Special Article

Scaling down to scale-up: a strategy for accelerating community-based health service coverage in Ghana

John Koku Awoonor Williams ,¹ James F. Phillips ,² Ayaga A. Bawah ³

¹Ghana Health Service, Accra, Ghana

²Columbia University Mailman School of Public Health, New York, NY, USA

³Regional Institute for Population Studies, University of Ghana, Accra, Ghana

Received: Feb 28, 2019

Accepted: May 14, 2019

Correspondence to

James F. Phillips

Heilbrunn Department of Population and Family Health, Columbia University Medical Center, Mailman School of Public Health, Columbia University, 60 Haven Avenue, New York, NY 10032, USA.
E-mail: james.phillips@columbia.edu

© 2019 Korean Society of Global Health.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORCID iDs

John Koku Awoonor Williams
<https://orcid.org/0000-0002-1094-8212>

James F. Phillips
<https://orcid.org/0000-0002-6720-7204>

Ayaga A. Bawah
<https://orcid.org/0000-0003-4864-4182>

Conflict of Interest

The authors have no competing interests to declare. Ethical safeguards for the Navrongo project, described in this case study, were instituted by the ethical review procedures of the Navrongo Health Research Centre of the Ghana Health Service. Other research activities described in this case study are based on protocols that have been approved by the ethical review processes of the Ghana Health Service and Columbia University.

INTRODUCTION

“One must learn by doing the thing, for though you think you know it, you have no certainty until you try.”

- Sophocles, 400 BC

Calls for evidence-based action are as old as writing itself. Exhortations to learn-by-doing recur whenever health system change is proposed. Learning by doing benefits from scaling operations down to tractable levels of management, testing changes that may or may not improve operations, and scaling up innovation based on lessons learned. However, the many small-scale projects and pilot studies that have proliferated in the health sector in recent decades often end without their large-scale utilization,¹ in part because scaling up is a label signaling the end of research rather than a paradigm for generating continuous evidence to guide a sustained process of organizational change. This paper presents Ghana's experience with sequential “scaling down” of operations as a continuous process of evidence-driven scaling up. While the Sophoclean process of “learning by doing” is more complex than this phrase connotes, the Ghana example represents a practical demonstration of a paradigm for scaling up that retains the advantages of small scale “learning by doing” as a means of catalyzing the pace, operational integrity, and coverage of scaling-up.

Commencing with policy responses to the 1978 Alma Ata Global Health Conference,² improving access to primary health care has remained a pillar of health policy in Ghana ever since. Despite a full decade of investment in large scale policy action during the 1980s, evidence emerging in the early 1990s established that implementation of policies had failed.³ In 1992, the Ministry of Health convened an advisory committee to review problems and seek solutions that would define a new course for community health care programming. But policy debate ensued over the optimum configuration of community worker cadres and feasible means of financing community worker deployment costs. To resolve debate, a process of learning-by-doing was launched that has continued to the present (Fig. 1). The process that has been applied is adapted from a paradigm sponsored by World Health Organization to scaling up pilot project innovations.⁴ Specific attention in Ghana was directed to transferring the Bangladesh model for phased in research to its program development needs.⁵ However,

Author Contributions

Conceptualization: Awoonor Williams JK, Phillips JF; Funding acquisition: Phillips JF; Methodology: Phillips JF; Writing - original draft: Phillips JF; Writing - review & editing: Awoonor Williams JK, Bawah AA.

Fig. 1. Five scaling down initiatives for guiding scaling up of community-based primary health care programming in Ghana.

CHPS = Community-based Health Planning and Services; SLD = Systems Learning Districts.

the operational history of the Ghana model contrasts with antecedent Asian programs in important ways. We are therefore providing a synopsis of its history with the goal of extracting lessons that could inform program development elsewhere in Africa. This national program, founded in 1999 and implemented since 2000, is known as the Ghana Community-based Health Planning and Services (CHPS) Initiative.^{6,7}

EVIDENCE-DRIVEN COMMUNITY HEALTH PROGRAM DEVELOPMENT IN GHANA

The Ghana paradigm for evidence-driven program development is portrayed in Fig. 1. Stages in community-based care development have involved scaling down management into episodes of sequential learning, with each followed by a process of scaling up operations based on lessons learned. Scaling down has provided administratively tractable units of observation for systems learning that informed each subsequent episode of scaling up of program improvements. No single study or research activity is implied by this approach; rather, it connotes a process of sequentially integrating episodes of investigation into corresponding phases of large-scale system decision-making and development.

Developing CHPS as a micro-pilot

The scaling down process commenced in 1994 with pilot study by the Navrongo Health Research Centre (NHRC) for exploring means of developing culturally appropriate service delivery strategies for a range of primary health care needs.⁸ This involved convening stakeholders in three villages to seek their advice in 90 days intervals over an 18 months period and implementing pilot services according to their recommendations. This participatory consultative process generated a concept for culturally compatible service delivery.

Community Health Nurses were an established cadre of paramedics that had been improperly utilized. Nearly 2,000 of these workers had been trained for 18 months in basic primary

health care services, but they were deployed to hospitals and clinics where their services were largely redundant with other paramedics. Their average patient caseload was therefore very low, approximating one case episode per worker per day. The pilot focused on assessing the feasibility of redeploying these nurses to community locations where access to nursing care would foster efficient utilization of their skills.

