CommCare Connect for Cost Effectively Delivering Child Health Services

Overview

GiveWell has expressed interest in CommCare Connect (CCC) as a potentially efficient mechanism to deliver highly cost-effective interventions, including the distribution and administration of high-impact health commodities. The focus of this document is on using CCC for a Child Health Campaign (CCC-CHC) involving door to door delivery of high-impact services for children under five years old.

GiveWell has also highlighted uncertainty on several aspects of CCC including costs, room for more funding, ability to recruit orgs and workers, verification, and potential for adverse outcomes. GiveWell has generously given Dimagi a scoping grant to address some of these uncertainties as well as propose activities to address others. Through discussions with GiveWell, Dimagi envisions three phases:

Phase 1, Scoping (Dec'23-Feb'24): to address uncertainty around the total addressable market (including our ability to recruit partner orgs and FLWs), room for more funding, lay out the steps to bring this concept to scaled delivery, and to propose the phase 2, operational pilot activities. This document represents the outputs from this phase.

Phase 2, Operational Pilot (starts Q2, 2024): If GiveWell decides to proceed, this phase would involve scale up of CCC-CHC in Nigeria in order to address uncertainty around costs, verification, and adverse outcomes, as well as validate some of the claims made about total addressable market and ability to recruit partner orgs. In this phase, we will codify and test our Standard Operating Procedures (SOPs) to run CCC-CHC at scale. We will design an RCT with our research partner, in order to be ready for phase 3.

Phase 3, Evaluation (starts in 2025): If Phase 2 results are encouraging, a natural next step would be a rigorous evaluation of the CCC-CHC implementation approach that was solidified in Phase 2. We expect the research would focus on the question of whether CCC-CHC increases counterfactual coverage. Dimagi has submitted a proposal to USAID DIV with IPA Nigeria to fund this evaluation, and USAID DIV has begun to engage with us by asking for more information. If this is successful, we expect the DIV grant would start in early 2025.

The goal of this document is to provide background on CCC in general and CCC-CHC in particular, report on our Phase 1 scoping activities, and propose the Phase 2 operational pilot activities in Nigeria for 2024. In doing so, we will also address the following questions posed by GiveWell in the scoping agreement:

Q1: What has Dimagi learned about what geographies are good fits for CCC in terms of mortality rate, government support, supply, etc. (See answer below)

Q2: What health commodities does Dimagi think are particularly well-suited for distribution via CCC, given existing coverage rates and availability of commodities? (See answer below)

Q3: What is the profile of partner organizations suitable for CCC? (See answer below)

Q4: What is the level of future room for more funding? (See answer below)

Q5: What is Dimagi's plan to assess fraud or collusion? (See answer below)

Background and Framework for CommCare Connect

For the last 20 years, Dimagi has been digitally enabling Frontline Workers (FLWs) in LMICs, primarily through our open source CommCare platform. Our new initiative, CommCare Connect, offers a novel mechanism to allow frontline organizations and FLWs to opt into additional paid, purposeful work.

The long term vision for CommCare Connect is to support the efficient delivery of a wide range of proven interventions. The interventions we currently focus on are:

- **Child Health Campaign (CHC)**: door-to-door delivery of vitamin A, deworming medication, and malnutrition screening to children under 5 in communities with high child mortality rates and low vitamin A and deworming coverage. This will soon include ORS/zinc distribution as well.
- **Kangaroo Mother Care (KMC)**: community-based support to help families with a small and vulnerable newborn to adopt KMC practices .
- **Mental Health**: group therapy interventions such as Group Interpersonal Therapy (IPT-G) and Group Problem Management Plus (gPM+) delivered by non-specialist providers.
- **Early Childhood Development**: delivery of parenting interventions that are proven to improve the cognitive development of children.

Dimagi is exploring different modes of deployment within CommCare Connect to deliver these and other interventions. In one mode (d2flw), we work directly with the FLW. FLWs individually opt in to delivering services within CommCare Connect with minimal institutional support. As an example, imagine a CHW who works about 20 hours a week to provide people with HIV with community-based care and accompaniment. With CommCare Connect, the CHW will have access to additional opportunities, such as opting into learning how to deliver a proven ECD parenting intervention, through a digital, self-paced course. Once the CHW is digitally certified, she can deliver this parenting intervention in her communities and be paid based on verified delivery of the intervention to caregivers in her community.

In the second mode of deployment (d2org), which is the one CCC-CHC utilizes, we partner with locally-led organizations (LLOs) to deploy high-impact interventions. Dimagi sets up pay-for-performance contracts with LLOs in which they get paid for digitally verified service delivery of FLWs using CCC apps. The FLWs can be government supported CHWs or field staff recruited and managed by the LLO. The LLOs manage many aspects of deploying interventions such as procurement, training, supervision, government engagement, and community mobilization.

There is a third and very important mode (d2gov) that Dimagi is beginning to develop, in which CCC is adopted by governments. An early example of this is our gPM+ CCC program in Ethiopia. Our partner, World Vision, is working closely with the Ethiopian government to evaluate CCC as a more cost effective way to roll out mental health support in the Tigray region. The government will be processing the payments to the FLWs.

General Framework

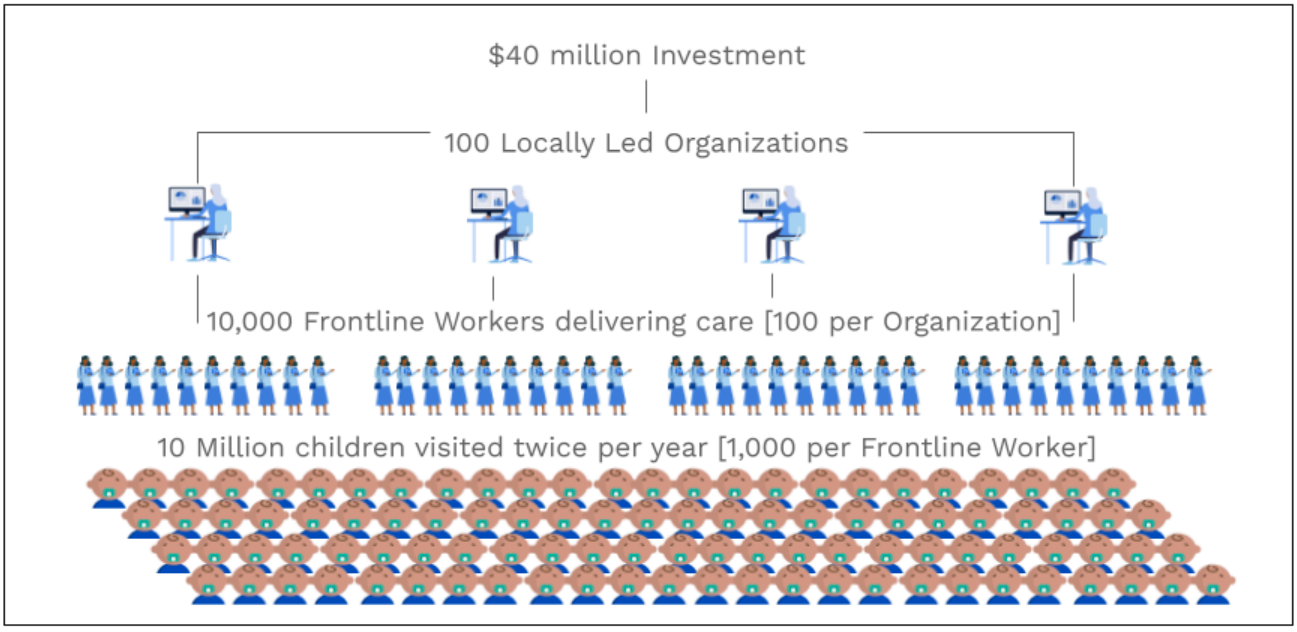
Dimagi is interested in developing CommCare Connect programs for interventions that are highly cost effective and can be delivered at scale by low-skilled FLWs with support from LLOs. The following are useful terms for defining and assessing a given CommCare Connect d2org program:

- **Intervention**: the specific service or commodity (e.g., administering vitamin A and deworming medicine)
- **Client Criteria**: who can safely receive and cost-effectively benefit from the intervention. (e.g., 6-59 month old children who have not had vitamin A or deworming in the last six months). Note that this criterion can have implications for what is required to identify eligible clients, e.g., different targeting techniques are needed for CHC vs. KMC.
- **Geography Criteria**: where the intervention can be deployed cost-effectively. (e.g., areas with at least 10 deaths per year per 1,000 6-59 month old children and suspected vitamin A supplementation coverage of < 50%)
- **Partner Criteria**: what are the minimum requirements for us to partner with an organization. (e.g., 5+ years serving their community, prior experience with health campaigns, ability to manage 50 FLWs)
- **Payment Terms**: rules that specify how much we pay for verified service delivery, including whether we only pay for clients that meet the client criteria. (e.g., $2 per verified service delivery of children meeting client criteria - see below for more nuanced description).
- **Total Addressable Market (TAM)**: The TAM can be determined from the above components for an intervention. It is the number of people that: (a) live in geographies meeting the Geographic Criteria, and (b) meet the Client Criteria, and (c) can be reached by a partner organization meeting the Partner Criteria.

