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Maternal and Child Survival Program

Cost Analysis for Clean Clinic Approach Activities in Guatemala and Implications for Scale-Up

Summary Report

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The Maternal and Child Survival Program (MCSP) is a global, $560 million, 5-year cooperative agreement funded by the United States Agency for International Development (USAID) to introduce and support scale-up of high-impact health interventions among USAID's 25 maternal and child health priority countries, as well as other countries. MCSP is focused on ensuring that all women, newborns and children most in need have equitable access to quality health care services to save lives. MCSP supports programming in maternal, newborn and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment.

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Acknowledgments

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List of Abbreviations

CCA	Clean Clinic Approach
HAI	health care-associated infections
HCF	health care facilities
IPC	infection prevention and control
LOE	level of effort
MEAL	monitoring, evaluation, accountability, and learning
MCSP	Maternal and Child Survival Program
MoH	ministry of health
MPSAS	Ministry of Public Health and Social Assistance
USAID	US Agency for International Development
WHO	World Health Organization

Executive Summary

Introduction

Water, sanitation, and hygiene (WASH) services are a cornerstone to providing safe health care services, improving patient satisfaction and care seeking, and responding to health emergencies. A 2016 global analysis reported that 26% of health care facilities (HCFs) lacked basic water services, 21% lacked basic sanitation, and 16% had no hygiene services. For Latin America, the World Health Organization and UNICEF estimate that 5% of HCFs have no water services.

The costs due to health care-associated infections (HAIs) and the subsequent savings from implementing WASH to prevent infections in HCFs are not well documented in Guatemala or in lower- and middle-income countries in general.

The Clean Clinic Approach (CCA), a 10-step quality improvement process developed by the US Agency for International Development's Maternal and Child Survival Program (MCSP) and Save the Children, supports HCFs to make incremental and effective improvements to cleanliness and infection prevention to improve quality of care and reduce maternal and newborn infections, without relying on large external investments.

From February 2018 to March 2019, the Ministry of Public Health and Social Assistance (MPSAS) of Guatemala, supported by MCSP, implemented the CCA in 11 HCFs (four tertiary and seven secondary) offering labor and delivery services in the Western Highlands of Guatemala.

Objectives

MCSP conducted a cost analysis of the CCA in Guatemala to document expenditures necessary to implement the CCA; inform future incremental improvement efforts, both within and outside of Guatemala; and explore and contribute to the literature base on the implementation cost of WASH for infection prevention and control (IPC) interventions.

Methodology

The cost analysis employed a bottom-up activity-based costing method for the major activities associated with the CCA intervention. It also retrospectively examined staff level of effort and actual input costs and quantities to analyze the intervention's direct costs by cost categories and activities.

Results

The total costs were compiled by activity, category, and fixed/variable costs over the 18-month intervention period. The total direct implementation cost per the analysis was $260,664 ($23,697 per HCF).

The highest cost activity was 2.b: Alongside MPSAS, conduct routine coaching and monitoring visits to participating HCFs, at 27.15% ($6,434 per HCF) of total expenditures. For costs by cost category, salary costs (personnel, fringe benefits, and contractual work) accounted for 77.46% ($18,355 per HCF) of total expenditures. The equipment and the materials and supplies cost categories were the lowest, at a combined 8.61% ($1,668 per HCF).

The HCFs were assessed on a 100-point scale, with criteria weighted according to their impact on IPC. On average, HCFs saw their assessment scores rise from 46% to 89%, a difference of 43 points or $5,924 per average assessment score point increase. Cumulatively, the 11 HCFs raised their scores to a total of 480 points or $543 per each assessment point increase.

Findings and Recommendations

Personnel comprise the largest implementation cost and have the greatest cost implications for scale-up of future WASH for IPC activities. Key program staff recommend a minimum of one WASH technician with clinical experience per 10 HCFs and per geographic region. Technicians would be able to add additional HCFs after 1 year.

Introduction

Water, sanitation, and hygiene (WASH) services are a cornerstone to providing safe health care services, improving patient satisfaction and care seeking, and responding to health emergencies. On World Water Day 2018, the UN secretary-general raised a call to action for universal WASH coverage in health care facilities (HCFs) citing increased infections, longer hospital stays, and loss of life.[1] Furthermore, improving WASH in HCFs contributes to achieving Sustainable Development Goals 6.1 and 6.2 as part of universal WASH coverage. As of 2016, globally, 26% of HCFs lacked basic water services, 21% lacked basic sanitation and 16% had no hygiene services (16%).[2]

The World Health Organization (WHO)/UNICEF Joint Monitoring Programme (JMP) for WASH estimated that in 2016, 5% of HCFs in Latin America had no water services[2]. However, little data exist on access to basic WASH services at various points of care within Guatemala's HCFs and there is no publicly available national data on WASH in HCFs.