A contrasting strategy, promoted by United Nations Children's Fund at the time, advocated the deployment of volunteer workers. The relative efficacy of volunteer deployment versus nurse deployment was unknown. With the goal of producing a sustainable approach to primary health care, the pilot aimed to assess means for volunteers to be rapidly recruited by the experiment, and trained to operate revolving accounts for financing the provision of primary health care pharmaceuticals.⁹

Scaling up the Navrongo pilot into a factorial trial

To assess the potential health, survival, and fertility impact of the piloted staffing strategies each type of staffing was implemented in one of the four sub-districts of Kassena-Nankana District in the Upper East Region (UER). This district was chosen because demographic research capabilities of the NHRC were already well developed in the area,¹⁰ facilitating the evaluation of a 1996–2003 district-wide plausibility trial.¹¹ Workers were deployed to treatment arms corresponding to sub-districts where care was provided either by community-based nurses, or volunteers, or both types of workers assigned jointly as a team. For comparison purposes, one sub-district was set aside where fully functioning sub-district care was available, but where no community workers were assigned. Wherever nurses were deployed their presence had dramatic impact on childhood survival while volunteers deployed without nurses had no survival effects.^{12,13} Fertility impact arose wherever nurses were deployed jointly with volunteers¹⁴ but nurse deployment, without community outreach activities of volunteers, had no fertility impact.^{15,16}

Testing replication: the Nkwanta initiative

When the Navrongo trial demonstrated that doorstep care could improve reproductive and child health, the Ministry of Health launched a replication study in Nkwanta district of the Volta region to clarify the milestones and processes for replicating the Navrongo program at scale (**Fig. 1A**). Questions concerning the replicability of the Navrongo success-story required operations to be scaled down to a few communities within Nkwanta District.^{17,18} This activity involved focusing implementation research on the replication process and demographic research on assessing the impact of replication, thereby producing experience for national policy statements that could guide a national scaling up program. Scaling down to community pilots proved to be a critical learning resource for the Nkwanta team, leading investigators to recommend utilization of a piloting process wherever CHPS start-up activities were to be pursued in the future.

Implementation milestones were identified that clarified the essential steps in process of getting CHPS functioning in a given service zone. Mapping and community service catchment areas started the process, followed by a process of reaching out to leaders and connecting with social networks. Once community engagement was established, volunteer effort could be directed to developing facilities for the resident assignment of nurses. Nurses that had been recruited, trained for 18 months in primary health care services, and deployed to hospital and clinical duties were retrained in community engagement methods. Equipment, supplies, and logistics arrangements for outreach activities was procured at

a pace that was commensurate with the milestone completion process. Once equipment, supplies, and facilities were ready, nurses were deployed with a mandate to recruit, train, and deploy supporting volunteers for health advocacy activities.

Administrative responsibility for implementing CHPS is vested in District Health Management Teams (DHMT) comprised of a 4 to 5 persons district level committee lead by a District Director, and staffed by paramedics responsible for key elements of primary health care services. The seemingly simple CHPS implementation process proved to be complex to convey to DHMT were assigned responsibility for managing CHPS start-up operations. Yet, all DHMT required orientation into the process of managing the implementation process. If conventional workshop and training approaches were applied, the steps and processes of launching CHPS were poorly understood. However, once Nkwanta was functioning as a fully functioning CHPS implementing district, a process of exchange, demonstration and catalytic financing could be launched to disseminate the implementation strategy to trainee DHMT.

Disseminating the scaling down approach

In all, 32 DHMT were oriented to the concept of scaling down operations for systems learning, and embarking on a localized version of the Nkwanta milestone approach.¹⁹ In this approach, each of the 32 districts launched a local version of the phased introduction of the CHPS initiative, zone-by-zone, thereby scaling-down the Nkwanta model as a component strategy of scaling up CHPS (**Fig. 1B**). In each participating district, implementation proceeded at a pace that was determined by local availability of leadership, manpower, and financial resources that are required for progressing through the Nkwanta milestones. The demonstration and utilization process were scaling down to zones so that each locality had a pace of implementation that is defined by local leadership and resource management capabilities.

Scaling up within the 32 districts was successful (**Fig. 1B**). During the start-up period from 2000 to 2008, nearly all CHPS implementation was concentrated in the 32 districts where implementers had experienced the CHPS start-up process. Community-sponsored leadership exchanges fostered the diffusion of this community-led scaling down of implementation leadership understanding, commitment, and collective action²⁰⁻²⁴. Once CHPS was established in a few communities within a given district, the program spread rapidly within district boundaries. However, in the absence of DHMT exposure to demonstration of the Nkwanta milestone approach to scaling-down start-up activities, the spread of CHPS among other DHMT was slow. The process of communication, demonstration, and the transfer of experience from districts that were implementing CHPS to districts where CHPS was not functioning well was unfinanced. Since CHPS was confined to a few districts, practical understanding of the CHPS implementation process was lacking in most rural areas of Ghana. And, where scaling-down was not operative, demonstration zones were lacking, depriving DHMT of the learning resource that community leadership and political engagement could provide.

