization structure, CIA services, procedures, reporting, roles and responsibilities, skills used, street children experience and support. Of these, challenges, procedures, mobile phones and roles and responsibilities were coded at the highest frequencies while Internet use and support were coded least frequently. Challenges and procedures nodes were the top two. In the analysis, we noted a significant overlap between the ‘challenges’ and ‘procedures’ nodes where social workers talked about barriers to some of their case management procedures.

Under challenges, long commutes, weak communication and lack of feedback and budget constraints were highlighted by both groups of social workers. On budget constraints, one social worker commented that without money it was impossible to help CIA. Another expounded:

*“In the communes only have \$200 available for 12 months. This is not enough. This is only enough for meetings. How can we find budget for more support?”- CCWC social worker*

Key informants disclosed that CCWC social workers salary of \$20 dollars a month was not enough and had driven several CCWC to seek other opportunities to make money. The low salary not only had implications on work motivation, it also took away time that they could devote to CIA case management.

The PDOSVY further explained the effects of budget constraints on his and the social workers' performances. He noted that lack of funds kept social workers from completing their tasks and in the worst case scenario; institutions may be forced to shut down. However, when finances are available institutions can complete case expediently.

*“The main problem is fund if they have no fund everything is stopped, in generally if they have no budget for implementing they have no gasoline to go to the base, in fact they ask me to go to the base if the Department does not provide the budget to me I have no ability to go. Nowadays a number of Departments are stopped the Global Fund cut the help, they wait for the help of UNICEF and Global Fund.....if they have no fund they must close this work, normally like NGOs is fund cut they will close the door a duration. When they have the money they have the ideas, what we do, we start from what such as do the training, follow up, to make case study.”-PDOSVY Official*

Other challenges identified pointed to problems with data collection.

Information gathering was a complex process that required multiple training sessions conducted by the PDOSVY. Second, the paper based method was burdensome owing to multiple forms required by the ministry and was exacerbated by frequent inability to get complete or accurate information from clients. Data collection like follow-up visits required much travelling which was often times expensive and inconvenient for social workers as they received no budget support to cover travel expenses.

Separately, one NGO social worker pointed out the importance of rapport building with CIA for overcoming data collection challenges. She notes that without relationships with CIA and given short timelines, data collection becomes difficult and sometimes the information gathered is unhelpful in subsequent case management steps.

*“Due to we built the relation in short time so some information that they tell us is true and some no true, it is an information that we cannot do analysis and make our plan , we collect wrong information and implementing the plan is not successful due to the lack of information.”- NGO social worker*

CIA challenges identified were related to drug use, involvement in criminal activity, lack of education and family support, forced migration and discrimination. One CCWC social worker spoke clearly about the negative societal view of street-based CIA saying ‘everyone hates them’ and confirming the presence of stigma against street children in Battambang. Additionally, this population was characterized as difficult to work

with, especially when they escape from institutions because ‘they want to be free to work anywhere’ or because they ‘don’t want to be controlled’.

Looking at the procedures node, quotes coded into this category describe workload, workflows and point to required case management procedures. The procedures node showed strong overlap with a node for roles and responsibilities. For instance, PDOSVY described procedures undertaken when parents of CIA are imprisoned:

*“It is important when a family is imprisoned it must to fill the current event manners, to search where are the relatives and family, we do integration and we follow up what and how they change and what vocational that the prison provided for they have the skill when they are free, they can continue the skill and we follow up their skill is developed or not, it is the story that we use to do and we have successful.” – PDOSVY Official*

The phrase, ‘legislative procedures’ was used repeatedly to describe data collection protocols that social workers are to follow. Only the PDOSVY referred to these policies during the interview, emphasizing their importance in guiding the work of social workers.

Training and/or workshops came up at the overlap of the procedures and roles and responsibilities node. Here social workers talked about attending capacity building workshops to learn about data collection and proper procedures for case management. The PDOSVY’s role in improving the practice of data collection and adherence to

minimum standards of care stipulated by the government by training social care staff was emphasized in the overlap between procedures and roles and responsibilities.

## **1.4 Discussion**

### **1.4.1 Understanding the Results**

This study is the first one in Cambodia to successfully map the workflow of social workers in the context of their work with CIA. Some studies on management of malaria by front line workers in remote parts of Cambodia exist with lessons that could apply to social workers [109-113]. These studies assess various aspects of frontline malaria case management in rural areas, evaluating the community health workers effectiveness, impact on caregiver response to child illness and role of capacity building. One study found that while diagnosis of malaria and delivery of antimalarial drugs had improved since the deployment of the health workers to the villages, like the social workers in our study, this cadre could benefit from additional training to grow their knowledge base and expand the range and quality of services they can provide [113].

Social work as a practice is still very new in Cambodia [97]. The first professional social work candidates graduated in 2012, joining a workforce primarily served by social workers and community volunteers with little to no training [96]. Where training exists, it is mostly informal and short term [95]. Additionally, the country's low social worker ratio of 2 to every 25,000 in the population is significantly inadequate to cater to the needs of CIA [78]. Although commune council staff through CCWC focal points provide additional number of social work staff, each commune is only served by one CCWC



social worker who oftentimes has little to no professional training in social work [87]. Slow development of road infrastructure and the high proportion of people living in rural Cambodia converge to create circumstances where social workers have to travel long distances for case management. With few existing social workers, it is likely that many areas rarely get regular visits from social workers and in these areas, loss to follow up is high.