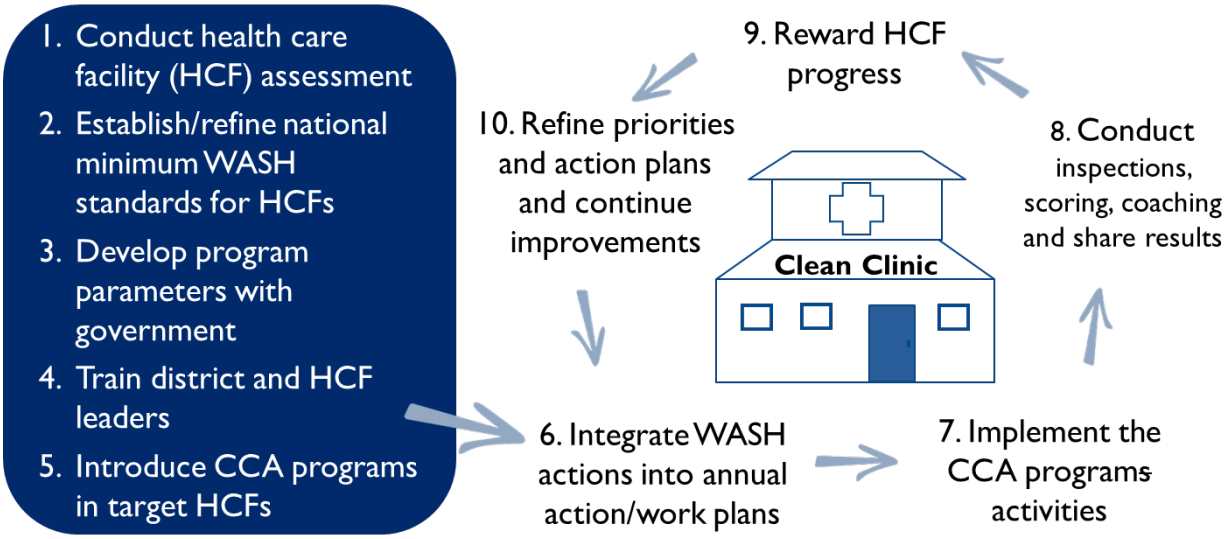
The costs due to health care-associated infections (HAIs) and the subsequent savings from WASH to prevent infections in HCFs are not yet well-documented and little data are available. One case-control study from 2000, conducted in a public Guatemala City hospital, found that the additional average cost associated with treatment for a patient with neonatal nosocomial pneumonia was $804, resulting in an estimated $93,264 in additional costs (116 cases) to the hospital that year.[3] Similarly, the average excess cost for a pediatric nosocomial pneumonia case was $1,139 or $85,425 per year (75 cases).

The Maternal and Child Survival Program (MCSP) is the US Agency for International Development's (USAID) Bureau for Global Health's flagship program with the goal of preventing maternal and child deaths.[4] MCSP supports reproductive, maternal, newborn and child health interventions in 32 countries, in partnership with ministries of health (MoHs) and other government and local partners.

One such intervention, developed and implemented by MCSP and Save the Children in Haiti, Nigeria, Democratic Republic of Congo, and Guatemala, is the Clean Clinic Approach (CCA), which aims to improve WASH in HCFs. Through a 10-step quality improvement process (Figure 1), the CCA supports HCFs to make incremental and effective improvements to cleanliness and infection prevention and control (IPC), without relying on external investments, with the goal of contributing to improvements in quality of care and reductions in maternal and newborn infections.[5]

[1] United Nations Secretary-General's remarks at Launch of International Decade for Action "Water for Sustainable Development" 2018-2028 [as delivered], March 22, 2018. United Nations Secretary-General website. https://www.un.org/sg/en/content/sg/statement/2018-03-22/secretary-generals-remarks-launch-international-decade-action-water. Accessed October 31, 2019.
[2] World Health Organization (WHO)/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP). JMP website. https://washdata.org/data/healthcare. Accessed October 31, 2019.
[3] PAHO. 2003. Costo de la infección nosocomial en nueve países de América Latina. http://socienee.com/wp-content/uploads/n_internacionales/ni2.pdf. Accessed October 31, 2019.
[4] Maternal and Child Survival Program (MCSP) website. https://www.mcsprogram.org/
[5] MCSP. 2016. Clean Clinic Approach. MCSP and Save the Children. Brief. MCSP website. https://www.mcsprogram.org/resource/clean-clinic-approach-brief/. Accessed October 31, 2019.

Figure 1: 10-step process of MCSP's Clean Clinic Approach



Abbreviations: CCA, Clean Clinic Approach; HCF, health care facility; WASH, water, sanitation, and hygiene

Table 1: MCSP Guatemala Clean Clinic work plan activities adapted from the 10 Clean Clinic Approach steps

CCA Steps	No.	Activities	Jan Mar 2018	Apr Jun 2018	Jul Sep 2018	Oct Dec 2018	Jan Mar 2019
1	1.a	Assess HCFs.					
2, 3	1.b	Share results/convene workshop to review national standards and develop program and monitoring and evaluation parameters.					
4	1.c	Conduct orientation workshops with participating departments and municipal governments.					
5, 6	2.a	Orient HCF staff to the CCA approach and national standards, and develop CCA action plans.					
7	2.b	Alongside the MPSAS, conduct routine coaching and monitoring visits to participating HCFs.					
8, 9, 10	2.c	Alongside the MPSAS, conduct certification visits in participating HCFs.					
-	3	MCSP provide the refined toolkit to MPSAS and USAID for use in scale-up efforts.					
-	MEAL	Monitoring, evaluation, accountability, and learning					
-	Ops	Miscellaneous operational costs billed to clean clinic					

Abbreviations: CCA, Clean Clinic Approach; HCF, health care facility; MEAL, monitoring, evaluation, accountability, and learning; Ops, operations; MPSAS, Ministry of Public Health and Social Assistance

MCSP Guatemala implemented activities from March 2016 to September 2019. The CCA was not included in the original work plan but was added in 2018. From February 2018 to March 2019, the Ministry of Public Health and Social Assistance of Guatemala (MPSAS), supported by MCSP, implemented the CCA in 11 HCFs (four tertiary and seven secondary) offering labor and delivery services in the Western Highlands of Guatemala (Table 2).