Reaching scale with about 100 medium-sized partner organizations

For the purpose of this discussion, we will consider scale to be the ability to deploy USD 40 million dollars per year, which would consist of 10% overhead for Dimagi to run CCC-CHC with the rest going to commodities and LLOs.

We can classify partner organizations as being either small, medium, or large sized. We will functionally define “medium-sized” for a given CommCare Connect program as an organization that can deliver $400,000 worth of the intervention per year. For CHC, an organization could deploy $400,000 per year at $2.10 per visit by organizing 76 FLWs to each visit on average about 210 children per month (around 10 per day). For KMC, an organization could deploy $400,000 per year at $50 per KMC case by managing 250 FLWs doing KMC part time, averaging about 2.7 cases per month.



Deploying $40 million per year through 100 orgs

As depicted in the diagram above, Dimagi plans to reach scale for CCC-CHC, or any of the d2org-based interventions, by eventually working with around 100 medium-sized organizations. We believe this is operationally feasible with modest efficiency improvements relative to our current approach to supporting two medium-sized organizations (C-WINS and Sanmat), as described in more detail below. These organizations are each currently deploying $88,000 of intervention in less than six months (or $176,000 per year) with 40-50 FLWs. We believe both organizations are capable of delivering $400,000 of intervention per year, and could expand their field staff to well over 100 if need be. In December 2023 and January 2024, C-WINS averaged over 2,600 child visits per week and Sanmat averaged over 3200 visits per week, each with 35-40 active FLWs. In Nigeria, we have found many LLOs that are larger than C-WINs and have signed Letters of Support indicating their interest in CCC-CHC.

CommCare Connect for Child Health Services (CCC-CHC)

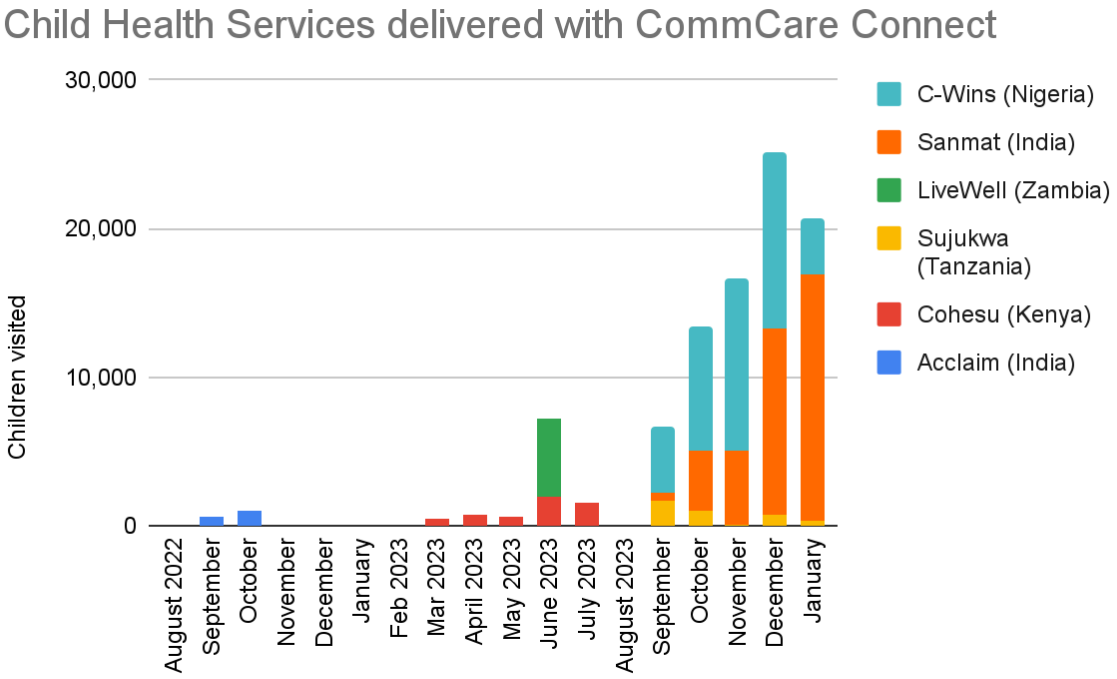
In this section, we describe our work thus far with CCC-CHC in detail, as well as our plans to improve it.

Problem Statement and evolution of CCC-CHC

Although vitamin A supplementation (VAS) and deworming are inexpensive, portable, and straightforward to administer by FLWs, UNICEF estimates only ~64% of children in need are reached with the recommended 2 VAS doses per year. After a period of rising coverage, VAS started declining even before COVID-19 caused a further 19% drop.[1–3] The need is highest for the poorest and hardest-to-reach communities.[4,5] Similarly, deworming isn't equitably distributed or reaching all those in need.[6,7] VAS is increasingly provided in fixed-site, large events despite evidence that door-to-door campaigns are more effective. A study across 13 Sub-Saharan African countries found door-to-door VAS reached 91% of

households compared to 63% at fixed sites.[8] Studies show that fixed-site approaches often miss the most vulnerable children who are from poorer, less educated, or different religious backgrounds.[9,10] Similar gaps are estimated for deworming.[11]

Dimagi has signed pay-for-performance contracts with six LLOs in five countries that have delivered over 95,000 child visits. We are currently launching a seventh contract to trial the addition of ORS and zinc, in Nigeria. We expect to deliver the first ORS/zinc packets in the first week of March. Through the course of these projects we have expanded the scope of services provided to children, and improved our technology and processes.



In all cases, Dimagi established pay-for-performance contracts with LLOs to deliver the CHC using Dimagi's digital apps for specified payment per child visits, which cover payment to FLWs, training, procurement, and supplies - with some support and training materials being provided by Dimagi. The FLWs must use the CCC apps in real-time to access decision support for screening and dosing and data capture including GPS for verification algorithms. The LLOs oversee the campaign and invoice Dimagi monthly for verified services delivered.

Initial Pilots

We started work on CCC-CHC In Q2 2022. Our first pilot delivered only vitamin A and deworming medicine. Dimagi worked with Every Infant Matters to develop apps on CommCare that guide FLWs through registration, screening, dosing, and counseling. We then worked with a separate entity, Acclaim, to pilot CCC-CHC in Rajasthan, India, where 10 FLWs completed 1,644 child visits. The app and processes were refined based on user feedback. As in all of our pilots so far, they gave the FLWs training (about 1 day) in the administration of vitamin A and deworming, along with how to use the CCC apps.

After this work in Rajasthan, we added a Mid-upper arm circumference (MUAC) screening to the visit and the CCC apps. We also formalized a pay-for-performance contract that funds LLOs to obtain government permissions, procure medicines and phones, recruit and train FLWs and pays $2 per verified child visit for up to 5,000 visits. We signed with three LLOs: Cohesu trained 10 government-supported FLWs in Kenya who completed 5,000 visits in July, 2023; LiveWell worked with the Zambian government to support the bi-annual Zambian national child health campaign and delivered over 5,000 visits in June. Sujukwa worked with the Tanzanian government to identify a high-need area, where they launched a campaign in August and are finishing up their 5,000 visits in Q1, 2024.

Both Cohesu and Livewell have presented their findings to the governments of their countries. In Zambia, the CCC-CHC app will also be used in the upcoming child health weeks in June and November 2024 by our partner LiveWell to ensure high quality data management and coverage mapping compared to current methods used by the government in Zambia.

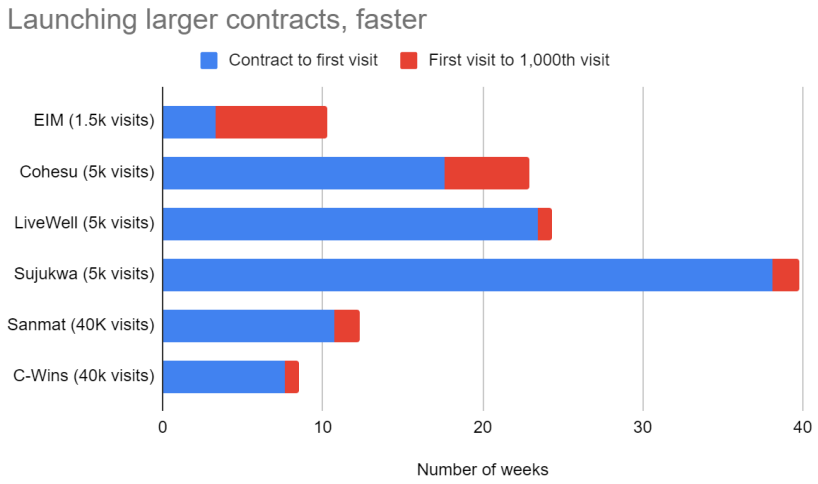
Larger deployments

Dimagi released an RFP in April, 2023 which received 23 applications in six weeks. The responses helped validate our cost assumptions and demonstrate demand from LLOs. We awarded C-WINS and Sanmat contracts to complete 40,000 visits each, in Nigeria and India respectively, by March 2024. C-WINS completed its allocations in January 2024, and Sanmat will complete theirs in February.

