Introduction

When Ghana signed the World Health Organization’s Alma-Ata Declaration in 1978, it embraced a vision of a health system that prioritized those in greatest need (World Health Organization 1978; Ministry of Health Republic of Ghana 1995; Saleh 2012). Yet, by the early 1990s, services remained inaccessible to the rural poor (Nyonator and Kutzin 1999). In search of practical means of achieving Health for All, the Ministry of Health convened an advisory panel in 1991 to define a new course for community health care programming. A program of implementation research and action was launched that has contributed to community-based primary health care (PHC) development ever since. Experience gained illustrates a strategy for moving beyond a pilot trial to national programming while also tailoring change to local cultural conditions and capabilities of relevant administrative units. This chapter presents a country case study of ways to leverage health system reforms developed in one location by spreading implementation capacity throughout a country.

Ghana’s history of evidence-driven program development is portrayed in figure 10.1. Questions concerning what should be done in response to evidence of continuing high fertility and high mortality remained the subject of policy debate in the 1990s. The provision of PHC remained remote from the population in need or dispersed to poorly supervised and inadequately trained volunteer health workers whose services often did more harm than good (Skeet 1985; Peter, Davidson, and Burger 1987; Walt, Perera, and
Heggenhougen 1989). Despite international consensus that community-based PHC could save lives, the appropriate strategic responses to this consensus were unresolved in the 1990s and are still evolving three decades later (Perry et al. 1999; Freeman et al. 2012; Singh and Sachs 2013). This chapter presents a country case study of ways to guide the process of PHC development with a phased program of research, evidence-based policy reform, and organized spread of implementation capacity throughout a country.*

Ghana’s 1980 Primary Health Care Policy aimed to develop the organizational structure that is shown in figure 10.2. Although Level A was

*Preparation of this chapter was supported by grants of the Doris Duke Charitable Foundation’s (DDCF) African Health Initiative to the Mailman School of Public Health, Columbia University. The authors gratefully acknowledge advisory support of members of the DDCF African Health Advisory Council and guidance of the CHPS+ Strategic Advisory Committee chaired by Dr. Anthony Nsiah-Asare, director general, Ghana Health Service.
planned to comprise primary service points that would function as the main community-based care point, budget constraints had prevented essential health post construction that the Level A agenda required. Subdistrict care had been established in clinics, termed Level B, with each clinic serving a population ranging from ten thousand to twenty-five thousand in a given subdistrict. Each of these subdistrict health centers was staffed by medical assistants, “enrolled nurses,” and midwives with the goal of providing access to basic ambulatory health care. Level C consisted of a hospital led by at least one physician who was supported by a team of paramedics. Each district in Ghana was provided with a district health management team (DHMT) convened with administrative authority over the system shown in figure 10.2. By 1990, each of the ten regions of Ghana was equipped with a referral hospital and a regional health administration to coordinate the activities of each DHMT. In 1996, an act of parliament consigned the policy and political functions of the health sector to the Ministry of Health; implementation functions of the health care system, as shown in figure 10.2, were consigned to the newly constituted Ghana Health Service (GHS).

By the early 1990s, a cadre of community health nurses (CHNs) had been created and nearly two thousand had been hired, trained for eighteen months, and deployed to districts throughout Ghana. Each CHN was mandated to provide immunizations, care for childhood illness, dispense family planning methods, and deliver other PHC services (table 10.1). However, the absence of revenue for constructing Level A community facilities, purchasing essential equipment, and providing logistics support, prevented CHN community deployment. Instead, CHNs were assigned to already fully staffed Level B subdistrict health centers and Level C district hospitals, where their redundant services amounted to one episode of care per worker per day. Thus, despite the creation of the CHN cadre, more than half of all households were located nine kilometers or more from the nearest Level C hospital or Level B clinic. It was apparent to program planners in Accra that Level A in the system shown in figure 10.2 existed in name only.

To provide evidence that could guide the development of policy to address the need for accessible PHC, the Ministry of Health established a health research unit of the Policy, Planning, Monitoring and Evaluation Division in Accra with a mandate to establish health research centers in each of the three ecological zones of Ghana (Agyepong and Adjei 2008).

By 1992, the northern ecological zone version of these centers was established in the Kassena-Nankana District of the Upper East Region (UER) from institutional capabilities that had been generated by research on vitamin A
supplementation (VAST Study Team 1993). The Navrongo Health Research Centre, based in Navrongo, was accorded a mandate to convert an existing cohort research system into a population research platform for the demographic evaluation of community-based PHC (Binka et al. 1999). The UER was Ghana’s most impoverished region. The core mandate of the Navrongo Health Research Centre was to research means of addressing the challenging health development problems of Sahelian northern Ghana (Binka et al. 1995; Adongo et al. 1998; Ngom et al. 1999; Doctor 2007). UER mortality rates were well above national levels, and cultural traditions were known to sustain high fertility (Adongo et al. 1997) and constrain health development (Ngom et al. 2003). The study area economy was dominated by subsistence agriculture, literacy was low—particularly among women—and traditions of marriage, kinship, and family-building emphasized the economic and security value of large families. Parental health-seeking behavior was governed more by tradition than by the pursuit of modern health care (Ngom et al. 2003).