The challenges exemplified by our study results are neither unique to Cambodia's social workers nor unique to the country itself. Reviews of child protection systems in Africa, the Caribbean and the South East Asia-Pacific region describe underdeveloped social care systems characterized by limited resources and often served by poorly qualified social work staff [15, 114, 115]. Nonetheless social care systems are adapting to these challenges by bridging formal and informal child welfare activities since there is evidence that informal systems extend social safety nets to the most vulnerable groups where national governments have failed to do the same [14, 15, 38, 116]. To gain more from informal systems of care, better systems are required to harmonize the efforts of all actors and agents in the child welfare apparatus.

NGOs (including international, multilateral and bilateral agencies) supplement government efforts by directing funds to improve child protection. However, these efforts are typically integrated vertically into the existing system, leading to

fragmentation and overwhelming of the system, especially where coordination is weak [14, 117]. From a documentation stand point, NGOs tend to require their own reporting documents besides those required by the government. This adds data collection responsibilities to frontline social work staff [118]. Furthermore the combination of vertically integrated programs and poor coordination mechanism often limits data sharing [88, 119]. Without a way to harmonize all these efforts, tracking beneficiaries and accurately measuring the impact of CIA initiatives is impossible.

Low technical capacity has been identified as a weakness within Cambodia's local government and social work staff [86, 87, 95]. For supervisory staff this leads to weak supportive supervision, poor accountability on use of resources, and other inefficiencies [6, 15, 117, 120]. In Cambodia, local government offices with responsibilities in social care are top-heavy, with few staff available to conduct operational activities [86]. This not only places limits on the number of people available to conduct case management activities, but also uses up much of the local government's funds for salaries rather than service delivery. An assessment of CCWC effectiveness corroborates our study's observations of weaknesses in social workers' skills and knowledge [87]. The assessment outlines potential target areas for capacity building, prioritizing data collection skills.

The street children in our study received little support from social workers. Reasons for this were unclear however, we hypothesize that limited resources and an inability to contextualize available services to the needs of street children could explain this phenomenon [121]. In other contexts, poor data, high mobility of this group and stigma have been cited as reasons for poor targeting of welfare and protection services to street children. These are serious limitations because they delay interventions. Literature suggests that early intervention is especially important for new street children because the likelihood of resolving at-risk situations within the home or initiate reintegration of the child is higher in earlier stages [122]. In Poipet, a survey of street children showed that lack of knowledge about services available at a drop in center was the primary reason why only 38% of sampled children had to accessed support services at least once [19].

Moving forward, our study shows that greater efforts are needed to address vulnerabilities experienced by street children. Specifically, more advocacy will be essential to increase national attention on the needs of street children. This will require more data on the prevalence of this population as well as other factors that lead to better provision of services. Empowering local governments could be a first step in creating registries within respective communes. Future policies on CIA should acknowledge street children as a special sub-set of CIA to facilitate development and implementation

of guidelines for their protection. It will be important to review existing policies and to eliminate those that promote stigma, maltreatment and neglect of street children. This could go a long way in minimizing barriers that prevent this population from accessing support services.

On data collection, we learnt that the data fields represented in MOSVY case management forms do not reflect what is needed by the government to plan for and target additional resources to CIA. Additionally, there is potential to improve the quality and accuracy of data on CIA by crosschecking with community database such as the commune IDPoor registry. Protocols defining access to such information by social work staff could help to streamline this process.

To ensure that data on CIA is captured in a timely fashion and to create a system that can be shared across different agencies, it will be necessary for the Alternative Care Database to be scaled up and transitioned from a passive to an active system. Allowing frontline workers access to a data entry portal would facilitate data input directly into the system from their communes, saving time and minimizing labor spent on data entry at the commune and national level. The implementation of mobile phone-based data collection systems could further facilitate CIA documentation by supporting real time data entry. The growth of mobile phone use, presence of expanding 2G, 3G and 4G networks and of the use of smart phones present opportunities to introduce mobile

phones as tools to enhance service delivery to CIA by social work staff. To do this, more research to characterize social workers literacy and technological capacity will be required.

Lastly, before addressing low numbers of social work staff, it will be important prioritize capacity building of the existing workforce. Existing training modules can be adapted to different media so that social work staff have a variety of ways by which they can access these materials. The suitability of paper, video or audio formats for training materials is a potential future area for research.

## CHAPTER 2

### 2. Lessons Learned

The aim of this chapter is to summarize lessons from the study. We present a summary of the results and discuss relevant findings in light of the question: *would an mHealth tool be a suitable solution to address the challenges in case management of CIA experienced by social workers in Battambang, Cambodia?* We then present justification for our answer and considerations for subsequent phases of the study.