For these deployments, we added vaccine promotion to the child health visit intervention. We updated the app accordingly to track vaccine status of each child, and made numerous other improvements to the app as well. We also updated our contract and processes. This contract was quickly signed by both partners with minimal customization and is close to our goal of being a fully standardized contract. The current contract stipulates that partners must complete at least 1000 child visits within 120 days of contract signing. Our current onboarding process (detailed in Appendix D) involves a detailed iteration on the campaign and microplan for implementation. The onboarding phase usually lasts about 2 months, and we have streamlined multiple processes, and continue to do so for reducing lead time between contract signing and initiating the implementation in the field. We provide organizations with an initial setup fee of USD $15,000 for purchase of phones, drugs if applicable, and other consumables and other activities needed for onboarding.

We are also honing our monthly process of validating and paying LLOs, including a review of potential duplicate entries or other violations of our contract terms, and continue to look for ways to further streamline it. The process includes Dimagi sharing a detailed review of approved and rejected claims for the LLOs to review. The LLOs then submit an invoice which Dimagi quickly pays. The LLOs are also required to report the amount paid to each FLW to Dimagi.

As the chart below shows, we've been able to go more quickly from contract signing to visits as our work has progressed to larger deployments.



ORS small pilot

Dimagi is launching a small pilot to explore the addition of ORS/zinc with C-WINS, our partner in Katsina, Nigeria that finished the 40K visit deployment in January.

We are extending CCC-CHC to include free ORS/zinc distribution, and will test this out with 5,000 child visits commencing in late February 2024. C-WINs has procured 5,000 treatments of ORS/zinc. The visits will include all the interventions of the prior rounds (Vit A, deworming, MUAC, and vaccine promotion) in addition to ORS. The ORS/zinc intervention was originally conceived to provide each household with enough ORS and zinc to treat one case of diarrhea per U5 child in the household. We are now trying to shift this to be two treatments per child, based on the work CHAI is doing in Bauchi, and C-WINS is procuring an additional 5,000 treatments for this purpose.

Vaccine Promotion

Immunization is widely acknowledged as one of the most valuable financial health investments and impactful global health successes in history. Despite the well-known dramatic benefits of routine childhood vaccination and the progress in increasing access to vaccines in lower-income countries, immunization coverage has largely plateaued over the past decade, with additional setbacks from the strain placed on health systems during the global pandemic. The number of children missing out on the benefit of any vaccination, called “zero-dose” children, was estimated at 14.3 million in 2022, with millions more children only partially vaccinated. Nearly 50% of zero-dose children at risk of dying from vaccine-preventable diseases live in three critical geographic contexts–urban areas, remote communities, and populations in conflict settings.[12]

Household vaccine promotion through door-to-door canvassing by FLWs has proven an effective means of increasing rates of fully vaccinated children, particularly in marginalized communities where routine immunization is weak and vaccination is not a social norm. Under CCC-CHC, FLWs will integrate health education on the importance of complete immunization to protect children against disease and death, remind caregivers of the recommended immunization schedule tailored to the age of the child being visited, and referral to a local vaccination provider.

The potential to increase immunization coverage through FLW home visits has a long history, with a growing evidence base as lay health worker programs proliferated in response to the human resource crisis of health professionals. Dimagi has identified several studies that support the hypothesis that FLW visits to households can increase vaccination rates, including:

- A controlled trial in Ghana published in the Bulletin of the World Health Organization in the 1990s,[13] consisted of a home visit program during which caregivers of unvaccinated children were advised to take the child to a nearby child clinic of their choice and were given a referral note for the clinic. Up to three additional visits were made over the next 6 months if the child did not complete vaccination. Vaccination coverage rose over six months from 60% to 86% in the intervention group compared with 61% to 67% in the control group.
- In a 2005 systematic review of 60 published studies evaluating the effectiveness of interventions aimed at increasing child immunization coverage in developing countries, Pegurri et al. found that, while most interventions aimed at improving coverage rates reported an increase in the percentage of fully-vaccinated children, with a mean increase in coverage of 27%, lay health worker interventions and door-to-door canvassing strategies resulted in the greatest increase in the proportion of fully-vaccinated children.[14]
- There was a subsequent 2011 systematic review[15] of 12 studies, ten of which were randomized controlled trials, conducted among economically disadvantaged populations in high-income countries as well as studies from LMICs. This review showed promising benefits of household promotion by FLWs in improving child immunization coverage. The significant findings of this review, together with the results of the wider 2010 Cochrane review[16] of 82 studies, which indicated the effectiveness of FLWs in promoting immunization childhood uptake (RR 1.22, 95% CI 1.10 to 1.37; P = 0.0004), demonstrate the potential for household vaccine promotion to contribute to a package of effective child health interventions. In particular, improved uptake of immunization is achieved through home visits that consist of health education and reminders.[17–19] These findings were reinforced with a 2016 update of the 2011 Cochrane review, focused on interventions for improving childhood immunization coverage in LMICs, which found moderate-certainty evidence that health education at village meetings or at home improves coverage with three doses of DPT3 (RR 1.68, 95% CI 1.09 to 2.59).[20]

Status of Malaria Vaccine

It would be a small change to incorporate the malaria vaccine tracking and promotion into CCC-CHC when appropriate. Based on what Dimagi could ascertain online, Nigeria's FMOH and NAFDAC approved the R21/Matrix M vaccine last year, however, there does not seem to be an allocation from Gavi or the GFATM to Nigeria as of 2024. The allocations for 2024-2025 are already done to 12 African countries, which does not include Nigeria. The Coordinating Minister for Health Dr. Mohammed Ali Pate noted that Nigeria may not receive doses before 2025 from Gavi at least.

Cost Effectiveness Considerations

Vaccines themselves are so effective that CCC-CHC causing even a small increase in uptake could improve the CE of CCC-CHC notably. Dimagi modified GiveWell's CE model for New Incentives, and concluded that a 5% increase in vaccine uptake would add 4-5x multiples of cash transfers to CCC-CHC's CE. (Dimagi can elaborate on this if useful, though imagines that GiveWell might do its own

analysis.) Dimagi sees one of the advantages of CCC that we can bundle interventions together to improve overall cost effectiveness of our programs. Dimagi is interested in working with GiveWell on how to model the overall cost-effectiveness of bundling several cost-effective interventions together. However, we understand that this is very challenging thng to model. For example, it could be that two different interventions would both avert a given death, and so if you sum the beneift of both interventions you are essentially double counting the benefit of doing them both, since either one by itself would avert the death. We understand GiveWell is exploring how to model things like this and might have progress to share later in the year.

It would also be interesting to explore whether there are synergies between CCC-CHC and New Incentives if both were operational in the same geography. Perhaps CCC-CHC could reduce the costs or increase the rates of counterfactual coverage of New Incentives by promoting New Incentives to children missing vaccines. In the CCC-CHC pilot in Katsina, over 10% of the children visited are zero dose. Thus, for every $20 spent on CCC-CHC, one zero dose child is identified. Currently, New Incentives spends about $89 for each child who is fully immunized through its program and who wouldn't otherwise have been fully vaccinated. If CCC-CHC were to reduce this by $5 or $10 per counterfactual child (which is just speculation for argument's sake) then it would justify a fair bit of the cost of CCC-CHC.

Malnutrition Screening and Referral

Nearly half of deaths among children under 5 years of age are linked to undernutrition. Globally, 149 million children U5 in 2022 were estimated to be stunted (too short for age) and 45 million were estimated to be wasted (too thin for height). The global burden of malnutrition has dramatic developmental, economic, social, and health impacts for children and their families as well as for the stability and well-being of communities and countries. Malnutrition compromises a child's future growth and development and their immune system, increasing their risk of life-threatening illnesses such as diarrheal disease, pneumonia, and malaria. Effective solutions for the treatment of severe acute malnutrition (SAM) have been well-established, including in- or out-patient provision of ready-to-use-therapeutic (RUTF) food and medical treatment for any comorbidities. One of the significant needs resource-constrained countries face is the identification of cases of child malnutrition in a community–particularly in contexts with high rates of malnutrition in which parents may be conditioned to the social norm of under-nourished children.

Mid-upper arm circumference (MUAC) is simple to use and has proven a better predictor for mortality, especially when repeated frequently over time, compared to other practicable anthropometric measures such as the weight-for-height z-score (WHZ). Regular screenings in the community increase early diagnosis and reduce the risk of costly and specialized hospital care. Community-based management of acute malnutrition (CMAM) programs have considerably increased coverage of treatment for SAM over the past decade, yet the platform for detecting, diagnosing, and treating SAM has typically been in clinic settings. Continued gaps in malnutrition screening coverage and a persistence of SAM led researchers and implementers to explore strategic methods for expanding access to care, and finding the means to leverage MUAC community-level screening at scale.[21] Thus, the standard MUAC protocol was revisited to create a simpler protocol that could be implemented by FLW into other existing platforms to leverage the untapped potential for lay health workers to address the significant burden of acute malnutrition.[22]

Evidence in numerous LMICs suggest that minimally-trained FLWs can improve the early detection, correct classification, and referral of uncomplicated cases of acute malnutrition using MUAC tape and a simplified protocol that indicates when medical treatment is needed.