Figure 10.2. The organizational structure of primary health care services in Ghana at the community (A), subdistrict (B), and district hospital (C) levels.
Table 10.1. Primary health care modalities and services provided at the community level.

<table>
<thead>
<tr>
<th>Category</th>
<th>Health Intervention Provided by Community-Based Health Planning and Services (CHPS) as of January 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General population</strong></td>
<td></td>
</tr>
<tr>
<td>Malaria prevention</td>
<td></td>
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<tr>
<td>• Cost-free insecticide-treated bed net distribution</td>
<td></td>
</tr>
<tr>
<td>• Residual spraying, environmental management</td>
<td></td>
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<tr>
<td>• Training for improved malaria case management and referral</td>
<td></td>
</tr>
<tr>
<td><strong>Childhood preventive and curative care</strong></td>
<td></td>
</tr>
<tr>
<td>Expanded program in immunization</td>
<td></td>
</tr>
<tr>
<td>• Comprehensive immunization care with Bacille Calmette-Guerin, Diphtheria-pertussis-tetanus, Haemophilus influenza, Hep (B-1, 2, and 3), oral polio vaccine (1, 2, and 3), Rotavirus vaccine, Pneumococcal vaccine (1, 2, and 3), measles</td>
<td></td>
</tr>
<tr>
<td>• Vitamin A supplementation</td>
<td></td>
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<tr>
<td>Integrated management of childhood illness</td>
<td></td>
</tr>
<tr>
<td>• Training and deployment of all community health officers in diagnosis, care, and referral of febrile illnesses—for example, antibiotics for pneumonia and acute ear infections, malaria treatment (artesunate/amodiaquine), and referral of febrile diarrheal disease cases for clinical care</td>
<td></td>
</tr>
<tr>
<td>• Care and referral for watery diarrheal diseases via oral rehydration therapy</td>
<td></td>
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<tr>
<td><strong>Reproductive health: prepregnancy and pregnancy</strong></td>
<td></td>
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<tr>
<td>Community-based family planning</td>
<td></td>
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<tr>
<td>• Provision of oral contraceptives, injectables, condoms, information services, referral for side effects or provision of clinical methods; clinic-based provision of intrauterine device and subdermal methods</td>
<td></td>
</tr>
<tr>
<td>Clinical services</td>
<td></td>
</tr>
<tr>
<td>• Intrauterine device, subdermal contraception, tubectomy, oral contraceptives, and condoms</td>
<td></td>
</tr>
<tr>
<td>• Care for side effects</td>
<td></td>
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<tr>
<td><strong>Perinatal health</strong></td>
<td></td>
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<tr>
<td>Antenatal care</td>
<td></td>
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<tr>
<td>• Routine four visits, including checkup and referral</td>
<td></td>
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<tr>
<td>• Tetanus toxoid, iron supplementation</td>
<td></td>
</tr>
<tr>
<td>• Intermittent preventive treatment of malaria in pregnancy with Sulfadoxine pyrimethamine</td>
<td></td>
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<tr>
<td>Promotion of facility based care</td>
<td></td>
</tr>
<tr>
<td>• Promotion of facility-based delivery</td>
<td></td>
</tr>
<tr>
<td>• Immediate postdelivery care</td>
<td></td>
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Note: All modalities and modes of delivery employed by the Navrongo Project and subsequently by CHPS were approved in advance by the Ministry of Health and endorsed for community-based services by the World Health Organization.
Developing Community-Based Primary Health Care

The Primary Health Care Steering Committee was chaired by the director of public health of the Ministry of Health, with participating members that included the director of maternal and child health, the director of the health research unit, and other research experts. Instead of risking public investment in a large-scale, unsuccessful program, the committee sponsored the creation of a four-phased learning process for guiding deliberations on policy.

Phase 1: Participatory Planning Research

Phase 1 was comprised of a three-village learning process that aimed to develop culturally appropriate strategies for providing PHC (Nazzar et al. 1995). Discussion groups comprised of community leaders, women’s social
networks, and frontline workers were convened to comment on service needs and strategies. Based on community advice, services were implemented and discussion was reconvened to gauge reactions. Traditional community gatherings, known as “durbars,” were used to build consensus for relocating nurses from subdistrict and hospital clinics to community locations. The pilot also clarified strategies for recruiting, training, and deploying volunteers for supplementing nurse services with rudimentary syndromic care and referral for childhood illnesses (see box on this page). Attention was also directed to eliciting community contributions of labor and materials for constructing community health compounds, where nurses were to be posted for resident health service work.

Phase 2: The Navrongo Trial

To generate evidence on the possible impact of Phase 1 strategies, a Phase 2 plausibility trial was launched in four subdistricts, each corresponding to policy options for providing convenient, low-cost, and comprehensive service delivery operations. Cells of the trial corresponded to subdistricts where fully functioning clinics were available for medical assistants and nurses to provide the full regimen of PHC. One such subdistrict was set aside as a comparison area. The four subdistricts of Kassena-Nankana were randomly allocated to two operational dimensions.