#### 2.1 Summary of Results

The qualitative study presented in this chapter explored CIA case management exemplified through daily workflows, information needs, and barriers to optimal delivery of care for CIA. Additionally, the study described life experiences of street-based CIA and identified their case management needs. Results show, for CIA, social workers are often times the first and only contact they have with the child welfare system. Within the workflows generated from the data, we found specific constraints contributing to poor follow up and delayed case management of CIA. These are long commutes to visit CIA, weak links to supervisors and other institutions that provide referral services, inconsistent data collection practices, insufficient or inaccurate information on CIA cases, and limited knowledge and skills for handling especially challenging cases.

Reporting for CCWC social workers was verbal and took place at meetings while NGO social workers had structured reporting mechanisms facilitated by oral and written reports. Furthermore, social workers worked within a system that provided little to no feedback on the quality or long term impact of their work. Data collection was paper-based utilizing 34 mandatory government forms. NGOs had additional forms besides the required case management documentation. We identified three data fields that could be useful for linking an individual's data across the different forms purpose: they are child code number, child name and date of birth. However, we did not find any evidence of investments to establish longitudinal records for CIA.

Looking at street children's experiences, we saw varied reasons for being on the street but similar survival practices like begging or working small jobs to earn an income. The children indicated an awareness of support services available in Battambang despite evidence from social work staff suggesting that the care of street children is a low priority item in the provincial child welfare agenda. We concluded that participation of social workers in connecting street children with services was limited and dependent on the social workers proximity to street-CIA hotspots (sleeping places, hiding places, eating places). Furthermore, only a handful of organizations in Battambang were found to provide support to street children. Case management needs identified were similar to those of other types of CIA researched by other groups in

Cambodia and globally [19, 21, 123, 124]. Some of the challenges highlighted by the data suggest that like other types of CIA, early intervention to remove situations of risk has great potential to prevent or mitigate future or concurrent risks.

## **2.2 Applying the Results**

From our data we developed two use case scenarios that incorporate constraints highlighted by study results. On one hand the use cases can serve as training materials for workshops to train young social workers on how to identify and manage challenges in case management. On the other hand, the use cases can be applied to mHealth development to identify functionalities of a system. The use case scenarios presented in figure 11 and 12 describe work challenges from the perspective of CCWC social workers<sup>1</sup>.

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<sup>1</sup>Using two fictional characters, Srey Lek and Racahana<sup>1</sup>



“Rachana is a 35 year old social worker for the CCWC responsible for the care of children in adversity in her commune in a rural part of Battambang, Cambodia. Rachana lives quite far from her work place. She gets up early to make it to work on time. She often travels to the office by motorbike. She likes her job working with children but looks forward to finding another job to earn more money for her family of 15. When Rachana arrives at the office at 8am, she signs in and walks to a board listing cases to be tackled. Today she has been assigned only two cases that require her to travel to the Thai –Cambodia border for a suspected case of forced migration. Because the CCWC has limited capacity to handle migration cases, she has to partner with a local NGO. She goes to the NGO office after a short while to meet with her collaborator. On the way to visit the first child, Rachana is aware that she does not know how to complete the case management tasks assigned to her. After a 2-hour commute to the border, she gets to the child’s home and finds that the child has moved to Thailand. She and the other collaborator visit the local commune chief to collect more information but he is busy and asks her to go back and return the next day. Her collaborator leaves and she commutes for another two hours to the next child. There, she is required to open up a new case so more forms are required. In total she fills out three in one visit. The case is of a child new to the province and in need of rehabilitation services. She informs the child that she would be back soon. On the way to the office the rain begins to pour and all the forms are damaged and become illegible. At the office, Rachana cannot return her forms nor complete a summary of her day’s cases. Her supervisor asks her to find another NGO to help track the migrated child. She tries to call several organizations but none of them are willing to partner with her because looking for the child would mean more work for them. At 5pm Rachana feels ready to go home to rest from her long day. Today she is unhappy. Today she has been unsuccessful and she has to complete her documentation outside of work hours. For tomorrow, she knows she will have to go back and try to find the missing child somehow.

**Figure 11: Use case scenario based on Rachana, a 35 year old CCWC social worker**

“Srey Lek is a 60 year old social worker for the CCWC responsible for the care of children in adversity in her commune in a rural part of Battambang, Cambodia. She has a high school level education but has more than 10 years of experience in her job. Although she can read and write in Khmer, she still finds it difficult to complete forms and reports required by her supervisor because she does not know how to. In fact, she often forgets to ask children or their guardians for information pertinent for her work. Srey Lek mostly works on her own except for a few instances when a local volunteer help her visit pregnant women or sick people in the community. She depends on them for information about new cases so she has to find ways to meet or contact them every week. Srey Lek is a hard worker but she always accepts the help because there are too many cases in her area. She also works with the village chief in the communes but the chief’s role is often just to pass information. While conducting regular visits Srey Lek discovers five siblings all under the age of 12 living alone at the edge of a village. The children are hungry and show signs of stunting. While there she realizes that she did not have enough registration forms for all of them. She takes down some information from 3 of the 5 children. She wants to move them to a care-giving situation right away but she needs her supervisor’s approval before that can happen. She is unsure about next steps. She leaves the eldest child some money and informs a neighbor about the situation, instructing them to help care for the children. She makes her way to her supervisor’s office where she submits the forms with information about the children’s situation, hoping that she filled out the forms correctly. Although the forms are not complete, her supervisor recommends that the 3 children wait in their own home until more information about a suitable guardian is available. Srey Lek goes back home because by the time she is done, it is too late to go back and find the children. On her way back she remembers she has not contacted an NGO about an abandoned 5-year old found under the bridge two weeks ago but she is tired. She wishes she had more support to complete her job and makes a mental note to address the 5-year old’s case the next day”.