- A systematic review in 2018[23] found evidence supporting strong CHW capacity to accurately diagnose SAM using MUAC with a high level of accuracy and reliability in three studies in Bangladesh and Mali–collectively completing MUAC measurements correctly >96% of the time.[24–26]
- In the Bangladesh study (2013)[24], MUAC was correctly assessed in 96.8% of children and oedema was correctly assessed in 78.4%, reflecting findings in previous studies by the authors (Puett et al 2013), which showed that 55 CHWs managed cases of uncomplicated SAM using a treatment algorithm with high-quality care–89% achieved 90% or higher in error-free management of screening, diagnosis and treatment.[24]
- In a Mali study, which evaluated the capacity of the community health workers to evaluate, classify, and treat cases of uncomplicated SAM was, mid-upper arm circumference was correctly assessed in 96.8% of children and oedema was correctly assessed in 78.4%.

These studies show promise that using CCC-CHC, FLWs can be prompted to screen U5 children for malnutrition during household visits using MUAC and to refer moderate and severe cases of malnutrition to the nearest treatment facility.

Cost Effectiveness Considerations

As a very crude CE calculation, assume 4% of CCC-CHC visits (at $2.10 per visit) identify an untreated SAM case, 5% of SAM cases start treatment, the baseline mortality of untreated SAM is 20%, and treatment reduces mortality by 60%. This translates to $8,750 in CCC-CHC costs per death averted from malnutrition screenings alone--even if there were no other benefits at all from CCC-CHC.

Our current pilot offers some reasons why this might not work however. Our initial pilot in Katsina yielded much less than 4% SAM cases. We think this was at least partly a training issue. There was also an issue of whether there were effective referral pathways for SAM or MAM children in Katsina which reduces the value of MUAC screening, and also potentially the motivation. We have spoken to LLOs in other states where treatment centers have been established and so there are better referral pathways. In this document, we also discuss the potential for extending CCC-CHC to include home-based treatment of SAM by FLWs-- though we are not confident in our ability to procure RUTF in Nigeria at this time.

Addition of ORS and Zinc to CCC-CHW

ORS and zinc have not yet been distributed through CCC, but Dimagi is enthusiastic about adding it to the standard CCC-CHC program, especially after seeing the recent GiveWell grant to CHAI for free ORS distribution in Bauchi, Nigeria. From Dimagi's perspective, this highlights the potential cost savings from bundling interventions through CCC. GiveWell estimates a CE of 17x multiple of cash transfer at $2.70 per child and 21x cash transfers at $1.97 per child for ORS distribution by itself. Dimagi's understanding from several communications with CHAI (and also confirmed by GiveWell) is that the intervention is a single visit that drops off two treatments of ORS per child. CCC-CHC hopes to deliver ORS at a comparable price point, along with Vit A, deworming, vaccine promotion, and malnutrition screening.

On March 1, Dimagi was informed that CHAI will contract with Dimagi for the digital solution to support their ORS/zinc distribution in Bauchi. As part of the selection process, Dimagi gave a demo of the CCC-CHC app which is similar to what CHAI needs for their door-to-door ORS distribution campaign. CHAI plans to deploy in July 2024 through Oct 2024. Dimagi sees added synergy if GiveWell funds

Dimagi for the CCC-CHC, in that CHAI will additionally benefit from the SOPs and verification strategies that Dimagi will develop (e.g., taking time- and GPS-stamped pictures of ORS packets.)

Acute diarrheal disease is the third leading leading cause of child mortality globally – more than half a million children die from preventable and treatable diarrheal disease each year. In most cases, death is caused by dehydration, which can be prevented by giving extra fluids at home, or it can be treated simply, effectively, and cheaply through an Oral Rehydration Salts (ORS) solution. A commonly-referenced meta-analysis in 2010 found that 100% coverage of ORS reduces diarrhea mortality by ~93% in community settings and is relatively as effective as intravenous fluids at rehydrating children in hospital settings. Even after downward adjustments based on study nature, effect size, and generalizability, GiveWell assumes that the effective reduction in mortality for U5 children covered by ORS with zinc is 60%.[27]

Despite the known benefit of oral rehydration therapy (ORT), UNICEF currently estimates that 56% of children in LMIC do not receive ORS treatment for diarrheal disease.[28] Mapping of geographical inequalities in ORT found that in 2017, the highest number of children with diarrhea who remained untreated by ORS were in parts of eastern sub-Saharan Africa, north Africa, south Asia, and southeast Asia.[29] Price and convenience of accessing ORS and zinc are two widely documented barriers to ORT for diarrheal cases. Thus, home-based preemptive distribution strategies by community health workers have been identified as cost-effective solutions to improving use of ORS.

Several research studies reinforce the claim that distribution of ORS and zinc by lay health workers increase coverage and use of ORT for episodes of child diarrheal disease. Given the number of case studies have also found a correlation between ORS usage and reductions in mortality[30] as well as the medical understanding of the effect of ORS on dehydration, it is logical that increased ORS coverage would cause reductions in diarrhea mortality.

- A meta-analysis of 24 randomized controlled trials, quasi-experimental and observational studies published by Das et al. 2013[31] found that community-based interventions, such as community case management of childhood illness by community health workers, led to a 9% increase in care seeking for diarrhea and were associated with 160% increase in the use of ORS and 80% increase in the use of zinc for diarrhea.[31]
- A cluster randomized trial in Uganda in 2016[32] tested the impact of eliminating financial and access constraints on ORS use, by randomly deploying 118 community health workers to one of four methods of ORS distribution: (1) free delivery of ORS prior to illness (free and convenient); (2) home sales of ORS prior to illness (convenient only); (3) free ORS upon retrieval using voucher (free only); and (4) status quo CHW distribution, where ORS is sold and not delivered (control). Results after adjusting for confounders showed the greatest impact in provision of free and convenient ORS distribution, prior to illness (increased ORS coverage by 19 percentage points relative to the control group (95% CI 13–26; $P < 0.001$), 12 percentage points relative to convenient only (95% CI 6–18; $P < 0.001$), and 2 percentage points (not significant) relative to free only (95% CI −4 to 8; $P = 0.38$). GiveWell's model estimates that free provision of ORS can decrease the proportion of children not using ORS when they have diarrhea by 27%, or a 15-16 percentage point increase.[33]

Cost Effectiveness Considerations

GIveWell has shared CE models for ORS/zinc, albeit ones with high uncertainty. From Dimagi's review of GiveWell's shared CE models, it seems likely that free distribution of one or two treatments per child would likely substantially increase the impact of CHC-CCC. Note-- we are currently planning to drop off two ORS treatments twice per year per child.We would appreciate guidance on if this is the best approach (vs. 2 packets once per year as CHAI is doing, or 1 packet twice per year which would cost less than 2 packets twice per year).

Additional Commodities Appropriate for CCC (Q2)

While this proposal largely focuses on making the case for CCC-CHC in Nigeria, Dimagi is excited that GiveWell sees CCC as a potential platform for other commodities and interventions. This aligns well with Dimagi's view of CCC.

Generally, if any entity is seeking to provide free, high-coverage distribution of a commodity, CCC offers many advantages over traditional methods. First, 90% of the distribution costs go to locally-led orgs and low-skilled jobs, in contrast to typical efforts where more costs go to large international NGOs overhead. Second, we provide fine-grained digital verification and tracking. That is, distribution is digitally verified with smartphone apps at point-of-delivery, with GPS, time-stamps and pictures, in contrast with typical methods which rely on paper forms. A third advantage is the ability to do follow-ups. Because phone numbers are digitally collected, these can be used to send follow-on messages or surveys about the commodity. Finally, there is potential to bundle commodity distribution with high-impact interventions such as vaccine promotion and malnutrition screening.

The criteria we see for whether a commodity is suitable for distribution by CCC include:

- **Prosocial**: Dimagi is only interested in delivering commodities that benefit underserved individuals and communities.
- **Training**: Can be delivered or administered by low-skilled, non-specialist field staff with a modest amount of training.
- **Supply chain**: The commodity is easy to transport, and store if available in the country. E.g. anything requiring cold-chain would not meet this criterion.
- **Availability:** The commodity must be available in sufficient quantities somewhere in the country. Note that in some cases an initiative could make the commodity available, e.g,. if an entity wanted to distribute 1 million solar lanterns, they could make those available.
- **Portable**: The commodity itself needs to be suitable for an FLW to carry in quantity to deliver door to door.
- **Free**: We could imagine extending the CCC model to support the (subsidized) selling of commodities, however we do not currently anticipate doing so.

There are many commodities that would meet these requirements. This proposal covers the addition of ORS and zinc to CCC-CHC for example. We also explore additional commodities below.