Through the CCA, MCSP and the MPSAS established national standards for WASH in HCFs, implemented assessments and trainings, incorporated results into work plans, and evaluated and recognized progress (Table 1). On average, participating HCFs improved their total assessment scores from 46% to 89%. Due to the success of the initial CCA intervention, the Government of Guatemala plans to move forward with implementing the approach in all of the public, non-specialty hospitals of Guatemala.

Objectives

MCSP conducted a cost analysis of the CCA in Guatemala to document expenditures necessary to implement the CCA and to inform future, incremental improvement efforts, both within and outside of Guatemala.

Table 2: Description of MCSP Guatemala Clean Clinic activity locations

Level of Care	Type of Facility	#	Description
Secondary	Centers for Integral Attention of Maternal and Child Health	2	Provide normal and uncomplicated births Open 24 hours per day Capacity for minor surgeries, including cesarean sections and postabortion care
	Centers for Permanent Attention	5	Provide normal and uncomplicated births Open 24 hours per day
Tertiary	District hospital	3	Open 24 hours per day Capacity for major surgeries
	Regional hospital	1	Open 24 hours per day Capacity for major surgeries and specialties

Methodology

The cost analysis employed a bottom-up activity-based costing method for the major activities associated with the CCA intervention, like methods described in a February 2019 Emory University webinar on costing WASH in HCF interventions.[6] The analysis retrospectively examined staff LOE, actual input costs and quantities, and standardized costs to analyze the CCA's direct implementation costs by cost categories and activities. This costing analysis is from the perspective of the implementing organization, whether it be an MoH or a nongovernmental organization, and does not consider opportunity costs.

Data Sources

Key technical and programmatic staff were consulted to define the scope of project activities and expenditures and to identify data sources and gaps. Additionally, staff provided initial budget and purchasing estimates. Accounting and administrative staff were also interviewed to determine the availability of existing cost data and identify cost category structures and coding methods.

The MCSP accounting team provided all cost inputs associated with the overall program from October 2017 to May 2019. In order to identify which costs were associated with CCA activities, the author searched for line items containing keywords, including names of key programmatic staff and relevant technical terms, such as *agua* (water)*, saneamiento* (sanitation)*, hygiene* (hygiene)*,* and *clinica limpia* (clean clinic).

For personnel costs, key programmatic staff (Table 3) identified their LOE for the duration of the CCA intervention, by month and percentage, and the accounting team provided salary unit cost information. Fringe benefits were calculated using standard percentages of salary costs. International travel costs were calculated using standard costs, and actual costs for flights and accommodations.

The collected data were entered into a cost-capture tool that allowed for categorizing each cost by activity, quarter implemented, standard organizational cost categories (i.e., personnel, travel, equipment), subcategories (i.e., lodging, transport, consumables), fixed and variable costs, and location by region (Table 4).

This process included an initial set of broad categories and subcategories that were reiterated to consolidate categories, eliminate unused categories, and to ensure consistency in categorization. See Annex 1 for the consolidated cost-capture tool and inputs.

[6] Emory University Center for Global Safe Water, Sanitation and Hygiene. 2019. Understanding the Cost of WASH in Health Care Facilities: Where Do We Start? Emory University website. http://washconhcf.org/webinars/webinar-6-feb-21-2019/ [February 21, 2019]. Accessed October 31, 2019.

Table 3: Guatemala Clean Clinic Approach water, sanitation, and hygiene personnel roles and responsibilities

Position	Roles and responsibilities
WASH TA - Sr. Specialist	Provided technical assistance, reporting, learning, and coordination with MCSP Core WASH team
WASH TA - Advisor	
WASH Manager	Experienced clinician charged with program design, management of WASH staff, and main point of contact with MPSAS
WASH Technician - Quetzaltenango	Experienced clinicians responsible for conducting monitoring visits and data collection, conducting coaching and mentoring, and point of contact for HCF staff and local and regional government
WASH Technician - Quiche	
MEAL Manager	Charged with data analysis and knowledge sharing
Health Manager	Coordinated project startup and provided support during the initial activities
Consultant	Conducted initial assessment and provided support during project startup

Abbreviations: CCA, Clean Clinic Approach; HCF, health care facility; MEAL, monitoring, evaluation, accountability, and learning; MPSAS, Ministry of Public Health and Social Assistance; TA, technical advisor; WASH, water, sanitation, and hygiene