Diagnosing implementation challenges by scaling down system appraisal

By 2004, most development partner investment in CHPS assistance had shifted from direct support of the scaling down model to a variety of component strategies comprised of technical assistance, workshop-based technical training for managers from donor selected localities, the provision of equipment and other donor prioritized components of the program. By 2008, national monitoring data showed that this counter-systemic approach was not working. As a program, the pace of CHPS scale-up would take nearly 50 years to

complete unless reform was undertaken. In response, the Ministry of Health launched a 2009 qualitative comparative appraisal of factors supporting or constraining the pace of scale-up. This scaled down investigation focused on districts, matched by geography, but with contrasting records for the pace of CHPS implementation (**Fig. 1C**). The report emerging from this review emphasized the importance of developing DHMT leadership for CHPS implementation and of improving procedural clarity about the implementation process. Primary health care budgets were severely constrained, preventing flexibility to commit revenue to start-up costs. DHMT were often concerned that launching CHPS operations would create local political pressure to scale-up an operation that was patently unaffordable, given national fiscal management policies that overlooked the need for implementation budget lines. Where practical experience with launching CHPS was lacking, implementation paralysis was the norm.²⁵

Scaling up solutions to problems as a plausibility trial

A new project was launched in 2010 to respond to the 2009 report by testing its recommendations in a plausibility trial that was located in different districts of the UER from the earlier Navrongo trial. This new plausibility trial was known by its acronym “GEHIP,” for the Ghana Essential Health Interventions Program. This project shifted the focus of CHPS implementation research from community studies to the investigation of DHMT leadership lapses that constrained the pace of CHPS implementation.

Located in four treatment districts of the UER, GEHIP interventions were designed to rekindle the “scaling down” model, refine its implementation, and test its impact on childhood survival. For example, pilot micro-implementation, demonstration community exchanges, and grassroots political engagement became process tools for fostering essential CHPS DHMT management capability.²⁶ District health, political, and development officials were engaged in participatory exchanges with community stakeholders with the aim of implementing CHPS even where community facilities were not yet developed. By creating a partnership of learning localities with DHMT, the project could demonstrate and initiate practical procedures for mobilizing community and district resources for the program, and spread this capability rapidly. A key theme of these interventions was orienting DHMT to the value of creating “learning CHPS zones” where the implementation process and community participation and popularity of the CHPS program could be demonstrated. The GEHIP sponsored DHMT participatory leadership exchanges were used to catalyze the systematic phase-in of CHPS milestones, zone by zone, in each of the intervention districts (**Fig. 1D**).²⁷

Launching learning localities is not without financial costs. GEHIP catalytic activities were financed with a flexible fund for each study district that was intended to enable district managers to create CHPS demonstration zones. Based on the Nkwanta replication experience, this investment could be used to foster the political popularity of the program through demonstration activities. To enable managers to engage in community demonstration activity, supplemental funding amounting to \$0.85 per capita per year for three years was added to the health budget as “catalytic revenue” that district leaders were expected to use in ways that would motivate popular support for expanding the resource base for CHPS. DHMT were advised to prioritize use of these funds for creating and using pilot CHPS zones of excellence. Once these pilot zones were functioning, public events could be convened that included local politicians who could participate in CHPS rollout activities. This process of decentralization, demonstration, and political engagement was critical to developing commitment to CHPS from District Assembly and local development officials.

Development revenue was allocated to district implementation costs of the program. This acceleration of development investment in CHPS was a direct outcome of the political outcome of providing seed funds of \$0.85 per capita per year for three project years.

In addition to these systems strengthening activities, GEHIP focused on improving the quality and range of services that CHPS provides. In particular, the critically important need for emergency public health components of primary health care was the focus of action.^{28,29} The approach was developed by scaling intervention down to a single sub-district where strategies could be tested out on a pilot basis, and then scaling up operations to all GEHIP treatment districts to evaluate the impact of its strategic design. Low-cost motorcycle transport vehicles were purchased and modified into tricycle ambulances. Then, using a systems approach, workers at each level of the GHS primary health care operation were trained in the identification of emergencies, appropriate interventions, and timely referral. Villagers, in turn, were provided with outreach education on the recognition of risk, means of communicating emergencies, and the importance of appropriate vehicle use. Volunteers were recruited, trained, and deployed to operate vehicles and manage communication. A system of care was devised to ensure that workers understood the appropriate care point for each type of emergency, ensuring that substandard facilities would be bypassed if a particular emergency episode could not be effectively managed at that location. Most importantly, community promotional activity focused on the importance of facility-based delivery. At no cost to families, emergency equipment was deployed to provide transportation for all deliveries. Results showed that this package of activities reduced maternal mortality.²⁸

UER CHPS population coverage in a 2010 baseline monitoring appraisal was found to be reaching only 20% of the population residing in communities targeted to be served by the program. GEHIP impact on the pace of CHPS expansion was immediate and pronounced. Within 4 years, coverage was complete in four GEHIP treatment districts, a level of coverage that was double the proportion of the population reached in comparison areas.³⁰ A difference-in-difference analysis of the mortality impact of this implementation success has showed that childhood mortality declined in the treatment areas more rapidly than in comparison areas. Two thirds of the difference in difference effect was associated with GEHIP “scaling down” interventions³¹ GEHIP also had an impact on the prevalence of contraceptive use.³²