Home administration of Ready-to-Use Therapeutic Food (RUTF)
Home administration of RUTF meets all of the criteria we listed above, with the exception of Availability. We have tried to identify sources of RUTF in Nigeria and have not yet succeeded, and the shortage of

RUTF and related interventions is well known. Even so, we think it is an important example because of the potential impact as well as the potential for Availability to improve. We envision that the LLO that is implementing CCC-CHC would have a small, dedicated team that does home visits to SAM cases to deliver RUTF. When a FLW delivering CHC identifies a SAM case then the special unit would commence visits and treatment if appropriate. We expect each SAM case to require 2 visits per week for 6-8 weeks. To our understanding, this small team would not need extensive training though perhaps having a nurse or similarly skilled worker would be appropriate and affordable.

As a simple back of the envelope calculation, if we assume that the mortality associated with untreated SAM is 20%, the mortality reduction from home-treated of SAM is 40%, the total cost RUTF (including transport) is $120, and that we pay the LLO $120 for the 6-8 weeks of treatment per case, then we still get a cost per death averted of less than $4,000 USD.

Bednets

Long-lasting insecticidal nets (LLINs) are a promising commodity to distribute through CCC. They are prosocial. Increasing uptake of use of LLINs could prevent many deaths. LLIN distribution would seem to meet our supply chain, availability, and free distribution requirements.

Portability is a challenge. Each net weighs around 500-800g, so it is unlikely that the FLWs will be able to carry more than 4-5 (maximum) nets at a time. Most LLIN campaigns use bicycles or vehicles for distribution. For this reason we would not see LLINs as something we would bundle with CHC but rather would be its own intervention.

Another challenge and/or opportunity would be whether distribution of LLINs is highly cost effective, or if a CCC-LLIN program should focus more on behavior change and increasing uptake of LLINs rather than distribution. There is potential for follow up calls, demonstrations, or generally leveraging the hyper-local knowledge of LLOs to address this.

Dimagi Overhead and Financial Feasibility of CCC-CHC

Dimagi is committed to requiring only 10% overhead on top of the funding that goes towards buying commodities and/or to the partner organizations. While this will positively impact CE analysis of our interventions, this objective is also aligned with our mission in ways that are not fully captured by CE analysis, including that we believe FLWs and LLOs deserve a larger share of the funds then they typically receive, and this is a key way that CCC is differentiated from typical, iNGO-run development.

We do not expect to fit our programmatic costs within 10% of our total funding until we reach a larger scale. We estimate that we can achieve this rate when there is around 5 million dollars being deployed through CCC per year. Thus, in the long run, having $5 million per year of total revenue seems like a good estimate for a floor of Dimagi running CCC sustainably. Furthermore, this would have to be through a small number (maximum 3) of different types of interventions, as it is hard to imagine this working for a given intervention without $1-2m per year.

Scoping CCC-CHC for Nigeria

This section covers our scoping work to assess and plan for a larger deployment of CCC-CHC in Nigeria, which forms the basis of the proposed activities we describe below.

Definition of CCC-CHC for proposed activities in Nigeria

Intervention: For Nigeria, CCC-CHC will bundle five intervention services: vitamin A, deworming medicine, vaccine check and promotion, malnutrition screening and referral, and free distribution of an ORS/zinc.

Client Criteria: All U5 children are eligible for CCC-CHC for at least one of the five services, though specific services will have other requirements. In particular, for vitamin A, the eligibility requirements are 6-59 month old children who have not received VAS or deworming in the last six months.

Geography Criteria: We will target areas with high under five mortality rates and with suspected VAS coverage of <50%. As a working definition, a cutoff of 70 deaths per 1000 live births seems likely to produce a high cost effectiveness of CCC. We have identified 10 high-need states in Nigeria, as described below.

Partner Criteria: This is described in more detail below but we are looking for partners with 5+ years of experience serving the implementation geographies, and the demonstrated experience to run health campaigns.

Payment Terms: We have used a few variations of payment terms. For the purposes of this proposal, we will use a flat fee per U5 child that is visited, digitally registered, and given all intervention services they are eligible for. For Nigeria, we are working with a flat fee of 1,000 Naira that includes everything except the cost of Vit A, deworming medicines, and ORS and zinc which Dimagi will procure separately and make available in Abuja or other large city in Nigeria.

Procuring Medical Supplies for CCC-CHC

For the proposed deployments, Dimagi will arrange the procurement of ORS/zinc. While we have not previously procured supplies, we are confident that we can manage ORS for the operational pilot activities proposed here. We have received multiple quotes for an order of 300,000 treatments of ORS and zinc, each of which includes 2 sachets of ORS and 20mg of Zinc. EHealth Pharmacies, which Dimagi considers highly reliable, quoted 360 Naira (0.38 USD) per ORS treatment. They will store ORS for 845,000 Naira (aout $1000 USD) per month in a warehouse in Abuja with controlled access and CCTV footage. We have received two lower quotes (200-240 Naira per ORS treatment) from vendors in Abuja, one of which is from Tyonex pharma, and the other is from Archy pharmaceuticals. Both are NAFDAC (Nigeria's FDA) approved. Our contracts with the LLOs will require them to manage transport and storage of the supplies after they pick them up in Abuja (or perhaps another large city). The LLOs we have spoken to typically have staff that come to Abuja once or twice a month and most offered to come to Abuja to meet our team while we were there. There is also the option of hiring a car or van to deliver the commodities to the LLOs if this were a barrier.

We anticipate that Vitamin Angels will donate vitamin A and deworming medicine to the LLOs. We worked with them in India and they provided valuable perspective as well as training to the LLOs in addition to the therapeutics.

To put this in context, the per-child costs would include:

- costs of ORS paid by Dimagi including procurement and storage in Abuja
- costs of vitamin A and deworming medicine, probably donated by VItamin Angels
- flat fee to LLO paid by Dimagi - estimated at 1,000 Naira per child
- Dimagi overhead

Partner Organizations in Nigeria (Q3)

In December and January, Dimagi conducted outreach efforts to identify LLOs capable of deploying CCC-CHC at our target scale ($400K per year) in our priority states. And two Dimagi staff visited Abuja from Jan 30-Feb 10 to meet with candidate LLOs and other stakeholders.

Dimagi searched for LLOs that meet the following criteria:

1. Work in one or more of the following states in Nigeria: Sokoto, Kebbi. Katsina, Bauchi, Kano, Borno, Zamfara, Kaduna and Jigawa (and work outside the better-off areas of that state)
2. Have 5+ years of experience
3. Have worked on health campaigns before.
4. Have experience managing field staff of at least 25 workers

Dimagi does not see a need to require LLOs to have past experience specifically with vitamin A or deworming, though most of the LLOs we have qualified do. And while most do have experience with digital technology, we also do not see this as a requirement as we have substantial experience equipping FLWs and organizations with digital solutions regardless of their past experience.

We have not set bounds for the annual budget size of the LLO. We have been somewhat surprised that some larger LLOs have been rather interested in CCC-CHC and that there are some networks of LLOs that seem promising.

Dimagi has identified many LLOs that seem suitable candidates, and received Letters of Support (that we can share with Givewell) from 20 LLOs, shown in the table below. . Our conversations thus far convince us that this is still only a small portion of the qualified LLOs operating in these states, and that we would find many more if we kept looking. Many of these organizations are also active in other allied domains like child protection, women's health, livelihoods and rehabilitation of people displaced by armed conflict and famines. Some organizations like Janna Foundation, Sufabel, SFH, PHI have significant parallelly running programs in tuberculosis, HIV, and NTDs along with nutrition.

Organization name and website	Founded	Health campaign experience	Size of Past Campaigns	Sokoto	Kebbi	Katsina	Bauchi	Kano	Borno	Zamfara	Kaduna	Adamawa	Jigawa
SUN Civil Society Alliance in Nigeria (CS-SUNN)	2010	Yes, with VA/DW	>200	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Planned Parenthood Federation of Nigeria	1989	Yes, with VA/DW	>200	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes

(PPFN)													
Society for Family Health (SFH)	1985	Yes, with VA/DW	>200	No	Yes	Yes	Yes	Yes	Yes	Yes	No		Yes
Pro Health International (PHI)	1993	Yes, with VA/DW	>200	No	No	No	Yes	No	No	No	No		
Janna Foundation	2013	Yes, with VA/DW	100-200	No	No	No	Yes	Yes	Yes	Yes	No	Yes	
Sufabel Community Development Initiative (SCDI)	2013	Yes, with VA/DW	100-200	No	No	No	Yes	No	Yes	Yes	Yes	No	No
Centre for Well-being and Integrated Nutrition Solutions (C-WINS)	2016	Yes, with VA/DW	100-200	No	No	Yes	No	Yes	No	No	No	No	No
Initiative for Social Development in Africa (ISODAF)		Yes, with VA/DW	51-100	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
EHA Clinics	2012	Yes, with VA/DW	100-200	No	No	No	No	Yes	No	No	No	No	No
Lofe Lofe Foundation	2017	Yes	100-200									No	Yes
Arewa Health Trust Initiative (AHTI)	2005	Yes, with VA/DW	51-100	Yes	No	No	No	Yes	No	No	No	No	Yes
Grow Strong Foundation	2017	Yes, with VA/DW	26-50	Yes	No	Yes	No	No	Yes	No	No	Yes	No
Grass-root initiative for strengthening community resilience. (GISCOR)	2017	Yes, with VA/DW	26-50	Yes	No	Yes	No	No	Yes	No	No	Yes	No
Center for Child care and Human development (C3HD)	2017	Yes, with VA/DW	26-50	Yes	No	No	No	Yes	No	No	No	No	No
Community Enlightenment and Development Initiative		Yes, with VA/DW	26-50	Yes	No	Yes	No	No	No	Yes	No	No	No
Rise to Inspire Africa (RIA)	2018	Yes, with VA/DW	51-100	No	No	Yes	No	No	Yes	Yes	Yes	No	No
Zenith Of the Girl Child And Women Initiative Support (ZEGCAWIS)	2016	Yes, with VA/DW	26-50	No	No	No	No	No	Yes	No	No	No	No
Concern for Women And Children Development Foundation (COWACDI)	2005	Yes, with VA/DW	51-100	No	No	No	Yes	No	Yes	No	No	No	No
SHI International	2016	Yes, with VA/DW	51-100	No	No	No	No	No	Yes	No	No	No	No
Solina Centre for International Development and Research (SCIDAR)	2012	Yes, with VA/DW	>200	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes

The following are example profiles (using their own words, in most cases) of the organizations we have spoken with:

Janna Health Foundation - Janna Health Foundation, a 20+ year NGO, empowers vulnerable communities (refugee, migrants, pastoralists etc.) in multiple Nigerian states through sustainable healthcare solutions. They are focused on delivering high-quality, community-centered care, prioritizing maternal & child health while tackling HIV/AIDS, TB, and leprosy. They've won multiple StopTB grants and run intense screening and treatment programs for TB and malnutrition in states like **Gombe**, **Bauchi** and **Jigawa**. Backed by a network of 1000+ experienced FLWs, they have a proven track record in vitamin A, Deworming, and recent TB & child health projects. They reported to Dimagi an annual budget of 405 million Naira.

Pro-Health International (PHI) - Since 1991, Pro-Health International (PHI) has worked across Nigeria's diverse landscape, delivering critical healthcare to the furthest corners of the country, serving thousands of vulnerable people through various large-scale programs. Their comprehensive approach, as evident from their past work with global funders have led to significant improvement in health outcomes of Adamawa, **Bauchi**, Imo and other underserved states of Nigeria. Their medical missions reach beyond immediate medical needs, building community resilience through education and resource access. With proven success in reaching over 70,000 Nigerians annually, PHI is well placed to make a significant contribution to deliver child health services to the last mile. They reported to Dimagi an annual budget of 2 billion Naira.

Sufabel - For 11 years, Sufabel Community Development Initiative (SCDI) has empowered underserved communities in **Bauchi**, **Borno**, **Zamfara** and **Gombe** in Nigeria by combating public health threats like TB, HIV, and malaria through prevention, care, and education. By mobilizing resources and empowering locals, SCDI ensures even the most remote areas have access to crucial healthcare services like last mile service delivery of vitamin A, deworming medicine and malnutrition screening. Supported by international organizations like the Global Fund and STOP TB Partnership, SCDI builds a healthier future where marginalized groups, women, and children have equal rights and opportunities, contributing to a more equitable service delivery.

AHTI - For nearly two decades (founded in 2005), Arewa Health Trust Initiative (AHTI) has championed public health in Northwest Nigeria, reaching the most vulnerable. Collaborating with over 800 health facilities and communities, they combat HIV/AIDS, malaria, tuberculosis, and malnutrition. AHTI empowers marginalized groups to address their health needs sustainably, utilizing local resources and partnering with government agencies and NGOs. A shining example is their work in **Kano** State, one of Nigeria's poorest regions with high malnutrition rates. In collaboration with IHVN, AHTI delivers the Basic Package of Nutrition Services (BPNS) to increase access to essential nutrition for pregnant women, children, and adolescent girls. They also address micro-nutrient deficiencies through increased access to vitamin A supplementation and routine deworming for children under 5, further tackling malnutrition's impact. With a deep understanding of local needs and a commitment to community-driven solutions, AHTI is making a significant impact on public health in Nigeria.

C3HD - For seven years since its founding in 2017, Center for Child Care and Human Development (C3HD) has been a beacon of hope for marginalized communities in four Nigerian states: Yobe, **Adamawa**, **Borno**, and **Kano**. They tackle health inequality, violence, and food insecurity through their "protective community-based approach," empowering communities to respond to future challenges. Operating across these diverse regions, C3HD prioritizes reaching the last mile, working alongside local partners and employing over 70% community members in their team.

Their diverse strategies include research, advocacy, capacity building, and community engagement, all aimed at transforming lives and fostering sustainable development.

RIA - Since 2020, Rise to Inspire Africa (RIA) Initiative has tackled the healthcare crisis in **Borno**, ravaged by conflict and facing severe malnutrition. This youth-led, women-focused organization shines in reaching isolated communities, empowering over 5,000 individuals and impacting 20+ communities through 12+ projects. Their strength lies in early detection and intervention, with a focus on malnutrition screening. By engaging communities and providing vital nutrition support, they address a critical need in this war-torn region. Their dedication to mental health services further bolsters their holistic approach to community well-being and makes tangible differences in the face of immense challenges.

Total Addressable Market and Room for More Funding (Q4)

Dimagi believes there is a compelling large Total Addressable Market (TAM) and impressive Room For More Funding (RFMF) just within the 10 states in Nigeria with the lowest health indicators for children.. As shown in the table below, **there are likely 10 million U5 children in these 10 states that would meet our geographic criteria**.

We believe the majority of this population is reachable by LLOs. In Appendix B, we show estimates made by our contacts at various of the larger LLOs that estimate that 80-90% of almost all states are safeely reachable by LLOs. It is possible that some portions of the reachable area, e.g., better off urban areas, do not in fact have high enough need to reach our geographic criteria. But we think it would be a conservative estimate that 50% of the population live in areas that are both reachable and have enough need to meet our geographic criteria. As one piece of supporting evidence, GiveWell's grant to CHAI to deliver ORS to 1.5 million children in the single state of Bauchi.

Assuming 50% of the TAM is reachable aras that meet our geographic criteria (including being high need) and assuming a minimum of $3 spent total per child per year (for two visits, including Dimagi 10%) this yields a **$15 million USD in RTFM per year in these states in NIgeria alone**.

We note that this argument will not be complete until after we have determined if CCC-CHC actually improves counterfactual coverage. It is possible that even if we implement CCC-CHC in geographic areas that meets all of our criteria, we will fail to obtain enough coverage to reach the children who actually have unmet need and instead will treat only children who have need (although this seems less likely for vaccine coverage and ORS than some of the other interventions.) But, assuming CCC-CHC does indeed work, it would seem there are a large amount of RTFM just in Nigeria. Dimagi plans to expand to many other countries as well.

Nigeria states - statewide stats								
			MICS 2021 report				Nigerian DHS 2018	
State	**Population**	**Approx U5 population** (using 17% estimate)	**Neonatal Mortality**	**Infant Mortality**	**Child Mortality**	**U5MR5**	**Vitamin A** (% in past 6 months)	**Deworming** (% in past 6 months)

Total	70,566,793	11,996,355	Median: 43.5	Median: 88	Median: 68.5	Median: 150.5	Median: 24%	Median: 6%
Sokoto	5,863,187	996,742	34	104	109	202	45%	7%
Kebbi	5,001,610	850,274	43	95	92	179	45%	3%
Katsina	9,300,382	1,581,065	49	89	77	159	10%	8%
Bauchi	7,540,663	1,281,913	45	89	70	153	21%	10%
Jigawa	5,590,272	950,346	53	95	88	174	72%	27%
Kano	14,253,549	2,423,103	44	87	67	148	13%	4%
Borno	5,751,590	977,770	36	79	66	140	12%	1%
Zamfara	5,317,793	904,025	31	83	58	136	35%	3%
Kaduna	8,324,285	1,415,128	47	73	58	127	28%	9%

Government and Institutional Support in Nigeria

Through the scoping grant from GiveWell, Dimagi engaged in multiple stakeholder discussions for national and state-level support for CCC-CHC. We had detailed meetings with the Assistant Chief Scientific officer of the National Primary health care Development agency (NPHCDA) who has expressed support for this implementation. We also presented our plan to the Director of Nutrition at the Federal Ministry of Health (FMOH), and they have also expressed their support to us during those meetings. The FMOH has expressed interest in a solution like CommCare Connect to capture longitudinal data about nutrition programs, and would be keen to know the results of the VAS+D supplementation campaign we plan to conduct during this year. The government also aims to integrate existing data systems capturing data about nutrition in a single portal and integrate it into DHIS2. Dimagi has experience integrating with DHIS2, and welcomes the opportunity to integrate CCC-CHC collected data into DHIS2. We attended a meeting of the National Nutrition Information System Task Force and demonstrated CommCare as a solution. We will seek to attend future meetings and contribute to the development of a system if invited to do so.