Table 4: Line item cost-capture categories

Category	Description	Options
Activity	Numbered activities per the work plan, plus monitoring, evaluation, and learning, and management and operations	1.2.5.1.a, 1.2.5.1.b, 1.2.5.1.c, 1.2.5.2.a, 1.2.5.2.b, 1.2.5.2.c, 1.2.5.3, MEAL, Ops
Cost category	Standard cost categories used by MCSP	Contractual work, international salaries, national salaries, fringe benefits, travel, equipment, materials and supplies, other direct costs
Cost subcategory	Subcategories developed using an iterative process of consolidating line items	Actuals, commodities, consultant, consumables, information technology, infrastructure, lodging, meals, overhead, per-diem, printing, refreshment, stationery and office supplies, other, tools, transportation, venue
Fixed/ Variable	Variable costs vary depending on the number of health care facilities and departments where implemented. Fixed costs are incurred regardless of the number of departments or health care facilities.	Department – variable Health care facilities – variable, fixed
Location	Project implementation locations	Guatemala City, Huehuetenango, Quetzaltenango, Quiche, San Marcos, Totonicapán

Abbreviations: MEAL, monitoring, evaluation, accountability, and learning; Ops, operations

Each cost line item was captured in the tool by unit, quantity of units, and the quarter in which each unit occurred. All costs were calculated in US dollars using an exchange rate of GTQ 0.13 per USD 1, the standard rate throughout the project.

The data were input into two separate data analysis tools. One tool separated costs by cost category and subcategory. The second tool analyzed costs based on the activity, as per the activity schedule (Table 1), then further analyzed costs by cost category.

Assumptions and Limitations

Key assumptions and limitations to this analysis are as follows:

- **Shared programming costs are not fully represented.** The CCA was conducted in HCFs that also received assistance from other MCSP activities. Multiple direct program costs were considered shared, such as learning events, public presentations, and most notably, transportation. Therefore, costs associated with shared activities, apart from LOE and travel, are not included in this analysis. Although transportation costs are included in the analysis, they are to be considered an underestimate. Transportation costs were shared across all activities under MCSP, and transport was often shared for coinciding events and site visits.
- **Fixed and variable cost categorization was based on informed estimates.** These were based on the activity the cost was associated with, staff associated with the cost, and cost line item descriptions, and were determined in consultation with programmatic staff.
- **Indirect costs were not included in this analysis.** Indirect costs included shared program costs, such as premises, utilities, operations, and agency headquarters support.
- **Cost categories and activities were categorized by the informed discretion of the author.** The author considered the line item descriptions, person executing the cost, and date of occurrence.

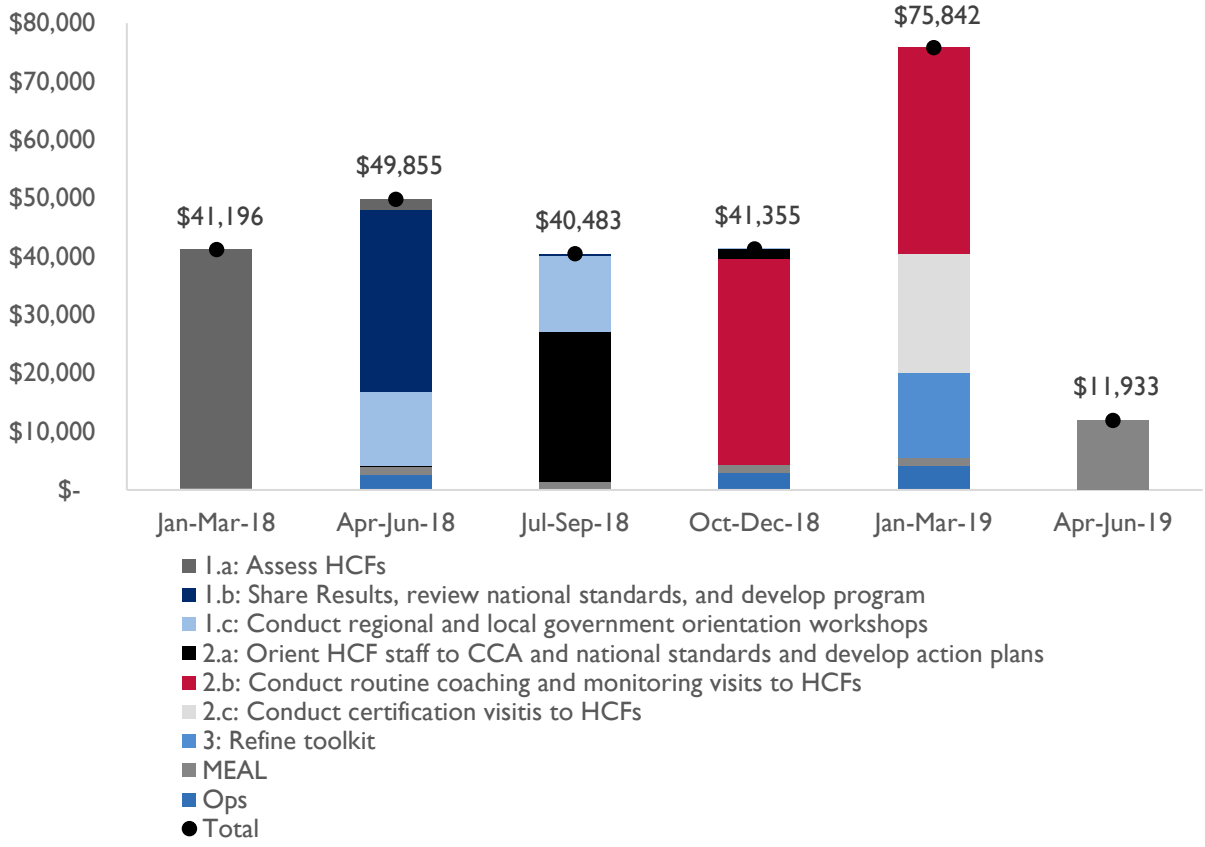
Results

The total CCA intervention costs were compiled by activity, category, and fixed/variable costs, over an 18–month period. These include personnel whose LOE was divided among the CCA intervention and other programs. Per the analysis, the total direct implementation cost for 11 HCFs was $260,664, or $23,697 per HCF. The intervention costs were collected from the period of January 2018 to June 2019, including startup and closeout, while the intervention itself was implemented from February 2018 to March 2019.