Putting success to work: the CHPS+ initiative

Important lessons from GEHIP are now being scaled-up to DHMT in all 13 districts of the Upper East Region, providing Ghana with a region of excellence where CHPS systems management and leadership can be a beacon for all Regional Health Management Teams in Ghana. This initiative, supported by the Korea International Cooperation Agency, will constitute a “System Learning Region” where CHPS functions effectively in every district, coverage is complete, and strategic gaps in service delivery are resolved. Known as “CHPS+” the UER scale-up is a component of a generalized GHS sponsored model for institutionalizing lessons that have emerged from the CHPS development experience. CHPS+ includes a program of implementation research, action, and learning that is positioned to guide future action. Just as the UER CHPS+ scale-up of GEHIP is critical to sustaining CHPS development, scaling down the replication process with a transfer experiment is critical to accelerating eventual GEHIP dissemination (**Fig. 1E**). With support from the Doris Duke Charitable Foundation, the Ghana Health Service is transferring GEHIP to 2 replicating regions where UER implementation capacity has been lacking. This replication arm of CHPS+ involves scaling down capabilities noted in **Tables 1** and **2** in 2 Systems

Table 1. The contribution of “scaling down” to scaling-up

Scaling up requires	Scaling down affects		
	The content of change by	The scope and coverage of change by	The pace of change by
Systems leadership: Ensuring that leaders at each level have authority for implementing change. ^{40,41}	<ul style="list-style-type: none"> Building understanding of the innovation and clarifying ways in which authorities can marshal for introducing and supporting the change process. 	Demonstrating for leaders strategies for participants to spread commitment and action at each organizational level.	Catalyzing the development of implementation leadership
Conceptual fidelity: Introducing a credible, conceptually clear and understandable innovation that is maintained as scaling up progresses. ⁴²	<ul style="list-style-type: none"> Clarifying means of ensuring uptake of all components of the innovation. Focusing on means of quality assurance. Ensuring understanding of essential milestones 	Optimizing the adaptation strategies to diverse local realities: No single set of operational innovations will cover populations equivalently in all regions or districts	Enabling managers to understand constraints to the pace of adopting innovation
Fiscal feasibility: Mobilizing the resource system to support the change process. ^{43,44}	Demonstrating the dynamics of human and financial resources required to sustain each component of the innovation	<ul style="list-style-type: none"> Clarifying the eventual costs of extending the innovative operation. Enabling regional administrators to understand contrasting costs of district and community contexts. 	Demonstrating the role of community engagement, volunteerism, and the value of community resource commitment
Planned organizational change: Changing the system to accommodate the innovation. ^{45,46}	<ul style="list-style-type: none"> By identifying the requirements of managing the scope of change. Clarifying worker reactions to change and appropriate actions and responses at each level of the system. Addressing the “fear of the unknown” at each level of the system 	Optimizing the deployment of scarce manpower by region and district, in response to severe shortages of trained health manpower in the poorest localities.	Offsetting “fear of the unknown” and operational confusion about roles and responsibilities
Knowledge management: Transmitting knowledge about the innovation within the system to all key stakeholders. ^{47,48}	<ul style="list-style-type: none"> Facilitating the development of mechanisms for “bottom-up” communication of reactions to change. Clarifying communication requirements for components of the innovation. Developing indicators of whether intended changes are understood and communicated. 	Adapting knowledge management to local needs: Ghana has 82 languages and profoundly different regional and district organizational experience with CHPS and awareness of its health benefits	Accelerating the rate of change in knowledge and awareness of what is to be changed, who is responsible for implementing change, and how roles are best delineated to make change happen.
Flexibility: Adaptation to the social, economic, political, cultural and institutional context where change is introduced. ^{4,8}	Adapting operational strategies to the social, economic, or environmental context for the innovation	Decentralizing operational planning to address profound regional and organizational variance in contextual determinants of change.	Implementing flexibility for accelerating the pace of operational adaption to the environment.

Learning Districts (SLD) of the Northern Region and 2 additional SLD of the Volta Region. This arrangement permits participating regions to utilize SLD as GEHIP systems learning localities for disseminating concepts that GEHIP has demonstrated to have worked well for CHPS development.³³ Portrayed in **Fig. 2A**, the CHPS+ process began with the creation of four SLD, each of which is linked with local university teams who have advanced capabilities in training and communication. Equipped with this capability, each SLD has been financed to sponsor activities that demonstrate and disseminate GEHIP capabilities for visiting DHMT to utilize (**Fig. 2B**).

The CHPS+ program extends beyond GEHIP replication, however. Its ongoing program of learning aims to diagnose implementation challenges, test solutions, and disseminate lessons learned. CHPS has elements that worked in the past, but it has drifted into becoming a program that is overly focused on construction of facilities for the community component of the system, to the detriment of program activities that highlight community engagement. But, by combining the DHMT leadership development innovations of GEHIP with the core components of CHPS, a new “scaling down to scale up” paradigm has emerged whereby the core capabilities of GEHIP are scaled down to SLD that serve as training platforms for institutionalizing and spreading the GEHIP approach within each participating district (**Fig. 2C**). Just as GEHIP has catalyzed Upper East Region scale-up of its operational elements, its success also invites scaling down replication to develop effective means of national scale-up of lessons learned.