On Feb 26, our partner LLO C-WINS met with NPHCDA to review the app in detail to ensure it captured their indicators of interest. Dimagi made some small adjustments to the app after this feedback, including expanding the list of vaccines to be tracked.

Additionally, a great deal of program planning for nutrition and supplementation programs is still done at the state and local levels. Many of the LLOs we have spoken with have worked extensively with local governments and have already intimated the local governments of this campaign. We obtained a letter of Support from the Gombe State Health ministry. We obtained a similar letter from Adamawa, though they are not one of our 10 priority states. Additionally, all of our potential LLO partners have demonstrated commitment to obtain local permissions for the campaign in their states. Vitamin Angels has agreed in principle to support us for this, but a formal documentary MoU is pending.

Why we chose Nigeria and where else CCC-CHC would work (Q1)

Nigeria is a strong fit for CCC-CHC because of the large populations living in areas of high need of the CHC interventions, due to high under five mortality and low suspected vitamin A supplementation. Our scoping work has reinforced our prior expectations that there are a large number of LLOs throughout the high-need states and they are often involved in the provisioning of health services. In our discussions with the NPHCDA there have been no signs of discomfort around leveraging civil society, but only in making sure that the data we collect includes indicators that are reported back to the NPHCDA. Indeed, Vitamin Angels, whose model involves supplying LLOs with vitamin A to address coverage gaps, works very closely with NPHCDA.

CCC-CHC has wide applicability in geographies where there is sufficient need for interventions suited for CCC-CHC and sufficiently strong civil society (i.e., existing LLOs). We do not anticipate, for example, that supply chain or availability would be a substantial problem for VItamin A, deworming medicine, or ORS/zinc. The interventions suited for CHC-CHC include our current five and others that meet the criteria described above for additional commodities. The need for only one or two interventions may be sufficient to achieve a high CE. For example, the distribution of ORS/zinc alone could justify $2-3 per child in large geographies, with the additional interventions further increasing the CE.

Dimagi would be happy to scope out additional countries to validate the existence of networks of LLOs such as we have found in Nigeria. We expect these networks to be especially robust in countries with less comprehensive community health systems, such as the DRC (but not Ethiopia, for example).

Currency Fluctuations

The Nigerian currency has shifted substantially against the dollar in the last year. When we awarded C-WINS a contract for 40,000 visits at $2 USD per visit in April 2024, $1 was worth about 460 Naira. In early Feb it was over 890. As of Feb 23, 2024 it is over 1600 Naira. We're switching the per-visit fee. The LLOs have agreed to 1000 Naira per visit (though we may need to increase this if the currency fluctuation is too extreme). This excludes commodities. These shifts in exchange rates seem to lead to a substantial improvement in the CE of CCC-CHC in terms of USD.

Proposed Activities for Operational Pilot

We propose the following:

Intervention: CCC-CHC as described above in the scoping section (Vit A, deworming, vaccine, MUAC, ORS). We will consult with GiveWell to determine how much ORS to drop off per visit, whether to include the malaria vaccine, and other important details.

Geography: We will work in 2-3 of the priority states listed above, in Nigeria, to be chosen with mutual agreement with GiveWell. We will further identify specific regions within states that are reachable by LLOs and have substantial need in terms of U5 mortality, suspected VA coverage, etc.

Price per visit: The LLOs have agreed to 1,000 Naira per visit, excluding the cost of the commodities. The total cost of the visit will depend on how much ORS we deliver per visit and currency exchange

rates. A good working number is $2.10 per visit, although the currency exchange could make this even lower. Note: we also pay $15,000 USD to each LLO for setup.

Scale: The table below outlines several options for investment ranging from a total of $950K to 3 million USD. The options vary in terms of the number, size, and duration of the subcontracts we would offer to LLOs. Each option balances various factors. First, we have an interest in working with several LLOs (vs just one or two) so that our findings are more generalizable. We also want to improve and demonstrate Dimagi's ability to manage many LLOs at once. Second, we want to also gain experience working with the size contract at our *scalable unit* size, i.e, the contract size that we eventually want to reach large scale with. We have estimated our scalable unit to be $400K per year per LLO. The two contract options in the table below that achieve this are $400K for 12 months or $200K for six months. Third, there is value in running 12 month projects that contain two six-month cycles where we return to the same community. There are both challenges and opportunities to revisit communities after six months, so having longer contracts will push forward our learnings and further improve our SOPs. Finally, the fourth factor that we are balancing is the total budget size. The more we achieve on the first three factors, the higher the budget.

inputs	Option 1	Option 2	Option 3	Option 4	Option 5
Number LLOs given a $400K, 12 month contract	0	0	1	3	5
Number LLOs given a $200K , 12 month contract	0	1	0	0	0
Number LLOs given a $200K , 6 month contract	2	1	2	2	2
Number LLOs given a $100K, 6 month contract	3	3	2	0	0
Dimagi projects costs (in addition to 10% included in per-visit costs)	$250,000	$300,000	$400,000	$400,000	$600,000
Duration	12 months	18 months	18 months	18 months	18 months
Computed					
Total cost	$950,000	$1,000,000	$1,400,000	$2,000,000	$3,000,000
Number of LLOs	5	5	5	5	7
Number of child visits (assuming $2.10 per vsiit and $15,000 setup per LLO)	297,619	297,619	440,476	726,190	1,092,857
Number of FLWs, assuming 250 visits per month per FLW	198	169	233	301	423

Options 1 and 2 are both at or under one million dollars. The main difference between these two is the duration, as Option 2 includes a 12 month deployment (at half our scalable-unit size) and a six month deployment (at our scalable unit size). We include 3 smaller contracts in both options to gain experience with more LLOs while also keeping the budget under one million dollars.

Options 3, 4, and 5 offer successively larger deployments and larger total budgets. Dimagi feels moderately confident that we can justify $2-3 million dollars as being a responsible use of money. One comparison point is the GiveWell investment to study the benefit of distributing ORS to 1.5 million children, which is estimated to have a substantial direct impact in addition to the learnings it will generate. While we don't yet know how much counterfactual coverage these deployments will achieve, it seems likely that one million visits in high-need states in Nigeria for $3 million total in high-need states in Nigeria will likely deliver reasonably cost-effective impact.

Dimagi is also open to a range of flexible arrangements, such as starting with a smaller option and then potentially adding in other deployments during the course of the project, or setting up a pay-for-performance contract between Dimagi and GiveWell where we only charge for visits we verify and pay LLOs for.

Dimagi's project budget: We estimate a budget size of $250K to $600K for Dimagi's project costs depending on the scale and duration of the total project. This will cover the activities described below, including development of the SOPs and data collection and analysis, as well development of onboarding and other materials that will help us scale more efficiently in the future. Dimagi will also contribute a sizable **cost-share** of investment in terms of software development and senior management, which we can detail if that information is useful for GiveWell.

Proposed Activities for Operational Pilot

At a high level, our implementation plan has the following elements:

A. Codify and test a set of SOPs for running CCC-CHC. In particular, expand and pressure test our monitoring and verification SOPs.
B. Scale CCC-CHC to more and larger LLOs, in areas of high need.
C. Assess and gather data from these deployments in order to reduce GiveWell's uncertainty around cost, adverse outcomes, availability of LLOs, etc.
D. Design and prepare to implement an RCT after the conclusion of the operational pilot, including research design, power calculations, etc.

The following plan describes the 18-month duration projects.

Set up [Months 1-4]: Dimagi will be ready to move quickly if this proposal is funded by GIveWell given the groundwork we are currently doing in Nigeria. During the first two months of this project we will codify our SOPs and sign contracts with LLOs.

Appendix A contains an initial list of the SOPs that Dimagi will develop. We will refine this list and develop documents for these SOPs. In most cases we have practices established from our initial six CCC-CHC deployments and simply need to codify them.

We will offer the awards to the number and size of LLOs agreed in the first months of this projects. We will choose from the LLOs we have already identified. (We welcome GiveWell's input on LLOs or specification of geographies.) We will allow minimal if any customization of the contracts. Very little customization was needed in our most recent set of awards. We expect to sign the contracts quickly, as many LLOs have expressed enthusiasm for the project.

Implementation and Monitoring [Months 5-15]: During this phase, Dimagi will oversee the execution of CCC-CHC by the LLOs. We expect this phase to resemble our efforts in Q4 2023 and Q1 2024 when we were overseeing two LLOs to each run 40K deployments. Scaling to more and larger LLOs will help test and solidify our processes and SOPs.

During this phase, Dimagi will carefully track and gather data necessary to reduce GiveWell's uncertainty around cost, adverse outcomes, etc. During this phase we will also focus on our verification activities as described below.