Costs by Activity

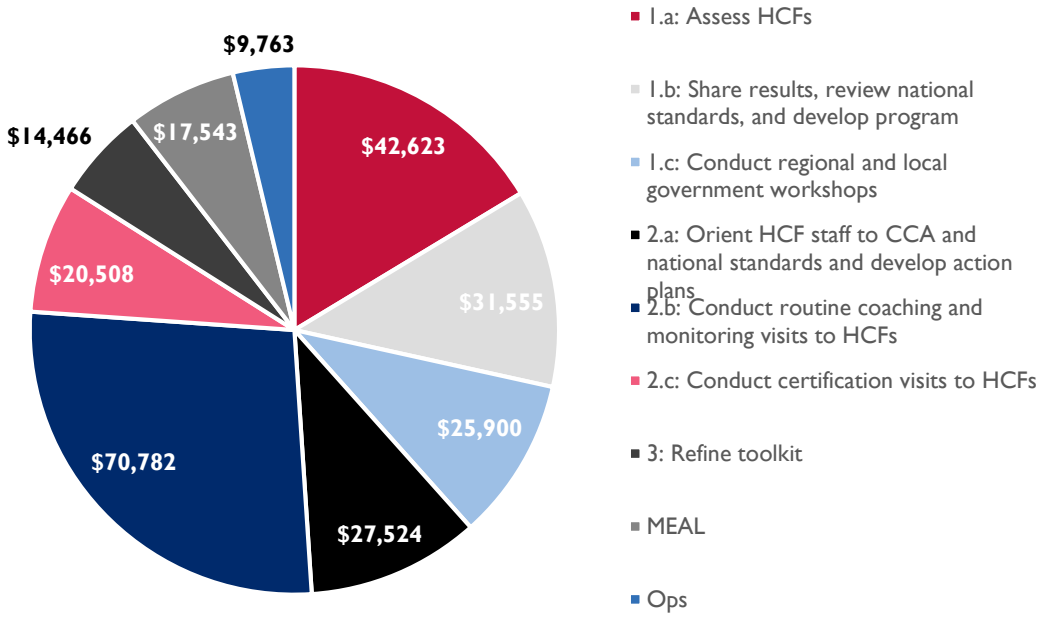
The CCA intervention costs were first analyzed by activity and the quarter in which they occurred (Figure 2). The highest cost activity was 2.b: Routine coaching and monitoring visits, at 27.15% ($6,435 per HCF). The lowest cost activities were Ops: Misc. Operational Costs, at 3.75% (USD 888 per HCF), followed by 3: Refine toolkit, at 5.55% ($1,315 per HCF) (Figure 3). Annex 2 provides detailed line item costs for each activity.

Figure 2: Cost of Clean Clinic Approach implementation by activity over time



Abbreviations: CCA, Clean Clinic Approach; HCF, health care facility; MEAL, monitoring, evaluation, accountability, and learning; Ops, operations; WASH, water, sanitation and hygiene

Figure 3: Total cost of Clean Clinic Approach implementation by activity



Abbreviations: CCA, Clean Clinic Approach; HCF, health care facility; MEAL, monitoring, evaluation, accountability, and learning; Ops, operations

Costs by Category

After the cost by activity analysis, direct costs were analyzed according to their category over time, by the quarter in which they occurred (Figure 4). Salary costs (the sum of the personnel, fringe benefits, and contractual work cost categories) accounted for 77.46% ($18,355 per HCF) of total expenditures (Figure 5). CCA programmatic staff consisted of two international staff, one contractor, two WASH managers, two WASH technicians, and one MEAL advisor, whose LOE varied throughout the life of the project. After salary costs, travel was the next largest cost category, at 7.05% ($1,670 per HCF).

Figure 4: Cost of Clean Clinic Approach implementation by cost category over time