**Figure 12: Use case scenario based on Srey Lek, a 60 year old CCWC social worker**

Based on study data, the mHealth system could incorporate functionalities to address some or all of the challenges identified in the study data. Table 6 summarizes these functionalities in the context of the 12 common mHealth and ICT applications proposed by Labrique et al.[125]. Figure 13 and appendix C and provide more details on specifics of the proposed mHealth tool.

**Table 6: Functions of proposed mHealth application. Summary of functionalities of mHealth applications per the 12 common mHealth and ICT applications framework**

APPLICATION	FUNCTION + PURPOSE
Client education & behavior change communication (BCC)	
Sensors & point-of-care diagnostics	Identity management systems, (e.g., biometric sensors such as fingerprinting sensors) to validate CIA identity and GPS tracking to map where CIA are encountered
Registers/vital events tracking	Digital forms to register children in adversity and their care givers into an electronic database
Data collection and reporting	Digital forms to record services delivered to CIA
Electronic health records	Electronic records to track CIA health status, immunizations and visits to any health provider
Electronic decision support	Automated decision support tools for assessment of CIA health and wellbeing status
Provider-to-provider communication	SMS or voice-based communication protocols connecting social workers with each other, local organizations and/or supervisors to facilitate faster referral of CIA and better coordination of care
Provider work planning & scheduling	Electronic scheduler with alerts to help plan work days, manage workload and facilitate timely referrals and follow up
Provider training & education	Multimedia training modules on best practices for case management, enumeration and CIA counseling
Human resource management	Web-based dashboards to view social worker performance and CIA health and wellbeing indicators.
Supply chain management	
Financial transaction & incentives	