The community health officer dimension of the project involved re-orienting existing subdistrict health centers to community health care and deploying them to community locations that would improve efficiency and develop the quality and intensity of child health services. CHNs were re-trained to function as village resident personnel, known as community health officers.
officers (CHOs), with training added to develop CHO skills in community engagement and doorstep service delivery.

The Zurugelu dimension mobilized cultural resources of chieftaincy, social networks, village gatherings, volunteerism, and community support. Volunteers were provided with six weeks of training in syndromic screening and referral. Volunteer deployment was posited to represent an affordable and feasible means of providing essential health services to the rural poor, premised on the observation that vibrant African social institutions could provide a platform for recruiting, supervising, and sustaining volunteer effort. Broad outlines of this volunteer-focused approach were advocated by the UNICEF-sponsored Bamako Initiative (Knippenberg et al. 1990). However, no systematic evidence had emerged showing that volunteers with limited syndromic treatment capabilities could save lives (Golden 1991; Lairumbi et al. 2011; Greenspan et al. 2013).

Since the Navrongo worker deployment dimensions could be configured independently, jointly, or not at all, a four-celled experiment was implied by the design (figure 10.4). The joint implementation cell tested the impact of relocating nurses as resident CHOs for ambulatory and preventive health services with backstopping and referral services provided by volunteers. Taken together, the two arms of the trial addressed key themes of policy debate about the effectiveness of volunteers and the sustainability of professional nursing (Binka et al. 1995). Experimentation was needed in the 1990s because

<table>
<thead>
<tr>
<th>Implementation of Community-Resident Nursing Services?</th>
<th>Implementation of the Zurugelu Dimension?</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Comparison</td>
<td>(Cell 4)</td>
<td>Volunteers Only</td>
</tr>
<tr>
<td>Yes</td>
<td>Nurses</td>
<td>(Cell 2)</td>
<td>Combined Community Nurses and Volunteers</td>
</tr>
</tbody>
</table>

*Figure 10.4. Cells of the Navrongo Experiment design.*
Lessons from Phase 2: The Navrongo Experiment

Cell 1: The Zurugelu Area with Primary Health Care Provided by Volunteers
- Volunteers could have been deployed and sustained with community support, but this strategy had no impact on child survival or fertility.

Cell 2: The Community Health Officer Deployment Area
- Nurse deployment saved lives.
- Impact was concentrated among post-infants (an integrated management of childhood illness effect).
- Nurses’ deployment without volunteers had no impact on fertility. Family planning requires comprehensive social engagement that includes outreach to male networks and opinion leaders.

Cell 3: The Community Health Officer and Zurugelu Volunteers Backed Up by Community Engagement
- Cell 3 was adopted in 1999 as national PHC policy.
- Where volunteers were deployed together with nurses, both fertility and mortality declined.
  - Child survival effects were equivalent to Cell 2: MDG4 in seven years.
  - Fertility decline of 15% in five years, equivalent to one birth relative to Cells 1, 2, or 4.

Cell 4: The Comparison Area
- Where subdistrict clinic services functioned without community-based care, neither mortality nor fertility declined.
- Caseloads at subdistrict health center were very low: about one patient per worker per day.

There was no rigorous scientific evidence that supplying family planning services would work in a demand-constrained, rural African setting or that community-based PHC could significantly improve childhood survival (see box on this page).

This conclusion was corroborated by qualitative research showing that parents dealing with childhood illness tended to seek traditional healers as their first provider, owing to customs of trust and respect that permitted the healers to allow parents to defer payments with the expectation that they would eventually be compensated for their care. The trust between traditional providers and their clients represented a form of social insurance that ensured access to traditional health care that was otherwise unaffordable (Nyarko et al. 2002). By replicating this custom of social insurance for deferring payment, the CHO could provide modern health technologies that replaced traditional medicine, a substitution effect that immediately improved survival (Wells-Pence et al. 2007) and eventually achieved MDG4 within seven years.
(Phillips et al. 2006; Binka et al. 2007). In addition, with training and supervision, their outreach to men focusing on family planning provided critical organizational capabilities for the project to achieve reproductive health impact (Debpuur et al. 2002). Therefore, the “combined cell” was adopted as the service model for the national health policy.

**Phase 3: Replication-Related Implementation Research**

In 1998, the Ministry of Health convened a conference of district and regional health officials to disseminate preliminary results and discuss implementation implications. Rather than accept results as a basis for moving forward, most participants in the meeting questioned the relevance of Navrongo research to their respective capabilities and needs elsewhere in the country. The remoteness of Navrongo, its research resource base, and unique administrative structure were cited as reasons to question the replicability and sustainability of the Navrongo model. However, the DHMT in Nkwanta District had already launched a process of replicating the Navrongo model. After discussing this initiative, conference participants resolved to reconvene deliberations within a year to review the experience of this replication and gauge the policy relevance of lessons Nkwanta provided as a basis for researching this implementation process, documenting its details, and demonstrating the process to visiting implementation teams.

Based on the Nkwanta experience, six steps were documented as national policy for implementing the program, which are phased in zone by zone over time wherever CHPS is implemented (figure 10.5).