Preparing for RCT [throughout project]: Throughout the project we will work with GiveWell and IPA Nigeria to flesh out the RCT design for phase 3. Dimagi and IPA have submitted a proposal to USAID DIV, with hopes of entering into co-creation where we will further flesh out the initial design floated by IPA. This proposal has passed initial screening and USAID-DIV is requesting more details on the study design and plans to send further questions on the proposal to Dimagi.

Wrap-up and analysis [Months 16-18]: In the final months of the project, Dimagi will analyze and report on the Operational Pilot and, if appropriate, develop proposals for further work.

Monitoring and Verification SOPs (Q5)

An important area of focus throughout this project will be on further developing and assessing our methods of verification.

We are currently analyzing the data from the pilots with C-WINS and Sanmat which will inform our improved strategies going forward. An example of our analysis is the age distribution of the 40,143 visits recorded by C-WINS:

1-12 months	13-24 months	25-36 months	37-48 months	49-60 months
11%	15%	19%	23%	32%

We suspect that some 5 year olds were being classified as 4 year olds due to the families and the FLWs wanting to give the services to children who just missed the age cutoff. This data is overall encouraging to us, in that it fits with what we would expect from actual service delivery, though also warrants a deeper investigation.

For the new pilot with ORS/zinc, we are requiring the FLWs to take a picture of the ORS/zinc packets they are dropping off, a time-stamped GPS, and to specify if the picture and GPS were taken at the HH, near the HH, or otherwise.

Our verification methods will include:

- Real-time checks will be performed based on timestamp, visit duration, and the decision support built into the CommCare Connect application experience itself.
- Weekly or biweekly reviews of GPS and time-stamp data to ensure the results fit within the expected patterns. This will include spot checks of pictures to ensure they are being taken and are different.
- Validation of and random spot-checking of phone numbers collected. We have modified our app to require the user to indicate whose phone number it is, realizing that sometimes we were given the number of a village elder. We will run simple checks to determine the number of unique numbers given per FLW, as well as to check for patterns like “123” being in the number. We will then call a sample of the numbers to determine if they are real numbers of a person in the designated area, as well as if they remember the service delivery visit.
- We will develop methods to assess larger batches of data, e.g. one month worth of data from an LLO. We anticipate being able to identify large-scale fraud or systematic errors by LLOs would lead to cancellation of the pay-for-performance contract if necessary. One challenge will be that we do not anticipate getting any large-scale fraud from the LLOs we work with, so we will seek out alternative methods to test these methods.

We look forward to working with others to develop these protocols. In particular, Karen Levy from Fit for Purpose has expressed interest to help us develop these SOPs from her experience. We are also hopeful to learn from New Incentives which has very substantial verification procedures to manage the cash distributions they oversee.

Appendix

Appendix A: Initial List of Standard Operating Procedures

The following is an initial list of SOPs that Dimagi will codify and test during the proposed Operational Pilot.

	SOP	Description	Status
1	Contracting and Onboarding LLOs	Procedures for identifying, vetting, and formalizing agreements with LLOs, including the specifics of pay-for-performance contracts, roles, and responsibilities.	Have 80%, need to codify
2	FLW Training and Certification	Guidelines for training Frontline Workers (FLWs) on the use of CCC apps, including modules on decision support, screening, dosing, and data capture. This SOP should also cover certification processes to ensure competency.	Have 80%, need to codify
3	Digital App Deployment and Updates	Steps for deploying Dimagi's digital apps to FLWs, including version control, updating procedures, and ensuring compatibility with devices used in the field.	Have 80%, need to codify
4	Child Visit Procedures	Detailed workflow for conducting child visits, from identification and consent to screening, intervention (e.g., ORS and zinc administration), and follow-up, using the CCC apps for guidance and recording.	Have 80%, need to codify
5	Data Management and Privacy	Protocols for data collection, storage, access, and sharing, focusing on ensuring data integrity, security, and compliance with privacy regulations, especially concerning children's health information.	Standard Dimagi practice
6	Monitoring and Verification	Guidelines for monitoring FLW performance and program impact, including the use of data captured via CCC apps for real-time analysis, GPS verification, and monthly invoicing processes. Continuous evaluation and improvement processes for the CHC program, including quality control checks, feedback mechanisms, and periodic review of technology and operational procedures to enhance service delivery.	Have 20%, need to develop
7	Procurement and Supply Chain Management	Procedures for the procurement of necessary supplies, including ORS and zinc, and management of inventory to ensure availability at all times for FLWs.	Have 20%, need to develop
8	Problem management	Protocols for handling emergencies or crises, including steps for rapid response, communication strategies, and coordination with local authorities or organizations.	Need to develop
9	Financial Management and Accountability	Financial procedures related to the pay-for-performance model, including detailed guidelines for invoicing by LLOs, payment processing, and audits to ensure accountability and transparency.	Have 50%

Appendix B: Estimates of reachable population

The following are estimates by Dimagi's contacts at some of the larger LLOs of how much of each state is reachable by LLOs.

State	Estimated percent safely reachable by LLOs	Source of information
Kano	90%	Dr. Jennifer (SFH), CS-SUNN team, C-WINS
Kaduna	90%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna)
Adamawa	90%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna), Muazu (he was a MEL lead for Adamawa SPHCDA until he joined Dimagi)
Katsina	85%	Dr. Jennifer (SFH), CS-SUNN team, C-WINS
Bauchi	85%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna)
Sokoto	80%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna)
Kebbi	80%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna)
Zamfara	80%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Stephen John (Janna)
Jigawa	80%	Dr. Jennifer (SFH), CS-SUNN team
Gombe	70%	Dr. Jennifer (SFH), CS-SUNN team, Dr. Suraj Kwami (State director of Health Research and planning)

Appendix C: Options for CCC-CHC deployments size and duration

The following table shows a range of deployment sizes by total cost (to GiveWell), duration. and cost per visit. Dimagi is fairly confident we can run CCC-CHC for 1,500 Naira per visit including the payment to the LLO and ORS procurement, and using donated Vit A from Vitamin Angels or other sources. Adding 10% to this gets to roughly $1.70 per visit. We also show some options with a higher cost per visit of $2.10 for comparison.

Cost	**Number months**	**Cost per visit**	**Number visits**	**Number children**	**Number FLWs** (250 visits per month)
$400,000	12	$1.70	235,294	117,647	78
$200,000	12	$1.70	117,647	58,824	39

$200,000	6	$1.70	117,647	117,647	78
$200,000	6	$2.10	95,238	95,238	63
$125,000	12	$1.70	73,529	36,765	25
$125,000	6	$1.70	73,529	73,529	49
$125,000	6	$2.10	59,524	59,524	40
$75,000	12	$1.70	44,118	22,059	15
$75,000	6	$1.70	44,118	44,118	29

Appendix D: Current Deployment process

Dimagi will formalize its onboarding process into SOPs as part of this project. The following steps describe our current, somewhat standardized, approach to date.

1. Onboarding call: This includes explaining the general aim, objectives and overview of processes we follow for onboarding to the partner organization.
2. Contract signing: We have a standardized draft contract reviewed and finalized by the program and legal team that is shared with the partner. This contract template includes standard legal clauses, Scope of work, Pricing details, payment criteria and data handling exhibits. The partner is asked to review and sign-off. We have allowed a small amount of customization but hope to get to a fully standardized contract.
3. Campaign and project plan iteration: Dimagi has a campaign plan template which requests details on key aspects of the implementation like recruitment, community mobilization, approvals, procurements, quality checks and micro-plan for implementation. Dimagi reviews and seeks clarifications from the LLO until we agree on the key aspects. The project plan involves identification of the high-need communities, the micro-planning in terms of which communities will be reached, targets if any for FLWs and timelines for the project. In the past we have gone back to the campaign plan presented by the LLO in scenarios where campaign moved at an undesired pace to nudge the LLOs to adopt alternative measures. Our current template is somewhat unwieldy and we will streamline it in future iterations.
4. Project setup: This involves the LLO raising an invoice for the setup fee, and initiating recruitments, procurements, government approvals and community mobilization. Dimagi has a set of guidelines and templates for recruitment and procurement which specify the desirable traits among its FLWs, while our procurement guidelines offer guidance on standard procurement practices, along with detailed specifications and requirements for procurement of phones or tablets. We usually have details on the community mobilization and government approvals through the campaign plan.
5. Pre-deployment calls and training: We provide access to the app along with a detailed user manual once most of the above steps are complete, and ask the LLOs to provide any contextual feedback. We also conduct training sessions for app usage, downloading and understanding the reports and data downloaded from the web dashboard, and a review of the operational plan before a pilot deployment and field testing is conducted. We monitor the results of a field test,

including a preliminary analysis of data, clarification of challenges related to the app or its contents, and testing if the reports and data obtained are in alignment with the app framework.

6. Shift to Deployment: This is the phase when field deployments begin support like data analysis and monitoring are initiated. We adopt a standard monthly payment invoicing process during the deployment phase which is oriented to the LLOs as well. A series of checks are run to verify the service delivery across FLWs and a final list of verified visits and rejected visits are sent to the LLO, for possible discussion,

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