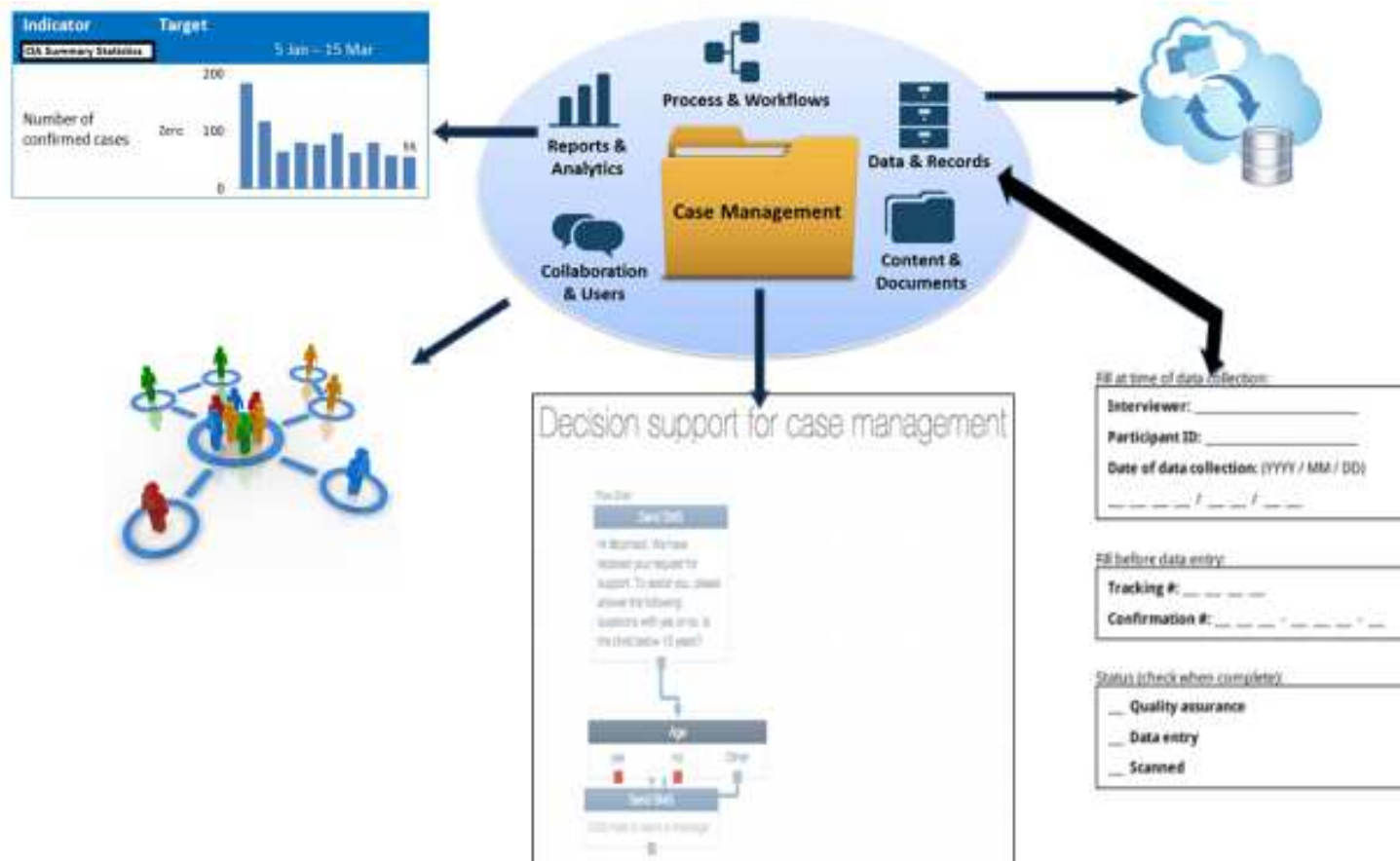


Figure 13: Components of ideal mHealth CIA case management tool. The picture provides an overview of what the mHealth solution for Cambodia's CIA problem could look like.

The logic model presented in table 7 defines potential outputs, outcomes, indicators and impact of the proposed intervention.

**Table 7: Logic model for the proposed intervention summarizing activities, outputs, outcomes and inputs for the mHealth application**

<b>Activities</b>	<b>Outputs</b>	<b>Outcomes</b>	<b>Impact</b>
Enumeration and documentation of CIA	Comprehensive CIA information and statistics	Complete CIA data sets	High quality data set describing CIA population
	Data sharing	Improved tracking of CIA and beneficiaries of social support programs	Improved targeting of CIA programming
Case management of CIA	Case plan formation and scheduling	Streamlined work schedules	Increase in number of CIA reached
	On-site decision support	Simpler work flows	Efficient problem solving
Capacity building	On-demand training modules	Improved skills and proficiency	Better quality care provided to CIA
	Social work protocols	Improved confidence/morale	Increased investment in/willingness to providing care/services to CIA

### **2.3 Assessing the Suitability of an mHealth Intervention**

We used the following BRIDGES ‘Real Access/ Real Impact’ criteria which outlines 12 key avenues to consider when reviewing environmental and contextual factors contributing to suitability of an mHealth intervention [73].

1. Physical access to technology

Physical access to mobile phone technology for social work staff involved in this study was more than satisfactory. From literature we learned that mobile phone use is growing in Cambodia as is the number of people using smart phones. 2G, 3G and 4G coverage in the region is growing as network providers invest in infrastructure development and strategies to improve mobile phone connectivity. Further, all social work staff in the study had mobile phones (at least basic and feature phones), and did not share them with any other individual.

## 2. Appropriateness of technology:

Mobile phone technology on the whole appeared to be appropriate technology. Although smart phones were few and several social workers expressed that they did not know how to use them, their ability to use at least the call function on their phones and their overall enthusiasm for mobile phone technology suggests that introducing mHealth tools that leverage mobile voice service would be a feasible venture.

## 3. Affordability of technology and technology use:

Overall technology use was limited and social workers possessed basic mobile phone skills that could be improved with short training sessions. Some of the social work staff noted that they did not know how to use more sophisticated handsets like smart phones. Further, most of the social workers only used their mobile phones for making calls and did not exploit other functions such as sms, alarms, contacts or reminders. CCWC social

workers did not report any computer use but they were aware of it. Although social workers did not discuss affordability of computers however; we learnt that they found smart phones unaffordable.

4. Human capacity and training:

Social worker capacity for mobile phone use was low and training needs were significant. Future considerations for mHealth development will have to take into account diverse ranges of social workers' technological capacity.

5. Locally relevant content, applications, and services:

Documents collected during direct observation such as MOSVY forms and a story board used by PDOSVY for training provides some ideas for content to include in future mHealth systems. Further research is required to identify the other content that may be relevant to CIA case management (e.g., systematic needs assessment protocols or guidelines).

6. Integration into daily routines:

Study participants used mobile phones regularly in their personal lives. In our observations of their work day, we noted how social workers were also using mobile phones to complete their work. Through mapping of social worker workflow, we identified additional areas that could benefit from the use of mobile phones including data collection and sharing of case files with supervisors and across multiple

organizations, the process of identifying organizations for referrals and completing required paper work, accessing supportive supervision during complex cases, among others.

7. Socio-cultural factors:

Our study did not identify specific social cultural factors that may promote or hinder mobile phone use. However, we noted that all women in the study had phones.

8. Trust in technology:

While we can only gauge the popularity of mobile phones as evidenced by high ownership rates and rapidly growing mobile phone sales, the available study results cannot determine the social workers' trust in technology. Although social work staff spoke positively about mobile phones citing examples of their advantages, we can only speculate that trust in mobile phone technology is high. In the future it will be necessary to examine the level of confidence accorded to mobile phone technology, and all technology at large, by social workers and CIA.

9. Local economic environment:

Economic constraints on the child welfare system were reiterated several times during the study. We expect that these funding challenges will shape design considerations and to some degree, affect the development of an mHealth system.