1. **Preliminary planning.** Communities are comprised of contiguous clusters of extended households with a common lineal leader or chief and elders representing coresident lineage heads (Lyon 2003). Since household membership in a community is unambiguous, Nkwanta planning started with social mapping of the boundaries of chieftaincy domains and locations of the households of traditional leaders. Three to five communities were clustered into geographic “zones,” defining nurse community health care service areas.

2. **Community entry.** Meetings, dialogue, and community diplomacy involving traditional leaders and elders was to build community ownership of the program and launch traditional public gatherings termed *durbars* for engaging community support (Tindana et al. 2011).
3. **Community health compound construction.** Community involvement enabled the Nkwanta team to organize volunteer construction of facilities that could act as service points for community-based health care. The process of constructing permanent facilities for public health programs involved procedural delay associated with acquiring revenue, awarding contracts, and completing the construction process. The Nkwanta process of soliciting community volunteer support for constructing traditional housing for CHPS operations uncoupled implementation with these construction formalities. Temporary community construction has been critical to accelerating CHPS operations wherever rapid scale-up has occurred.

4. **Essential equipment procurement.** Implementing CHPS required investment in equipment, supplies, and logistics arrangements.

*Figure 10.5. The Nkwanta milestones for launching community-based health policy services at the community level.*
5. **In-service training on community engagement.** Nurses were retrained in community organizational tasks that enable them to effectively liaise with community institutions.

6. **Volunteer training and deployment.** Community health volunteers were recruited and trained in community health mobilization, methods of promoting family planning and reproductive health among men, and procedures for backstopping nurses.

Phase 3 implementation research showed that the Nkwanta replication was feasible and effective (Awoonor-Williams et al. 2010) (see box on this page). Prior to CHPS implementation, family planning usage in Nkwanta District was estimated to be less than 4%. Within two years, prevalence had increased to 8.6%. The odds that infants were fully immunized was 2.4 times greater among children living in CHPS areas relative to areas not yet provided with CHPS. CHPS exposure was associated with odds ratios of 2.8 and 3.6 for completing the polio and DPT/Penta series, respectively (Awoonor-Williams et al. 2004).

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**Lessons from Phase 3: The Nkwanta Replication Trial**

- The Navrongo service model is replicable, but local strategic adjustments are essential. Local pilots and phasing in can clarify the adjustment process.
- There are six critical milestones for implementing Community-Based Health Planning and Services (CHPS) in each nurse deployment zone:
  1. planning district implementation by mapping and assessing traditional leadership;
  2. engagement of community leaders for convening community health committees and launching community durbars;
  3. community team facility development by traditional construction or renovation of interim community health compounds, where nurses live and work;
  4. marshaling essential equipment, supplies, and furniture for a given community health compound;
  5. orienting nurses to community-engagement tasks and deploying nurses with community-engagement backing; and
  6. recruiting community health committee volunteers, training volunteers, and deploying them to backstop nurses.
- Nkwanta and Navrongo could serve as transfer of innovation localities for catalyzing national scale-up by providing practical demonstration of the six milestones.
- Replication was associated with greater impact than had been observed in Navrongo.
- District leadership workshops failed if training lacked practical field team demonstration of the implementation process.
While the Nkwanta six-milestone approach to community-based care was found to be too complex to describe in workshops, it proved to be relatively simple to demonstrate, particularly when demonstration involved teams of peer counterparts learning about the initiative by seeing their respective roles in action. Accordingly, thirty-two DHMTs were selected among the 126 districts by regional directors of health services to observe the Nkwanta implementation process with the goal of disseminating practical implementation experience to each of Ghana’s ten regions. Each participating DHMT was requested to assemble teams of managers, subdistrict supervisors, and frontline CHOs to travel to Nkwanta, where they would be assigned to peer counterparts for witnessing milestone achievement, and plan for the transfer of this experience to their home districts.

This transfer process was catalyzed by small start-up grants to participating DHMTs, ranging between US$18,000 and $28,000, for financing an initial pilot CHPS zone in each participating district. These small grants were intended to catalyze CHPS start-up activities. While the GHS had made budget provisions for salaries, supplies, and equipment, there was no budget provision for start-up costs. To generate essential revenue, pilot zone activity was intended to generate grassroots political commitment for the allocation of development revenue for health post construction costs. This additional revenue could be marshaled by district assemblies if local political consensus was manifest. To build this political consensus, grassroots politicians from the district assembly were invited to participate in pilot zone communication and community consensus-building activities, a process that accorded opportunities for communities to demonstrate their support for CHPS and opportunities for politicians to garner popular support from voters by demonstrating their support of improving access to health care. Once started, this process of scaled-down, zone-by-zone spread of commitment to CHPS often catalyzed the diffusion of community commitment to implementation throughout participating districts. During the start-up period, from 2000 to 2008, nearly all CHPS implementation was concentrated in the thirty-two districts where implementers had visited Nkwanta and had experienced practical demonstration of the CHPS start-up process.