Table 2. The impact of the scaling down process in Ghana by system level

	System level	Description	Learning platform capability	Audience for the system learning process	Scaled down activity	Scaling up activity	Systems development outcome
1)	System Learning Communities in each participating district	Locality where primary health care is fully functional, where implementation steps and milestones are complete.	Community leaders and workers can demonstrate systems development activities	Community leaders and stakeholders from neighboring areas	Community leaders and stakeholders are engaged in health systems strengthening governance and implementation	Participating communities or visiting teams participate in community engagement activities for supporting primary health care.	Community “Champions of change” leading to diffusion of primary health care functionality and governance within participating districts.
2)	SLD	District where primary health care development processes are progressing and where stakeholders are trained in demonstrating implementation to counterparts.	Capacity to demonstrate participatory implementation milestones, planning and monitoring	District managers & political leaders & stakeholders from neighboring areas where system functioning & leadership is deficient.	Counterpart managers, supervisors, and frontline workers from learning districts participate in systems development activities	Participating managers, supervisors, and frontline workers replicate lessons in at least one lead community or lead communities	District “Champions of Change” leading to the spread of systems development capability from SLD to participating districts within each region.
3)	Regional Learning System	Region where district systems learning processes are sponsored and fully functional.	Capability to disseminate learning and promote grassroots political engagement for health systems strengthening	Regional leaders from regions where the candidate innovation is not yet introduced.	A region where leaders and managers can be oriented to the practical requirements of scaling down to scale-up.	Organized exchanges for implementation teams from participating districts to learn from operations at SLD.	Regional “Champions of Change” who support national leaders by demonstrating the scaling down to scale-up paradigm.
4)	National Learning System	Country with implementation research, knowledge management, and systems development fully functional	National planning and capability to track scaling up, diagnose problems, and institute corrective action.	National leaders and development partners who lack systems perspectives on strategies for improving large-scale program functioning.	Sponsoring implementation research and phased utilization of results.	Planning, financing, implementing, and monitoring scaling up.	Evidence-based organizational change based on the spread of scaling up capacity.

SLD = System Learning District.

With support from the two participating Regional Health Administration, participating DHMT deploy home district teams of implementers to SLD demonstration areas for orientation into the GEHIP process. This exchange process is accompanied with the provision of catalytic financing to support the creation of scaling down locations in each participating district (**Fig. 2D**). In this manner, the process of scaling down for learning by doing cascades through each district (**Fig. 2E**).

Evaluation of the scheme utilizes variance in the pace of implementation of the scheme to construct a stepped wedge design. By employing monitoring tools, and mixed method implementation research, the operational and demographic impact of replication activities will be possible. CHPS+ implementation will generate continuous learning that is the focus of knowledge management operations that aim to ensure utilization of the learning process for developing national capacity to scale-up CHPS programming without awaiting project completion. As a program of Sophoclean action and investigation, CHPS+ will comprise a 5-year system of researching the utilization of research that aims to foster GEHIP institutionalization. At present, however, the **Fig. 2** model functions as a 2-region trial. In this manner, scaling down is posited to be a tool for the eventual evidence-based scaling up of GEHIP in all districts of the Northern and Volta Regions.

Fig. 2. A strategy for utilizing a scaling down process to scale-up GEHIP.
GEHIP = Ghana Essential Health Interventions Program; SLD = Systems Learning Districts.

CONCLUSION

Ghana's history of community-based primary health care development comprises a theory of change that is summarized in **Table 1**. While it was declared as a national policy in 1999, with implementation that started in 2000, the program has yet to reach every rural household. A process of scaling up has therefore progressed for 2 decades. From the CHPS experience, scaling up requires critical capabilities that set the stage for decision and action as implementation unfolds. Columns of **Table 1** specify three attributes of operational change are relevant to determining if scaling up is progressing, as planned: i) Are the contents of the changes that are occurring consistent with operational content expectations? Fidelity to the proposed innovation can be eroded if scaling up dilutes the evidence that generated commitment to scaling up.^{34,35} ii) Is the geographic or institutional coverage of scaling-up progressing, as planned? iii) Is the pace of change consistent with expectations? Rows of **Table 1** summarize 6 attributes of effective scaling-up that have been marshalled by “scaling down” operations to learning localities. **Table 1** cell entries summarize the observation that capabilities associated with leadership, operational fidelity, fiscal feasibility, organizational planning, knowledge management, and implementation flexibility have been fostered by scaling down operations to ensure learning that sustains the content, coverage, and pace of CHPS scaling up. The six capabilities comprising the rows of **Table 1** are the core SLD capacities that **Fig. 2** activities aim to disseminate.

Systems perspectives in leadership development programs is often lacking,³⁶ but as the **Table 2** entry shows, the “scaling down” model permitted stakeholders at each level of the system to focus their attention on tractable management units where their leadership could

be directed to effective evidence based planning at each system level^{18,30}: At the community level, scaling down fostered diffusion of consensus and action for CHPS implementation. At the district level, scaling down clarified the milestones and practical requirements of phasing in CHPS implementation.²⁵ Lack of coherent CHPS district leadership constrained national scale-up.³⁷

Procedural uncertainty is also problematic, if change is viewed by DHMT as destabilizing. But, by demonstrating operations in learning localities, DHMT leadership malaise and “fear of the unknown” can be readily resolved by systems learning activities that generate conceptual clarity. Demonstration can also address confusion about the implementation process by clarifying DHMT leadership responsibilities and demonstrating the feasibility of moving forward with scaling-up. Financial planning is of critical importance to this process of leadership development, as illustrated by the entries in rows 4 and 5 of **Table 2**. But since resources for CHPS are severely constrained, effective DHMT planning requires demonstration of ways to draw upon popular community support for sustaining CHPS start-up costs, and ways to generate community commitment to volunteerism.^{26,38}