10. Macro-economic environment & legal and regulatory framework:

Our study did not look at legal or regulatory frameworks or macro-economic characteristics of our study setting in light of what may inform the assessment of suitability of an mHealth application for case management of CIA.

#### 11. Political will and public support:

Study results do not include indicators of political will and public support. Although the PDOSVY official had a positive response to the idea of incorporating mobile phone in the daily work of social worker, we cannot generalize his sentiments to other groups. At this point, given the ubiquity of mobile phones and the increasing need to address CIA concerns in the country, political support may not present a barrier to the development and implementation of an mHealth solution for case management. However, concerns regarding data security, confidentiality and protection of CIA are important considerations that must be addressed before an mHealth system can be implemented.

#### **2.3.1 Summary**

Applying the Bridges evaluation reveals that mobile phones and/or mHealth solutions would be suitable for the study setting. The study data indicate the mobile phones are ubiquitous in Cambodia and common among social work staff. In fact all the social work staff reported using their phones to assist them in their work at one point or another. Technology skills are on average low and unspecialized but the willingness of social work staff to be trained addresses this issue. More data is needed to complete the



full suitability analysis but based on available data, we can conclude that there is 'real access' to mobile phones and other enabling factors that will inform subsequent steps in the development of an mHealth application.

## **2.4 Cost Considerations**

To our knowledge, there is no literature specific to mHealth development in Cambodia with cost analysis estimates. Subsequent steps in the development of this project will require a quantitative analysis of social workers' workload and estimates on potential savings to be accrued if an mHealth intervention is deployed. This will require data on average case load per social worker and how much time it takes to complete the case load. These data will be useful in future negotiations with government and NGOs, to gain their support.

## **2.5 Expected Challenges & Solutions**

Anticipated challenges include establishing collaborative relationships with government entities and coordinating government and NGOs involvement in the implementation. Establishing a suitable accountability system especially once the application has been launched will require diplomacy and the assurance of pre-existing commitments to finance this project.

Secondly, although Cambodia has a high mobile subscription rate, the network coverage within the country is not always reliable, especially in rural areas.

Furthermore, electricity is not supplied everywhere so charging of phones may be a huge barrier. Low mobile phone literacy among social workers is a problem. However, this can be overcome through implementing short training sessions.

To address some of these issues, the following could be done:

1. Engage stakeholders at all levels in the planning and design phases to incorporate government input on the application and processes of developing it;
2. Embed mobile phone use training workshops into implementation plan to address the challenge of low mobile phone literacy. We may also include training modules in video format on social workers' cell phones;
3. Provide incentives such as free monthly mobile phone top up cards for personal use or promotions for outstanding social workers;
4. Maintain open lines of communication and facilitate weekly meetings with DCC and monthly meetings with DOSVY supervisors.

## **2.6 Study Strengths and Limitations**

To our knowledge, this is the first study mapping the workflow of social workers in Cambodia. The inclusion of both NGO and CCWC social workers was also unique as there are currently no studies including both social worker populations at the same time. Plenty of rich data was collected that will be useful for defining new research questions to better characterize case management of CIA or examine social worker efficacy more

closely. The inclusion of mobile phones as an area of interest for the study successfully sparked conversations among social work staff about the possibility of incorporating them into case management practices in the future. This new interest may be leveraged to identify individuals who would be willing to test prototypes of future mHealth tools designed for use by social work staff.

At the time of the study, we were unable to recruit from MOSVY social workers who are more similar to CCWC in that they are government workers prone to the same organizational constraints. They are also directly supervised by PDOSVY officials. However, this did not affect the study's aim to map workflows or understand roles, responsibilities and procedures.

To stay within the bounds of the study's first specific aim, we only mapped workflows associated with CIA case management, excluding other responsibilities to the general population that we observed in CCWC social workers. As such, the study may not have presented the full scope of challenges experienced by CCWC. Furthermore, we did not measure the time and/or effort required by different tasks conducted by the social workers. Future studies could incorporate a quantitative assessment of social workers' workload to provide more concrete evaluation of their workload.

Results of the study have limited generalizability due to our small sample size and choice to sample purposively. Furthermore, time and budget constraints limited our

sampling to commune and provincial level social workforce. Subsequent phases of the project could address this by conducting in-depth interviews and shadowing social care staff at the national level to corroborate information gathered at the local level and add to what we already know about the suitability of mHealth tools for the Cambodian context. Selection of NGOs based on the study's partner organization on the ground was ad-hoc and likely biased to subjective perceptions of past experiences with the study's local partner. This adds to the non-generalizability of the study results as the final group of NGOs is not representative of the CIA institutions in the area.

Most examples of CIA case management provided by the social workers were based on experiences with children in community care rather than street children, or a balance of residential, community and street CIA examples. As such, the results do not present a comprehensive view of interactions between street children and social workers. We noted that overall the limited focus on street children was due to resource constraints, negative characterization of street children by the society and a lack of prioritization for this group by social care leaders in the local government. A follow-up study targeting staff at drop-in centers for street children and other agencies that work exclusively with street children may be a suitable next step to better understand how social work conduct case management activities for street children.