**Phase 4: Scaling Up the CHPS Program**

To achieve its national mandate of removing geographic barriers to health care, CHPS planners have always sought to enable district managers throughout Ghana to adapt approaches to community health care to local traditions.
Lessons from Monitoring the Scaling-Up Process

- Initial scale-up was rapid in districts where teams had received on-site implementation orientation in Nkwanta.
- Workshops for district leaders without demonstration failed to have an impact on implementation unless district teams had also experienced on-site demonstration of the Community-Based Health Planning and Services (CHPS) implementation process.
- The absence of earmarked budget lines and start-up revenue delayed implementation.
- CHPS is sustainable with Ghana Health Service investments in staff, supplies, and logistics once start-up problems are resolved.
- CHPS scale-up is a process of guided diffusion within districts:
  - Demonstration: Within districts, scale-up progressed if pilot zones were established, funds were provided for financing a start-up community, and a process of community to community demonstration exchanges emerged.
  - Champions: Organizational change was accelerated if committed individuals were engaged in demonstrating the feasibility of CHPS implementation and its benefits to the community.
  - Political engagement: The popularity of CHPS catalyzed political support for development investment in start-up costs.

Effective CHPS Implementation Requires Decentralized and Phased Implementation

Rather than transferring CHPS operations to entire districts, Nkwanta exchanges transferred the process of phased learning to participating trainee districts. Once equipped with this capability, DHMTs could convene a process of community exchanges within their district, catalyzing the spread of community commitment to CHPS implementation once pilot services were established in one or two demonstration zones—a process akin to the diffusion of innovation (Davis and Cherns 1975; Mintrom 1997; Muula et al. 2004; Mintrom and Norman 2009). Component activities of the CHPS program have been designed to foster the diffusion of operational innovation (Rogers 1962; Awoonor-Williams et al. 2010). Success on a small scale can catalyze the spread of innovation within districts.
Progress Is Enhanced by Guiding Diffusion with Consensus-Building Activities

In response to the observation that scaling up can be accelerated by diffusion of CHPS implementation, the CHPS Initiative has been organized more in the manner of a social movement than a bureaucratic program. Where district managers have directed resources and training to community exchanges, local CHPS implementation can proceed. However, diplomacy and outreach to the political community is important to resource mobilization and consensus-building.

The Importance of Champions

This diffusion process has been catalyzed by ideational leadership. The CHPS experience suggests that organizational change is highly effective when it is driven by committed individuals who demonstrate that change is not only feasible as a process but is associated with outcomes that are in the interest of the community at large (Standing and Chowdhury 2008).

Knowledge Management for Fostering Change

Developing a program that relies on “guided diffusion” requires strategic attention to mechanisms for communicating lessons about progress to stakeholders at all levels of the system (Godlee et al. 2004; Hyder et al. 2007; Travis et al. 2004; Chen et al. 2006; Shoo et al. 2012; Awoonor-Williams et al. 2013; Ghiron et al. 2014; Phillips et al. 2018). In the CHPS program, communication tools, such as a newsletter, were developed for the flow of “bottom-up” lessons learned. Ghana has also developed mechanisms for “top-down” communication: policy conferences, policy guidelines, monitoring and evaluation feedback, and other mechanisms for communicating to district managers national policy commitment to the CHPS agenda. These mechanisms, in turn, were supported by “lateral communication” comprised of peer-to-peer demonstration of implementation at the district level. Though incomplete in its current execution, this communication system has developed awareness throughout the GHS system of the importance of CHPS scale-up, the feasibility of its strategies, and progress throughout the country in achieving widespread access to health care. In this manner, the management of CHPS knowledge has been a systems approach grounded in the channels of communication and action that move the change process forward.
Credibility

While national health programs throughout Africa have adopted the sector-wide approach to integrated health planning and decentralization, districts provided with the mandate to plan their operations are often ill-equipped to do so (Berman and Bossert 2000; Dujardin 2009; Peters et al. 2009; Vaillancourt 2009; Peters et al. 2012). The diffusion of organizational change is most likely to occur if the proposed alternative represents a clear improvement over existing operations and if the required changes are perceived to be both reasonable and achievable. CHPS fosters district-to-district demonstration designed to focus implementers on developing a manageable operational change agenda.

Ownership

Studies of the diffusion of organizational change consistently indicate that changes that are perceived by stakeholders as being imposed from the outside are less acceptable than those that are perceived to be initiated internally (Kirigia et al. 2005; Sivhaga et al. 2012; Sherr et al. 2013). In health system development, researchers are thus often marginalized from decision-making processes (Godlee et al. 2004; Damschroder et al. 2009). The sense of joint management-researcher ownership of change that characterizes the CHPS program arises from collaborative exploration of alternative operations, teamwork in planning change, and consensus-building regarding the practical implications of findings.

