Guiding the scale of Community-based Primary Health Care in Ghana through Implementation Research

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Outline: Guiding the implementation of PHC in Ghana

1) ***Background:***

Global issues: Primary health care: Debates of the 1970s

- ✓ "Partial" primary health care vs. "health for all."
- ✓ Family planning services vs. "development as the best contraceptive"

Can PHC programs succeed in Africa?

The debate in Ghana: Paid primary health care nurses (the WHO "health for all" model) vs. Volunteers (the UNICEF model)

Resolving debate: Role of Implementation science (Embedded Research)

2) The Community-based Health Planning and Services (CHPS) initiative

Lessons from …..

- ✓ Phase 1: The Navrongo participatory pilot
- ✓ Phase 2: The Navrongo experiment
- ✓ Phase 3: The Nkwanta replication trial
- ✓ Phase 4 Scaling-up

3) Reforming CHPS: The Ghana Essential Health Interventions Programme (The design)

Learning objectives

Students will gain an understanding of…..

1) …of **primary health care** service-delivery in an impoverished sub-Saharan African setting.
2) …applying **implementation science** to health systems development in a resource-constrained setting.
3) …the science of **scaling up** research knowledge.
4) ….of applying implementation science to the development of "**universal health coverage**" by…..
   - ✓ using "mixed methods" for research inference
   - ✓ applying "embedded science" for fostering research utilization

The Alma Ata Declaration of 1978 was a major milestone in public health:

What is "Primary Health Care"?

1. **Adaptive to the context:** Reflects and evolves fr… e economic conditions and sociocultural and political characteristics of each country and locality
2. **Targeted on priority problems:** the main … ntive, curative and rehabilitative services that are needed;
3. **Comprehensive:** Includes education co… …lth problems and the methods of preventing and controlling them; promotion of food supply and proper nutriti… …uate supply of safe water and basic sanitation; maternal and child health ca… …d control of locally endemic … …ugs,
4. **Syste…**
5. **Partic…** …ation in the planning, organizat…
6. **Integr…**
7. **Teamw…** …idwives, auxiliaries and commun…

In Ghana, this has meant "Universal Health Coverage" (UHC)…

- ✓ Accessible care for the major causes of infectious disease morbidity,
- ✓ Referral and ambulatory care for non-communicable diseases
- ✓ Preventive health service, such as immunization, family planning, health promotion services
- ✓ Maternal health services and facility-based delivery
- ✓ Affordable health insurance for all families

Ghana's research generated evidence relevant to **3 debates**……

1) Health for all "horizontal" versus "vertical" programming.

- **Vertical programs** separately address priority components of primary health care. These are often considered to be simpler to launch than comprehensive health systems, and have measurable impact on specific causes of morbidity and mortality. Vertical programs are separately organized initiatives sponsored by donors that embrace priority initiatives (immunization, HIV prevention and care, family planning, malaria prevention and care, TB, etc.)
- **Horizontal programs** are systems initiatives that aim to develop a set of interlocking primary health care needs, as advocated by Alma Ata.

2) The global population policy debate:

Programs promoting contraceptive use to meet existing demand for services versus approaches promoting development agenda that alter parental demand for additional children.

3) The health service staffing debate:

Volunteers (as advocated by UNICEF) versus paid professional providers as community-based primary health care service workers (as advocated by WHO) versus a combined "dual staffing" approach.

What is implementation science?

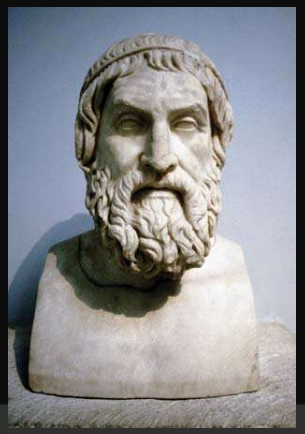
…and managing knowledge in ways that bridge the gap between what has been learned and actions that are needed to improve….

Implementation science involves investigating….

- **…the launching**
- **…the process of sustaining,**
- **…or the process of changing….**

…or the consequences of….