We learned that NGOs function independently of each other and there is limited sharing of information and practices. In retrospect, conducting in depth interviews with this group would have yielded more information and provided opportunities for rapport building for future collaboration.

During the study, understanding the Khmer context was made difficult by language barriers. Additionally, losses in translation during data transcription from audio to text format may also compromise study findings. Lastly, the role of bias cannot be ignored in the interpretation of the study results. It is possible that participants' contributions were affected by response bias, especially social desirability and recall bias. We also acknowledge that cultural difference may have affected interpretation of actions and other non-verbal forms of communication and/or body language during data collection. Interpretation of the information by the research team could also have been limited by personal bias, social and cultural barriers.

## **2.7 Conclusion**

The study results reveal that in Battambang Province, case management of CIA faces many challenges that result in poor delivery of care to CIA. Our findings also underscore the role of social workers at grass root level and the importance of timely and accurate data for effective case management. Despite sampling participants from one province, our data could be used as an indicator of what may be happening in social

care and child welfare in other provinces. Lessons drawn from our study site could be applicable to other provinces with similar characteristics. Moving forward, the analysis of our data per the BRIDGE criteria indicates that it would be suitable to introduce mHealth technology for CIA in this context. Specifically, mHealth tools can be used to improve enumeration and tracking of CIA, provide training for low-skilled social workers and deliver reliable on-site supportive supervision. While mHealth technology might be a promising solution, it will probably need to be implemented in parallel with other initiatives to strengthen the social welfare system and workforce. In light of this, the need for stronger government leadership and improved efforts to harmonize CIA care initiated by governmental and non-governmental bodies would be critical for improving outcomes for this vulnerable population.

## Appendices

Appendix A	Heat maps showing strength of 3G and 4G coverage on Metfone's network
Appendix B	List of MOSVY forms collected
Appendix C	Details of proposed mHealth solution