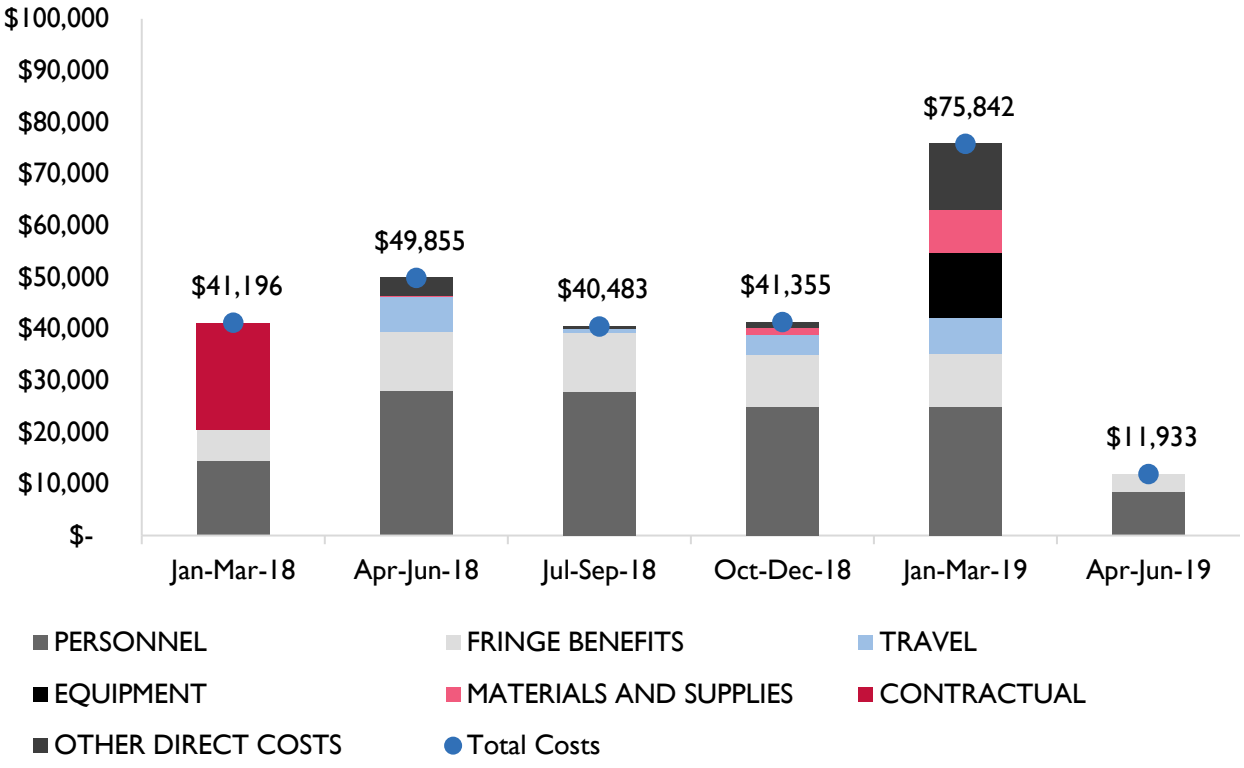
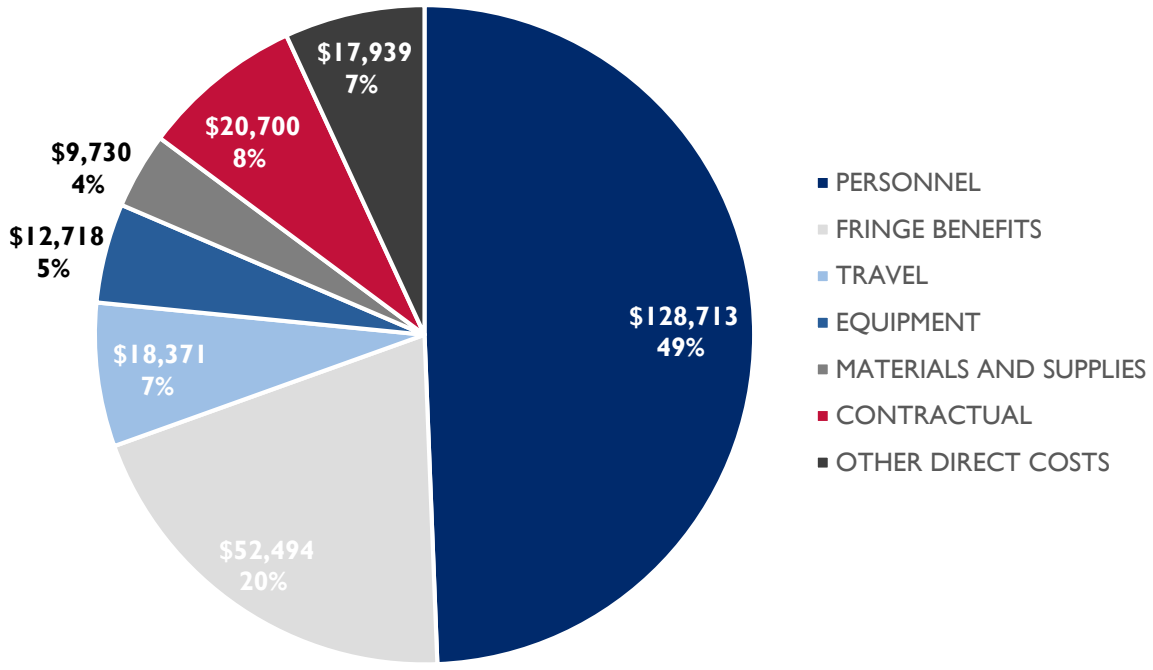


Figure 5: Total cost of Clean Clinic Approach implementation by cost category



The equipment, and the materials and supplies cost categories were the smallest, with a combined 8.61% ($2,040 per HCF) of the total direct costs and included $9,996 of funding that the CCA intervention received from a non-MCSP donor to cover tools and consumables. Of the equipment costs, and the materials and

supplies costs, approximately one-third were considered consumables (trash bags and dust masks), half were tools (safety glasses, trash containers, chlorine testers, etc.) and 3% went to minor infrastructure repairs and upgrades (miscellaneous parts and storage tanks for water and hygiene). Annex 3 provides detailed line item costs for each cost category.