Reforming CHPS

The evidence from Navrongo and Nkwanta showed that community health care could save lives if essential services were conveniently available and if workers were trained to provide the full range of essential PHC. But, the first decade of Phase 4 monitoring showed that CHPS was not living up to its full potential. The pace of scale-up was unacceptably slow in districts where leaders had not participated in Nkwanta exchanges. Moreover, CHPS was not adequately contributing to improvement in newborn survival (Binka et al. 2009; Atinga et al. 2018). A process of CHPS reform was instituted that revisited the logic of the framework shown in figure 10.3 with a renewed process of phased implementation research (figure 10.6).
CHPS Reform Phase 1: The Changing Political Context and Diagnostic Appraisal

The Political Context

From the onset of CHPS, evidence generated by research has had a political audience. The 2008 election launched a new era of CHPS political support for CHPS systems grounding. In that election, all political parties in Ghana supported CHPS implementation owing to the grassroots popularity of CHPS that was evident everywhere. Public concern about access to care emerged as a theme of political commentary, with the major parties promising that public demand for PHC could best be pursued by electing their candidates. The president of Ghana who was elected in this contest campaigned on a promise of making CHPS implementation a national priority.
The president had a personal understanding of research results related to the CHPS model. He had been the vice president of Ghana at the time of the 1999 National Health Forum for announcing the CHPS policy. Thus, in his capacity as the key convener of this conference, he presided over the rollout of CHPS as national policy. His advocacy of the initiative at that time was based on his personal understanding of the potential benefits of CHPS field operations.

To underscore his commitment to CHPS after the election, he sponsored a 2009 act of parliament that imposed a special tax on all government employees for financing CHPS implementation. The revenue generated by this action was inconsequential, but the symbolic value of this commitment was transformative for CHPS. Presidential speeches and political gatherings were focused on garnering support for CHPS implementation throughout Ghana. This national support, combined with a vibrant grassroots democracy in Ghana, provided political backing to act on the evidence generated by Navrongo and Nkwanta. The CHPS learning process that was intended to base PHC on Alma-Ata inspired a commitment that promoted a process of adapting strategy to the unique needs and capabilities of each participating district (Gilson et al. 1994; Gilson and Shalley 2004; Shalley and Gilson 2004; Gilson et al. 2005).

Political will was allied with resources to act. Petroleum-led economic growth of Ghana’s economy in the late 2000s enabled financing for CHPS. Revenue sources for CHPS shifted from external aid for vertical programs to Government of Ghana investments in the CHPS system of community-based PHC. External support shifted from grants to lending agreements that shifted down programming to decentralized systems investment controlled by district assemblies. With the new national political leadership and expanded flexible revenue at the periphery, CHPS became the component of the health care system that commanded political attention and priority at all levels of government. After 2000, district and regional managers’ performance indicators included criteria that were linked to be coverage of CHPS services. And these standards were not limited to the health sector. Development sector budget lines and resource allocations were revamped to provide opportunities to link health financing needs with district development resources. DH-MTs became integrated political stakeholders in the district-level development system. With grassroots politicians in command of local budgets, community demand for CHPS had an audience that could respond by consigning small, but meaningful, resources to its start-up costs.
The dynamic that emerged is depicted in figure 10.7 as a modification of the bureaucratic design portrayed in figure 10.2: An existing consensus involving grassroots politicians and community health committees defined the climate of demand for PHC services well before the 2008 election (figure 10.7A). What changed, however, was the partnership that emerged when district assembly members cooperated with subdistrict supervisors and traditional leaders in the process of organizing support for CHPS milestone transitions (as in figure 10.6). What changed was the emergence of partnership of the district chief executive and district director of health services, who from 2009 onward were formally instructed to consign priority to CHPS implementation (figure 10.7B). A new implementation research sequence was mandated to guide action that the political system was keen to embrace.
Chapter 1: Qualitative CHPS Review

In 2009, the Ministry of Health responded to the challenge implied by Phase 4 monitoring results by commissioning a review of the CHPS implementation process with the goal of clarifying factors that explained why implementation was proceeding rapidly in some districts but not at all in others (Binka et al. 2009). The report identified a need to focus more on CHPS components that emphasize field observation, teamwork, and community engagement.

Phase 2 of CHPS Reform: The Ghana Essential Health Interventions Program

Policy lessons that emerged from the 2009 Ministry of Health review were assembled into a systems strengthening research project known as the Ghana Essential Health Interventions Program (GEHIP). GEHIP emphasized two goals: (1) systems strengthening and (2) service development to address gaps in the range and quality of care that CHPS was capable of providing (Table 10.2).

Although much was learned in Navrongo and Nkwanta about making community health services work, less was learned about how to make district management systems capable of implementing these lessons at scale. GEHIP was therefore designed to shift the research and action agenda from testing delivery strategies to developing and testing means of making district leadership work.