## Appendix A

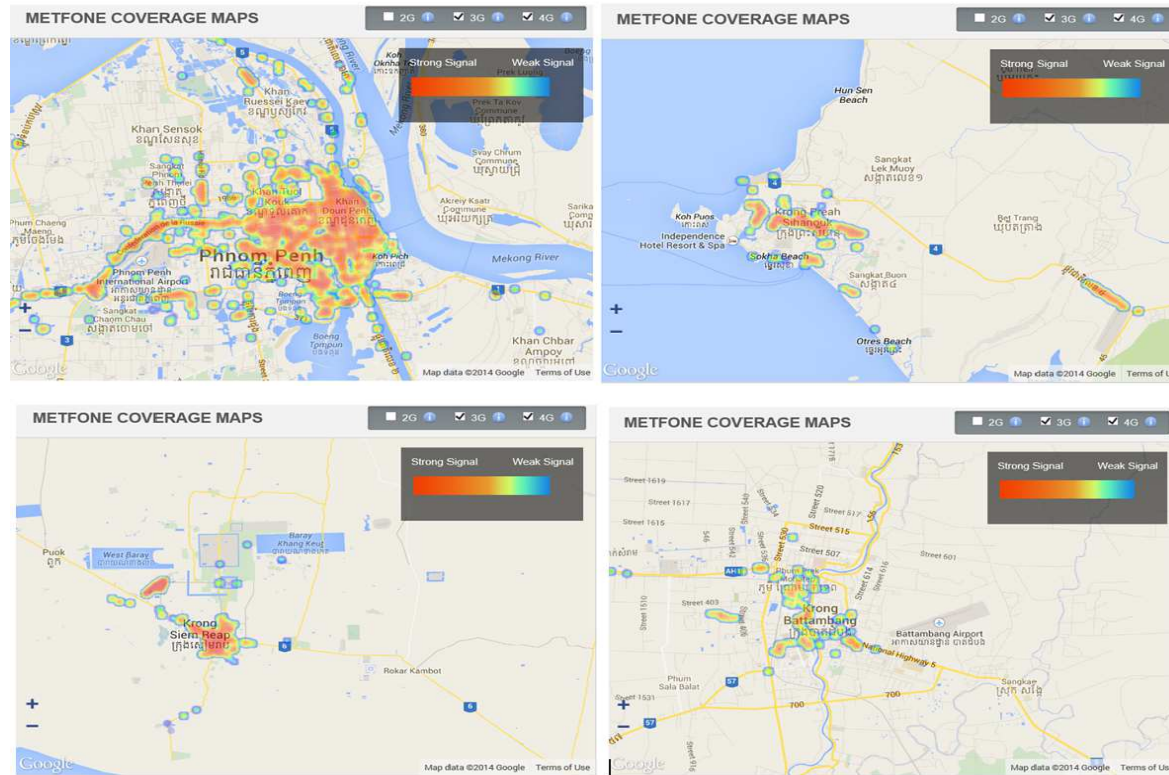


Figure 14: Heat maps showing strength of 3G and 4G coverage on Metfone's network



## Appendix B

Table 8: List of MOSVY forms and number of fields

Form #	Form Title	Number of Fields
1	Information on Children in Residential Care (MOSAVY)	67
2	CIA Center Summary Report	22
3	CIA Center Individual Report	33
4	First Response Form	34
5	Family Assessment for Keeping Child in Family	25
6	Family Services Plan	21
7	Child in Alternative Care Approval	26
8	Follow up of child situation	20
9	Alternative care acceptance form	20
10	Report on abandoned child	36
11	Report on finding child's biological parent/official caregiver	34
12	Family Assessment for Keeping Child in Family	24
13	Report on finding but not meeting child's biological parent/official caregiver	21
14	Decision to transition child to permanent care plan	19
15	Certification of full disclosure/discussion with parents/caregiver	14
16	Certification of parent/caregiver approval of child adoption request	20
17	Certification of discussion with child on child adoption request	12
18	Certification of child approval of adoption request	13
19	Record of attempt to provide alternative care within the country	17
20	Approval of child request withdrawal by biological parents	16
21	Notes on withdrawal of child request approval by child personally	13
22	Child supreme benefit form	48
23	Certification of return of child to parents/caregiver	21
24	In-country adoption request	35
25	Decision to reject child adoption request	5
26	Decision to accept child adoption request	3
27	Assessment record of parents submitting adoption request	51
28	Record of transition from temporary to permanent care with relatives	21
29	Certification of guardianship transfer	24
30	Child follow up form	29
31	Child request for withdrawal of adoption request	10
32	Withdrawal of child adoption request by parents	13
33	Acceptance of adoption by adoptive parents	14
34	Rejection of adoption request to applicant/foster parents	4

## **Appendix C: Details of proposed mHealth solution**

### **I. Target Users**

#### **Primary users**

CCWC social workers were identified as the primary front end users. This group was selected because of their central role in service delivery to CIA and other vulnerable populations at the commune level in Cambodia.

#### **Secondary users**

This would include supervisors, and other social welfare officers who need to create and/or submit reports or analyze data. In the study's context, these individuals may include commune chiefs, social welfare officials in the governor's office, PDOSVY officials, MOSVY and MOI officials (at the national level) and data specialists responsible for data management and analysis. As such access control mechanisms may be implemented for each type of user based on job function, seniority and reporting needs.

### **II. System Requirements**

#### **Hardware considerations**

The proposed mHealth system may leverage Smart phones with Android platforms with camera capabilities for photographs and video, voice, sms and MMS will

be required. Biometric devices that may be connected to the phone through USB, wireless or Bluetooth may be incorporated.

### **Software considerations**

Open-source data collection platforms such as CommCare<sup>1</sup> may be leveraged for facilitating data collection and management. A relational database may be used on the backend to store data and execute decision support algorithms. Incorporation of identity management software may be explored depending on sensors selected.

### **Other**

The mHealth system should be available in both Khmer and English. Options provided at log on may prompt the user to select language preference and log in credentials.

## **III. Content**

### **1. Data collection:**

Content for form construction will be adapted from the Alternative Care Database form and MOSVY case management forms, the Child Status Index which outlines key indicators for measuring child health and wellbeing. For example questions assessing nutrition patterns and deficits, history of illness and visits to a health center, specific

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<sup>1</sup> Commcare is a free, open source software used to develop mHealth tools. It is commonly used to build data collection forms and establish data registries which are stored in a cloud

information about where and how the child receives shelter and protection, level of emotional and psychosocial health as measured by social behavior, levels of happiness and view of the future, education and skills acquired. Birth certificate number, details of immunizations received to date, records of hospital visits completed for up to a year from the date of current data entry.

Data fields recording demographic and identifying information such as gender, age, education level and occupation will be included as required fields in the forms to create CIA profiles. Once an individual profile is complete, each time a child's record is accessed; a system algorithm will be incorporated to auto populate data fields in other forms that require this information. Identifying information and demographics of caregivers will also be a required field. For new records, CCWC will be required to assign a new child code number from a database of randomly generated available unique IDs. For record linking all forms will maintain the child code number present in MOSVY forms and incorporate biometric finger print and CIA photograph to make sure the records are linked to a unique individual. A special linking algorithm will be written for this. It will incorporate a search feature so that social workers can look up a child's name or search through a database of fingerprints to identify the right records.

Skip logic will be incorporated for fields that are not required and the geocoordinates field will be set to pop up right after the log in screen has been

completed and before a record look up/search screen so that CCWC do not forget to record this information. The application will be fitted with checks and balances to facilitate accurate data entry and prevent duplication of records. For instance, dates will be entered in the day-month-year format and incomplete records will be highlighted in a different color and designed to pop up on the home screen each time social workers access the application.

CCWC will see most of the data as forms, profiles, timelines, flowcharts and lists. Supervisors will see CIA data summaries and social worker activity summaries by province, district or commune in the form of lists, charts and figures. Maps will be incorporated to present GPS locations of where children are encountered.

## **2. CCWC training materials:**

Capacity building materials will be adapted from existing UNICEF social worker training modules, legislative procedure guides sourced from MOSVY and case management course documents from the School of Social Work in Phnom Penh. These will be available in video, audio and slide show formats.

## **3. Decision support:**

Algorithms to facilitate decision support for social workers may be incorporated.

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