A challenge to be addressed in any scaling up process is the need to balance structured fidelity to the innovation with flexibility to adapt operations to local needs. Some Regional Directors of Health Services failed to understand the implementation process while others have understood the program and implemented it effectively. Scaling-down provides regional leaders with a means of effective implementation of decentralization (**Table 2**, row 3). The goal of achieving people entered programming cannot be compromised by a concomitant goal to scale-up an innovation.^{39,40}

Strategic adjustment to local circumstances benefits from national policies for disseminating the scaling-down approach (**Table 2**, row 4). While the learning process that scaling up requires may be sustained, adapting operations can be grounded in local experience, social contexts, and local organizational needs that are unique to each participating district.⁴¹⁻⁴³ Ghana's scaling down paradigm has thus impacted on CHPS scaling-up capacity at each level of health systems functioning, from communities, to districts; thereby transforming regional capacity to manage scale-up when lead districts are serving as points of innovation, implementation research, and training. And, once champions of the CHPS program emerged from the leadership development process, their promotion of the program had systems development impact that extended to national policy and implantation units. National dissemination programs, such as the “National Health Forum” and the “Health Summit” were utilized to communicate knowledge about the health impact of community-based care and the feasibility of scaling up CHPS operations through the scaling-down paradigm.

Fig. 3 (bottom) summarizes the scaling down to scale up paradigm that is represented by the examples displayed in **Fig. 1**. Scaling down represents an implementation learning process that involves developing demonstration systems that are not only informative to senior managers, but are also relevant to decisions that must be made at each level of the system. At the periphery, successful implementation of community-based health care can be used to catalyze the spread of evidence-based replication, enabling senior managers to effectively disseminate organizational change. Most importantly, effective scaling down fosters people centered planning and management, an essential element of effective community-based care.

Fig. 3. The common elements of episodes of scaling down and attributes of subsequent scaling up.

As the scaling down process unfolds, the corresponding learning process can accelerate, improve, and support scaling up (Fig. 3, top). By organizing scale-up in a manner that respects and utilizes ethnic diversity, the guided diffusion process can represent a national paradigm for reform and system development. With qualitative and quantitative monitoring providing evidence on the content, coverage, and pace of change, scaling up can be evidence driven, and adapted to local realities, needs, and resources. Indeed, monitoring of CHPS program expansion suggests that coverage of the program is improving and that the pace of CHPS implementation has accelerated as a consequence.⁴⁴

ACKNOWLEDGEMENTS

The programs described in this paper were supported by grants to the Population Council from the Finnish International Development Agency, the United States Agency for International Development, and the William and Flora Hewlett Foundation and by grants from the Rockefeller Foundation to the Navrongo Health Research Centre. This paper was supported by grants of the Doris Duke Charitable Foundation to Columbia University and by support rendered by the University of Ghana Regional Institute for Population Studies. The authors gratefully acknowledge the contribution of the late Dr. Frank K. Nyonator, MD, MPH to this paper. Dr. Nyonator was the Acting Director General, Ghana Health Service and prior to that Director of the Ghana Health Service Policy Planning Monitoring and Evaluation Division. He collaborated in the drafting of a conference version of this manuscript and was a key figure in the development of community based primary health care in Ghana. His sudden death in August 2018 occurred prior to the completion of his collaboration on this manuscript. The authors also gratefully acknowledge the helpful comments of the advisory panel of the Doris Duke Charitable Foundation's Africa Health Initiative.