Results of the 2009 appraisal showed that PHC budgets were so rigidly structured in all study districts that the allocation of flexible revenue to cover start-up costs was not administratively possible. Deliberations tended to focus on the district-wide costs of doing everything rather than the zone-by-zone capabilities of communities to take action. Some district managers would delay implementation until external revenue could be acquired to defray start-up costs for a comprehensive service package. In contrast, leaders in rapid implementation districts established practical means of surmounting budgetary constraints with a grassroots process of political mobilization to support the utilization of development revenue for CHPS together with cost reduction strategies such as marshaling volunteer labor for constructing health posts and using less costly construction methods and materials. Where leaders had acquired practical experience with the organizational requirements of launching CHPS, through observation and participatory learning, there was understanding of the process of community- and political-engagement strategies for supporting CHPS rollout. Pilot implementation
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<th>Systems Strengthening “Pillar” for Improving . . .</th>
<th>Interventions Designed to Improve the Pace of Community-Based Health Planning and Services (CHPS) Scale-up and the System of Support for Primary Health Care</th>
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<td>. . . access to care</td>
<td>• Reform of the process of developing health posts to emphasize community-engaged construction of interim facilities where CHPS services can be provided without delay (Awoonor-Williams, Sory, Nyonator, et al. 2013)</td>
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<td>. . . expanding the range of services and the and improving worker skills</td>
<td>• Training all frontline workers in community newborn care interventions (Asuru et al. 2013) • Launch a community-engaged emergency referral system (Awoonor-Williams, Patel, et al. 2015) • Train community members and volunteers in danger-sign recognition and referral (Olokunde et al. 2015)</td>
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<td>. . . information for decision-making</td>
<td>• Simplify the service information system to eliminate redundant procedures and enhance data use for decision-making (Awoonor-Williams, Stone, et al. 2016) • Develop mortality audit procedures and systems for clinical review and response</td>
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<td>. . . essential drugs and equipment</td>
<td>• Provision of low-cost tricycle ambulances with cell phone systems, communication arrangements, and community outreach for essential emergency services (Adamtey et al. 2015; Furuya and Kamara 2011; Patel et al. 2016; Awoonor-Williams, Patel, et al. 2015, 2017)</td>
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<tr>
<td>. . . planning, budgeting, and finance</td>
<td>• Develop and test procedures for linking planning and budgeting to burden of disease profiles (Nyonator et al. 2015; Awoonor-Williams, Schmitt, et al. 2016) • Provide $0.85 per capital per year for three years in flexible financing (Awoonor-Williams et al. 2013)</td>
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<tr>
<td>. . . supervision, leadership, and governance</td>
<td>• Develop outreach procedures for facilitative supervision (Frimpong et al. 2011) • Implement observational and community-based participatory training as a component of leadership training (Nyonator et al. 2005) • Engage grassroots politicians in Ghana Essential Health Interventions Program field activities and community celebration of CHPS milestone achievement (Awoonor-Williams, Phillips, and Bawah 2016)</td>
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<th>Systems Strengthening “Pillar” for Improving . . .</th>
<th>Interventions Designed to Improve the Pace of Community-Based Health Planning and Services (CHPS) Scale-up and the System of Support for Primary Health Care:</th>
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</table>
- Birth monitoring and follow-up with care and referral, as needed (four postdelivery home follow-up visits)[115]–[116].  
- Frontline worker trained in case management and identifying danger signs assess and classify the child’s illness, and provide oral drugs as needed to ensure effective management of childhood illness and manage triage and referral (Aborigo et al. 2014; Mbalinda et al. 2014)  
- Community education and mobilization required for ensuring family identification of danger signs and recognition of the need to seek care or referral from a community health officer (Olokunde et al. 2015)  
- Observation of the neonate for twenty-four to forty-eight hours, including helping babies breathe, referral, exclusive breastfeeding, and cord care (Chan et al., n.d.; Zaidi et al. 2011)  
- Community volunteers trained to provide neonatal integrated management of childhood illness and IMCI at other ages differ due to the dosages of medicines used (Kruse and Høgh 2004)  
- Community treatment of pneumonia with amoxicillin and malaria with artesunate/amodiaquine  
- Promotion and provision of facility-based care for all neonatal illness  
- Supplementing existing hospital-based skin-to-skin contact via kangaroo mother care for thermal control for low birthweight infants (Lawn et al. 2010) with community-based KMC provided by all community workers and volunteers (Bhatta and Soofi 2008)  
- Upgrading CHO to midwife status (Speciale and Freytsis 2013; Sakeah et al. 2014)  
- Volunteers trained to report home births, visit newborns, and refer cases for facility-based care (Hommerich et al. 2007; Penfold et al. 2010, 2013)  
- CHO home-based care for neonates (Bang et al. 1999; Bhatta et al. 2005; Baqui et al. 2008; Darmstadt et al. 2005)  
- Incentives for volunteers to conduct CNC referrals of home births via mobile phones (Darmstadt et al. 2005; Baqui et al. 2009; Dawson et al. 2013) to report home deliveries to supervisors to enable prompt CNC by nurses |

**Source:** Adapted from Awoonor-Williams et al. 2013.
could be used to generate public support and consensus for action that offset prevalent managerial concerns that starting CHPS operations would create unsustainable grassroots pressure for an unaffordable program.

In response to the Ministry of Health 2009 report, the GHS launched a new policy to strengthen CHPS implementation. A project was convened to test means of implementing this policy and refining its strategies for saving maternal and newborn lives. GEHIP shifted the focus of research from conducting community studies to investigating district managerial and political leadership of CHPS implementation.

GEHIP involved six activities:

1. Implementation zones were developed within each GEHIP district, and exchange activities allowed subdistrict implementation teams to observe all essential CHPS start-up activities to foster and spread CHPS implementation capacity.