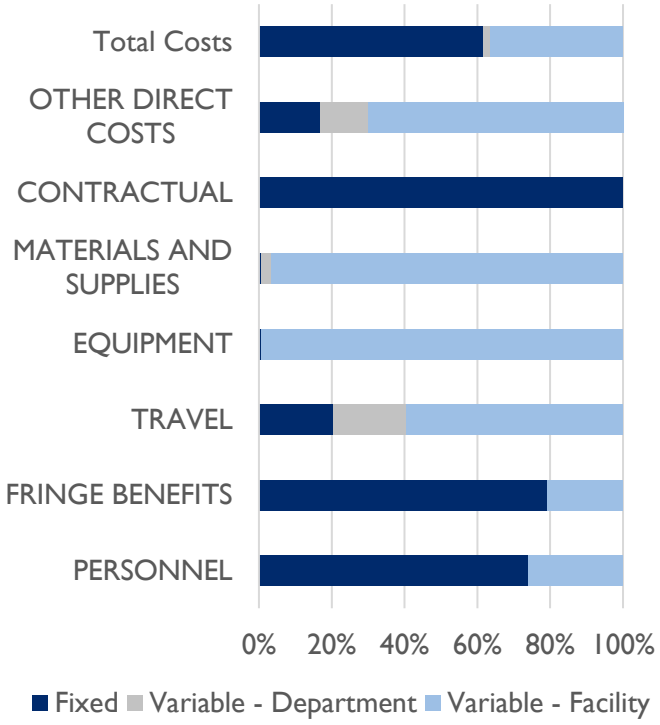
Fixed and Variables Costs

Each cost line item was categorized as fixed, variable by number of departments, or variable by number of HCFs, then compared by cost categories and by activity. Fixed costs accounted for 62.72% ($163,488) of total expenditures; variable costs were 37.28% ($97,175), of which 2% were costs by department/region. This equates to a per facility fixed direct cost of $14,863 and a per facility variable direct cost of $8,834.[7]

The majority of fixed costs were in activities 1.a: Assess HCFs (11.8%) and 1.b: Share results, review national standards, and develop program (13.4%). For variable costs, activity 2.b Conduct routine coaching and monitoring visits made up 21.3% of the costs.

Roughly, three-quarters (74.0%) of personnel costs were considered fixed while all other cost categories were primarily variable costs. Equipment, along with materials and supplies, were almost entirely variable per number of HCFs (Figure 6).

Figure 6: Activity cost variability



Cost by Outcome

The participating CCA HCFs were evaluated using national assessment standards developed by MCSP and the MPSAS as part of the CCA activities. The assessments were based on a 100-point scale applied to three wards (emergency, delivery, and postnatal), with criteria weighted according to their impact on IPC. HCFs scoring above 70 points were considered **Clean Clinics** and were rated as silver (70-80 points), gold (81-90), and diamond (91-100). See Annex 4 for the assessment details.

On average, HCFs saw their assessment scores rise from 46% to 89%, an improvement of 43 points, over a period of 8 months. This translates to a cost of $6,062 per average assessment score point increase. Cumulatively, the HCFs raised their scores by 480 points total at a cost of $543 ($341 fixed, $202 variable) per each assessment point increase. Table 5 outlines the improvements by ward and their associated cost per point improvement.

[7] Total direct cost per facility divided by percentage of variability

Table 3: Average MCSP Guatemala Clean Clinic score improvement and corresponding US dollar amount based on the total cost of implementation

Ward	Overall	Emergency	Delivery Room	Postnatal
Average CCA score points improved	43	46	41	44
Total cost ($)	260,664	86,888	86,888	86,888
Cost per point improvement ($)	6,062	1,889	2,119	1,975

Abbreviation: CCA, Clean Clinic Approach

The JMP has defined five indicators for basic levels of service for HCFs in water, sanitation, hand hygiene, waste management, and environmental cleaning.[8] The CCA HCFs improved their JMP indicator status from **limited** or **no-service** to **basic** a total of 31 times over the five indicators. This translates to a cost of $8,409 per JMP indicator that improved to basic as a result of the CCA activities. Table 6 summarizes the JMP indicators that improved to basic, overall and by ward, for the 11 CCA HCFs, along with associated cost per indicator improved to basic based on total cost.

Table 4: Total number of health care facilities improving their JMP indicator to basic by ward, with associated cost per indicator improvement

Ward	Overall		Emergency		Delivery room		Postnatal	
JMP indicator	#	$	#	USD	#	USD	#	USD
Water	6	50,451	6	16,817	4	14,481	5	14,014
Sanitation	5	42,043	6	16,817	4	14,481	6	16,817
Hygiene	9	75,677	8	22,423	8	28,963	9	25,226
Waste management	5	42,043	5	14,014	5	18,102	6	16,817
Environmental cleaning	6	50,451	6	16,817	3	10,861	5	14,014
Total # of indicators improved to basic for all HCFs	31	260,664	31	86,888	24	86,888	31	86,888

Abbreviations: HCF, health care facility; JMP, Joint Monitoring Programme

[8] WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene. Health care facilities. JMP website. https://washdata.org/monitoring/health-care-facilities. Accessed October 31, 2019.

Findings

The largest cost category for the CCA intervention was personnel, at 49.38% of the total costs, of which 74.0% were fixed costs. Categories associated with salary costs (personnel, fringe benefits, and contractual work) accounted for 77.46% ($18,355 per HCF) of total expenditures.