REFERENCES

1. Binswanger HP, Aiyar SS. *World Bank Policy Research Working Paper No. 3039. Scaling Up Community-Driven Development: Theoretical Underpinnings and Program Design Implications*. Washington, D.C.: The World Bank; 2003.
2. World Health Organization; The United Nations Children's Fund. *Declaration of Alma-Ata. International Conference on Primary Health Care, Alma-Ata, USSR, 6-12*. Geneva: World Health Organization; 1978.
3. Amofah GK. Ghana. Selective versus comprehensive primary health care. *Trop Doct* 1994;24(2):76-8.
[PUBMED](#) | [CROSSREF](#)
4. Simmons R, Fajans P, Ghiron L. *Scaling Up Health Service Delivery: From Pilot Innovations to Policies and Programmes*. Geneva: World Health Organization; 2007.
5. Phillips JF. Translating pilot project success into national policy development: two projects in Bangladesh. *Asia Pac Popul J* 1987;2(4):3-28.
[PUBMED](#)
6. Ghana Health Service. *The Community-based Health Planning and Services (CHPS) Initiative*. Accra: Ghana Health Service; 1999.
7. Ghana Health Service. *Community Health Planning and Services (CHPS): the Operational Policy, Ghana Health Service Policy Document No. 20*. Accra: Ghana Health Service; 2005.
8. Nazzar A, Adongo PB, Binka FN, Phillips JF, Debpuur C. Developing a culturally appropriate family planning program for the Navrongo experiment. *Stud Fam Plann* 1995;26(6):307-24.
[PUBMED](#) | [CROSSREF](#)
9. Chabot J. The Bamako initiative. *Lancet* 1988;2(8624):1366-7.
[PUBMED](#) | [CROSSREF](#)
10. Binka FN, Ngom P, Phillips JF, Adazu K, MacLeod BB. Assessing population dynamics in a rural African society: the Navrongo Demographic Surveillance System. *J Biosoc Sci* 1999;31(3):373-91.
[CROSSREF](#)
11. Binka FN, Nazzar A, Phillips JF. The Navrongo Community Health and Family Planning Project. *Stud Fam Plann* 1995;26(3):121-39.
[PUBMED](#) | [CROSSREF](#)
12. Binka FN, Bawah AA, Phillips JF, Hodgson A, Adjuik M, MacLeod B. Rapid achievement of the child survival millennium development goal: evidence from the Navrongo experiment in Northern Ghana. *Trop Med Int Health* 2007;12(5):578-83.
[PUBMED](#) | [CROSSREF](#)
13. Pence BW, Nyarko P, Phillips JF, Debpuur C. The effect of community nurses and health volunteers on child mortality: the Navrongo Community Health and Family Planning Project. *Scand J Public Health* 2007;35(6):599-608.
[PUBMED](#) | [CROSSREF](#)
14. Debpuur C, Phillips JF, Jackson EF, Nazzar AK, Ngom P, Binka FN. The impact of the Navrongo Project on contraceptive knowledge and use, reproductive preferences, and fertility. *Stud Fam Plann* 2002;33(2):141-64.
[PUBMED](#)
15. Phillips JF, Jackson EF, Bawah AA, MacLeod B, Adongo P, Baynes C, et al. The long-term fertility impact of the Navrongo project in northern Ghana. *Stud Fam Plann* 2012;43(3):175-90.
[PUBMED](#) | [CROSSREF](#)
16. Phillips JF, Bawah AA, Binka FN. Accelerating reproductive and child health programme impact with community-based services: the Navrongo experiment in Ghana. *Bull World Health Organ* 2006;84(12):949-55.
[PUBMED](#) | [CROSSREF](#)
17. Awoonor-Williams JK, Feinglass ES, Tobey R, Vaughan-Smith MN, Nyonator FK, Jones TC. Bridging the gap between evidence-based innovation and national health-sector reform in Ghana. *Stud Fam Plann* 2004;35(3):161-77.
[PUBMED](#) | [CROSSREF](#)
18. Awoonor-Williams JK, Vaughan-Smith MN, Phillips JF. Chapter 4. Scaling-up health system innovations at the community level: a case study of the Ghana experience. In: World Health Organization, editors. *Social Determinants of Sexual and Reproductive Health: Informing Future Research and Programme Implementation*. Geneva: World Health Organization; 2010, 51-70.
19. Nyonator FK, Akosa AB, Awoonor-Williams JK, Phillips JF, Jones TC. Scaling up experimental project success with the Community-based Health Planning and Services Initiative in Ghana. In: Simmons R, Fajans P, Ghiron L, editors. *Scaling Up Health Service Delivery: from Pilot Innovations to Policies and Programmes*. Geneva: World Health Organization; 2008, 89-112.