2. District managers instituted community engagement for volunteer construction of temporary health post facilities.

3. Field implementation–based learning was integrated into the training process and focused on practical demonstration to supervisors on how to undertake community engagement and liaison with traditional leaders.

4. Leadership development began to involve political and development officials, including budgeting and planning modules designed to catalyze grassroots efforts to expand the resource base of CHPS and improve GEHIP impact.

5. Supplemental funding amounting to $0.85 per capita per year for three years was added to the health budget as “catalytic revenue” for district managers to use for activities aimed at building popular support for CHPS.

6. There was a new focus on emergency services in maternal and neonatal care (table 10.2) (Patel et al. 2016), with motorcycle ambulances and volunteer drivers trained in emergency transport. CHO’s were trained in acute care triage and referral with attention directed to prehospital first aid. Community outreach was directed to ensuring appropriate use of the system.

The impact of GEHIP on CHPS coverage was immediate and pronounced (figure 10.8). HPS zones that were functioning in 2010 covered 20% of the population in the four GEHIP treatment districts. By 2015, all of the GEHIP target population was covered by CHPS services, a level of coverage that was

**CHPS Reform Phase 3: The CHPS+ Initiative**

There were deliberate efforts to build district leadership capacity. Going forward, the next phase, called CHPS+, has been designed to help leaders institutionalize systems learning for CHPS (Phillips et al. 2018). Initial CHPS+ activities focused on creating four systems learning districts (SLDs) where GEHIP functionality could be demonstrated to visiting implementation teams from other districts in two participating regions. Participating management team members who visit could then return to their districts to replicate the process of CHPS implementation (Phillips et al. 2018). This process of demonstration and counterpart support is accompanied with the provision of catalytic financ-
ing to support the creation of pilot communities in each participating district, where learning by doing can commence in ways that cascade CHPS reform through each district as community leaders replicate what has been demonstrated in SLDs. To evaluate the project, a stepped wedge design accompanies the pace of implementation, together with monitoring tools, a cluster sample survey, and mixed method implementation research. The CHPS+ implementation process is designed to provide continuous learning and knowledge management, and to develop national capacity to scale-up CHPS programming.

Conclusion

It is common for health research projects to end without impacting large-scale operations (Binswanger and Aiyar 2003; Cummings et al. 2007), in part because scaling up tends to terminate research rather than sustain the process of evidence-based organizational change (Simmons and Shiffman 2007). Ghana’s experience with sequential implementation research has addressed this problem. This learning process was not confined to the periphery. A continuous process of applying sequential implementation science to catalyzing the scale-up of community health service innovations has institutionalized evidence-based decision-making. At each level of the system, the process of learning by doing has been nationally commissioned, coordinated, and implemented at the regional and district levels. Peer learning combined with a system of demonstration that involves communities, districts, and regions of excellence can function as a catalytic process of spreading implementation learning to other regions, districts, and communities. In keeping with the community-guided diffusion concept, each SLD can function as a learning locality for spreading understanding of the community-based, scaling-down “learning by doing” activity for institutionalizing implementation innovation in participating districts.

Ghana’s CHPS research paradigm has emerged as a capability for evidence-driven systems development that will be a resource for guiding health systems development in the future. No health care system is perfect. Implementation science is showing that the key components of Ghana’s UHC agenda are not fully functioning as planned. For example, the National Health Insurance Scheme was launched with the goal of making health care affordable to all Ghanaians (Abiiro and McIntyre 2012; Mills et al. 2012). Yet, despite its important achievements, the National Health Insurance Scheme must address challenging implementation problems if it is to successfully ensure financial access to health care (Akazili 2010; Akazili et al. 2014; Awoonor-
Williams, Tindana, et al. 2016; Kanmiki et al. 2018). Similarly, while CHPS represents a pillar of UHC policy by facilitating essential care accessibility, CHPS implementation is often associated with quality of care lapses and organizational challenges (Frimpong et al. 2011, 2014; Atinga et al. 2018). Reforms that will be essential to achieving UHC will benefit from the institutional capacity of the GHS to conduct pilots, trials, replication studies, and scaling-up procedures that CHPS has pioneered.

The Future of Primary Health Care in Ghana

The Ghana experience enabled senior managers to introduce research-based innovations that simultaneously required people-centered action at the periphery. With qualitative and quantitative research providing evidence on the content, coverage, and pace of change, the implementation of community-based PHC could be consistent with national evidence and yet adapted to local realities, needs, and resources.

Monitoring data for the 2009–2018 period suggest that the past decade has been transformative, generating national-, regional-, and district-level political commitment to CHPS implementation. By 2010, the pace of CHPS scale-up accelerated. National monitoring provides evidence of a marked upward disjuncture in the pace of CHPS implementation that was associated with policy change in 2009. Ghana’s phased implementation paradigm could have an impact on CHPS scaling-up capacity at each level of health systems functioning, from communities to districts. Lead districts serving as points of innovation, implementation research, and training are transforming regional capacity to manage scale-up. National dissemination programs are being 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. At the current pace of CHPS coverage expansion, Ghana will achieve CHPS for All by the year 2022.

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