The activity with the highest cost was 2.b: Conduct routine monitoring visits and coaching, at 27.15% of the total expenditures, and with the longest implementation time of 6 months. As a result, the activity had the largest share of salary costs (23%), the highest variable costs of all of the activities (71.5%), and included 94% of equipment costs.

The next largest cost drivers were the contractual work cost category, at 8% of expenditures, and activity 1.a: Assessment of HCFs, also at 8%. All of the contractual work costs were within activity 1.a, comprising about half of its total cost. The contractual work costs were primarily international technical assistance (personnel) and travel expenses. The contractor that had previously developed and implemented the CCA in Haiti was contracted by MCSP Guatemala to conduct the initial HCF assessments and share its knowledge and experience from implementing the CCA in Haiti.

The tools subcategory made up only 4.18% of the CCA costs, and infrastructure 0.24%. In general, the CCA does not focus on tools and infrastructure, but instead monitoring, coaching, and mentoring. Tools included personal protective equipment and chlorine testers, while minor infrastructure consisted of small repairs to water systems and the addition of water storage capacity, in order to facilitate the coaching process.

Implications for Scale-Up

Personnel, the largest implementation cost (49.38%), has the greatest cost implications for scale-up. While the number of personnel required for activity implementation would vary by number of HCFs, the levels of management, MEAL, and international technical assistance would remain more consistent.

Per consultations with key programming staff, one WASH technician can support a maximum of 10 HCFs at any given time. During the first 3 months of HCF-level implementation, staff should conduct monthly facility monitoring visits and trainings, and ideally, continue with quarterly monitoring visits for an additional 18 months. As such, a WASH technician could support annual cohorts of 10 HCFs in a staggered model. The number of operating regions may also impact personnel, since a minimum of one technician is needed per region, regardless of the number of HCFs.

MCSP was asked to implement the CCA in 11 specific HCFs across four departments. Ideally, the selected HCFs would have been geographically close to one another, requiring less MCSP personnel to implement the intervention; or, alternatively, there would have been a larger number of HCFs in the same geographic areas. Also, additional HCFs may have been reached with the same amount of personnel if selected from the same departments.

The number of managers is not dependent on the number of HCFs or regions, but instead may need to be increased based on the number of technicians they are supervising and the level of external technical assistance provided. It is also recommended that at least one manager be centrally located to facilitate monthly meetings, and frequent communication and visits with key MPSAS staff.

Although an international contractor was hired to conduct the initial assessments (activity 1.a) and start the CCA intervention in Guatemala, a contractor would not be needed to scale up activities country-wide. These activities can be conducted by existing, qualified staff, if available.

All of the WASH staff dedicated to the CCA intervention were trained clinicians experienced in both WASH and health care quality improvement; therefore, they had higher salary requirements than one would expect for a typical community WASH coordinator profile.

Equipment, and materials and supplies were 7% ($2,040 per HCF) of the program costs and were 99% dependent on the number of HCFs. The bulk of the cost was starter kits that included tools, water filters, personal protective equipment, and some consumables, used to facilitate coaching. The starter kits also included chlorine testing supplies, such as a digital colorimeter, at a cost of $778 per HCF; however, chlorine testing can also be done using more inexpensive analog tools.

Other direct costs were 5.7% ($1,630 per HCF) of the total expenditures, and were primarily meals, lodging, and venue costs for regional learning workshops. These costs were mainly dependent on the number of regions (one workshop per region), but also the number of participating HCFs.

Travel costs were 7.05% ($1,670 per HCF) of the total expenditures, of which approximately half was dedicated to international staff travel and the other half in-country travel. International travel included three field visits from international staff. In-country travel consisted mainly of field visits and regional meetings and workshops; the costs depended on distance and time traveled.

In Guatemala, each CCA HCF received three monitoring visits and at least one additional coaching visit. For future programing it is expected that each facility would be visited a minimum of three times for the first quarter, followed by a total of six quarterly visits within the first year of implementation.

Developing national WASH for IPC standards (activity 1.b) is a key component of the CCA. Although Guatemala's standards were developed as a result of MCSP activities, any subsequent scale-up would require that these standards be updated, adapted, and expanded, based on stakeholder feedback, types of HCFs, and types of wards within HCFs.

Recommendations

The following recommendations are for consideration by the Government of Guatemala, implementing organizations, and donors regarding future iterations and expansion of the CCA:

- In our analysis, the first-year cost of implementation of the CCA was $23,697 per HCF. MCSP recommends that this estimate be used for planning future programs, with consideration for context, variable costs, and expected reduced costs after the first year of programming.
- Future HCF programs incorporating WASH should include personnel costs for hiring trained clinicians to lead WASH activities.
- Future HCF programs incorporating WASH should estimate a minimum of one program staff per 10 HCFs per year.
- HCFs should integrate costing analyses into projects from the start and work with their finance departments to assign activities, cost variability, and cost categories to each line item.
- While this analysis was conducted for a 1-year program, we suggest that future programs document the costs associated with implementing WASH in HCFs over several program years to better estimate true program costs and costs per facility, to make and sustain improvements over time.
- Future HCF programs incorporating WASH should go beyond the analysis presented in this brief and begin to document HCF costs, as well as the cost savings to families and HCFs that are generated from improvements in WASH and IPC.