20. Nyongator FK, Awoonor-Williams JK, Phillips JF, Jones TC, Miller RA. The Ghana community-based health planning and services initiative for scaling up service delivery innovation. *Health Policy Plan* 2005;20(1):25-34.
[PUBMED](#) | [CROSSREF](#)
21. Nyongator FK, Jones TC, Miller RA, Phillips JF, Awoonor-Williams JK. Guiding the Ghana community-based health planning and services approach to scaling up with qualitative systems appraisal. *Int J Community Health Educ* 2005;23(3):189-213.
[CROSSREF](#)
22. Awoonor-Williams JK, Phillips JF, Bawah AA. The application of embedded implementation science to developing community-based primary health care in Ghana. *Int J Popul Dev Reprod Health* 2017;1(1):66-81.
[CROSSREF](#)
23. Rogers EM. *Diffusion of Innovations*. New York, NY: Free Press; 1962.
24. Greenhalgh T, Robert G, Macfarlane F, Bate P, Kyriakidou O. Diffusion of innovations in service organizations: systematic review and recommendations. *Milbank Q* 2004;82(4):581-629.
[PUBMED](#) | [CROSSREF](#)
25. Binka F, Aikins M, Sackey SO, Aryeetey R, Dzodzomenyo M, Esena R, et al. *In-depth Review of the Community-Based Health Planning Services (CHPS) Programme: a Report of the Annual Health Sector Review 2009*. Accra: School of Public Health, University of Ghana; 2009.
26. Awoonor-Williams JK, Schmitt ML, Patel SN, Asuru R, Phillips JF. *Making the System Work: Lessons Learned on Strengthening Ghana's Community-based Health Planning and Services (Part A)*. Accra: United Nations Children's Fund; 2017.
27. Awoonor-Williams JK, Bawah AA, Nyongator FK, Asuru R, Oduro A, Ofosu A, et al. The Ghana essential health interventions program: a plausibility trial of the impact of health systems strengthening on maternal & child survival. *BMC Health Serv Res* 2013;13 Suppl 2:S3.
[PUBMED](#) | [CROSSREF](#)
28. Patel S, Koku Awoonor-Williams J, Asuru R, Boyer CB, Awopole Yepakeh Tiah J, Sheff MC, et al. Benefits and limitations of a community-engaged emergency referral system in a remote, impoverished setting of Northern Ghana. *Glob Health Sci Pract* 2016;4(4):552-67.
[PUBMED](#) | [CROSSREF](#)
29. Patel S, Awoonor-Williams JK, Asuru R, Schmitt ML. Lessons learned from a community-engaged emergency referral systems-strengthening initiative in a remote, impoverished setting of northern Ghana. *Ann Glob Health* 2014;80(3):191.
[CROSSREF](#)
30. Awoonor-Williams JK, Phillips JF, Bawah AA. Catalyzing the scale-up of community-based primary healthcare in a rural impoverished region of northern Ghana. *Int J Health Plann Manage* 2016;31(4):e273-89.
[PUBMED](#) | [CROSSREF](#)
31. Bawah AA, Awoonor-Williams JK, Asuming PO, Boyer CB, Achana SF, Akazili J, et al. The child survival impact of the Ghana essential health interventions program: a health systems strengthening initiative in a rural region of Northern Ghana. Proceedings of Annual Conference of the Population Association of America; 2017 Apr 27-29; Chicago, IL. Silver Spring, MD: Population Association of America; 2017.
32. Asuming PO, Bawah AA, Phillips JF. A health systems strengthening initiative in rural Ghana: the impact of the Ghana Essential Health Interventions Program on contraceptive use and unmet need. Proceedings of Annual Conference of the Population Association of America; 2017 Apr 27-29; Chicago, IL. Silver Spring, MD: Population Association of America; 2017.
33. Phillips JF, Awoonor-Williams JK, Bawah AA, Nimako BA, Kanlisi NS, Sheff MC, et al. What do you do with success? The science of scaling up a health systems strengthening intervention in Ghana. *BMC Health Serv Res* 2018;18(1):484.
[PUBMED](#) | [CROSSREF](#)
34. Breitenstein SM, Gross D, Garvey CA, Hill C, Fogg L, Resnick B. Implementation fidelity in community-based interventions. *Res Nurs Health* 2010;33(2):164-73.
[PUBMED](#) | [CROSSREF](#)
35. Carroll C, Patterson M, Wood S, Booth A, Rick J, Balain S. A conceptual framework for implementation fidelity. *Implement Sci* 2007;2(1):40.
[PUBMED](#) | [CROSSREF](#)
36. DeSavigny D, Adam T. *Systems Thinking for Health Systems Strengthening*. Geneva: Alliance for Health Policy and Systems Research, World Health Organization; 2009.
37. Sory EK, Jones TC, Nyongator FK, Phillips JF. Grassroots mobilization to accelerate the introduction of community-based health service delivery in Ghana: Strategic assessment of the CHPS program in the Central Region of Ghana. Proceedings of Annual Conference of the Population Association of America; 2003 May 1-3; Minneapolis, MN. Silver Spring, MD: Population Association of America; 2003.

38. Awoonor-Williams JK, Patel SN, Schmitt ML, Asuru R, Phillips JF. *Making the System Work: Developing Emergency Public Health Systems (Part B)*. Accra: United Nations Children's Fund; 2017.
39. Sheikh K, George A, Gilson L. People-centred science: strengthening the practice of health policy and systems research. *Health Res Policy Syst* 2014;12:19.
[CROSSREF](#)
40. Richard F, Hercot D, Ouédraogo C, Delvaux T, Samaké S, van Olmen J, et al. Sub-Saharan Africa and the health MDGs: the need to move beyond the “quick impact” model. *Reprod Health Matters* 2011;19(38):42-55.
[PUBMED](#) | [CROSSREF](#)
41. Gilson L, Alilio M, Heggenhougen K. Community satisfaction with primary health care services: an evaluation undertaken in the Morogoro region of Tanzania. *Soc Sci Med* 1994;39(6):767-80.
[PUBMED](#) | [CROSSREF](#)
42. Gilson LL, Shalley CE. A little creativity goes a long way: an examination of teams' engagement in creative processes. *J Manage* 2004;30(4):453-70.
[CROSSREF](#)
43. Gilson L, Palmer N, Schneider H. Trust and health worker performance: exploring a conceptual framework using South African evidence. *Soc Sci Med* 2005;61(7):1418-29.
[PUBMED](#) | [CROSSREF](#)
44. Phillips JF, Binka FN, Awoonor-Williams JK, Nyongator FK, Bawah AA. Ghana: four decades of community-based primary health care development. Global Conference on Primary Health Care: 40th Anniversary of the Declaration of Alma-Ata Conference; 2018 Oct 25-26; Almaty, Kazakhstan. Baltimore, MD: Johns Hopkins University Press; 2019.
45. Bassett MT, Gallin EK, Adedokun L, Toner C. From the ground up: strengthening health systems at district level. *BMC Health Serv Res* 2013;13 Suppl 2:S2.
[PUBMED](#) | [CROSSREF](#)
46. Glaser EM. Planned organizational change: factors bearing upon sturdy versus fragile rooting. *Sci Commun* 1986;8(2):260-9.
[CROSSREF](#)
47. Shoo R, Matuku W, Ireri J, Nyagero J, Gatonga P. The place of knowledge management in influencing lasting health change in Africa: an analysis of AMREF's progress. *Pan Afr Med J* 2012;13 Suppl 1:3.
[PUBMED](#)
48. Martin CM, Félix-Bortolotti M. W(h)ither complexity? The emperor's new toolkit? Or elucidating the evolution of health systems knowledge?. *J Eval Clin Pract* 2010;16(3):415-20.
[PUBMED](#) | [CROSSREF](#)