…operations.



Qin Shi Huang
221 BC

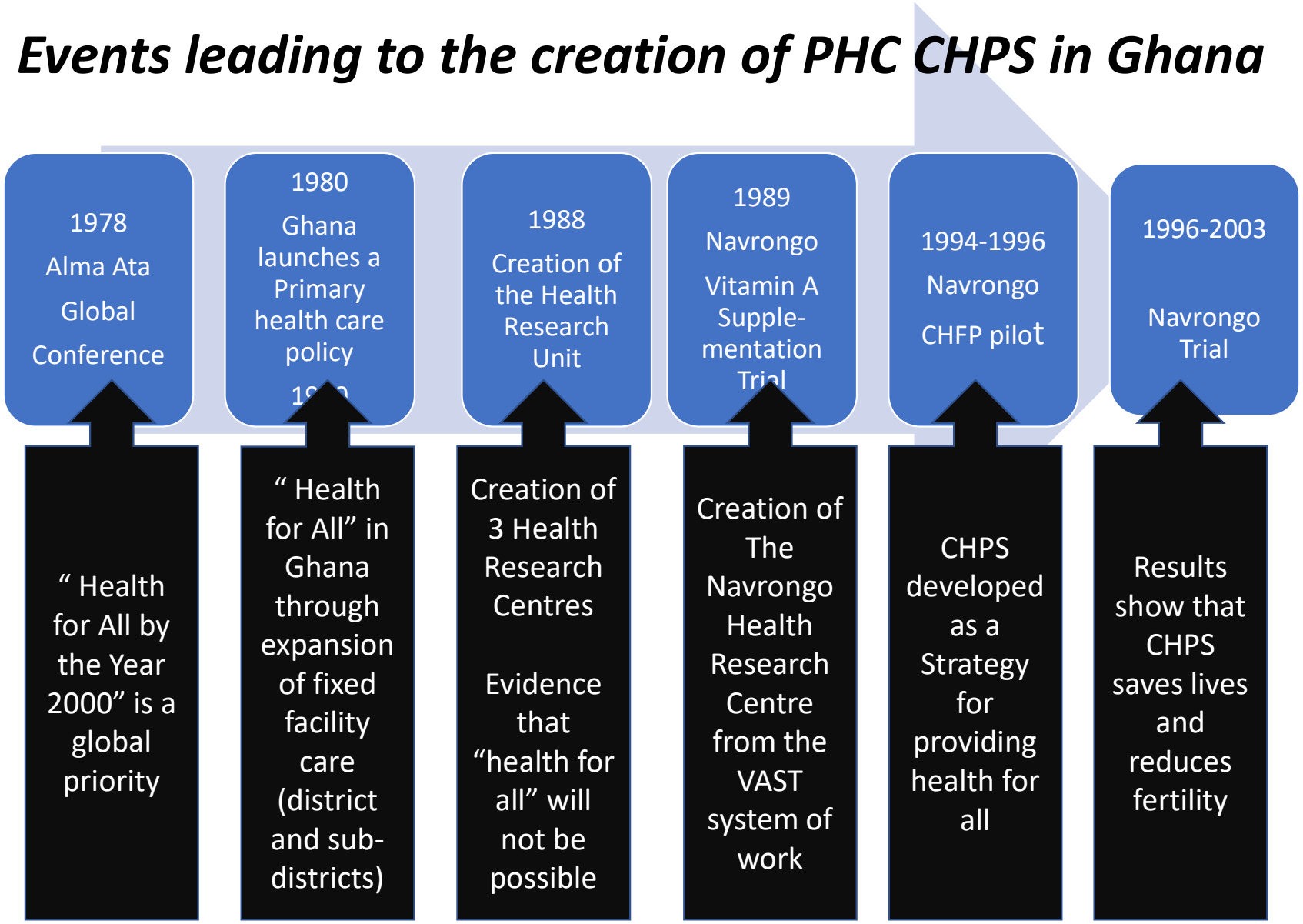
Qin Dynasty: Earliest known use of data for investigation of alternative decisions

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

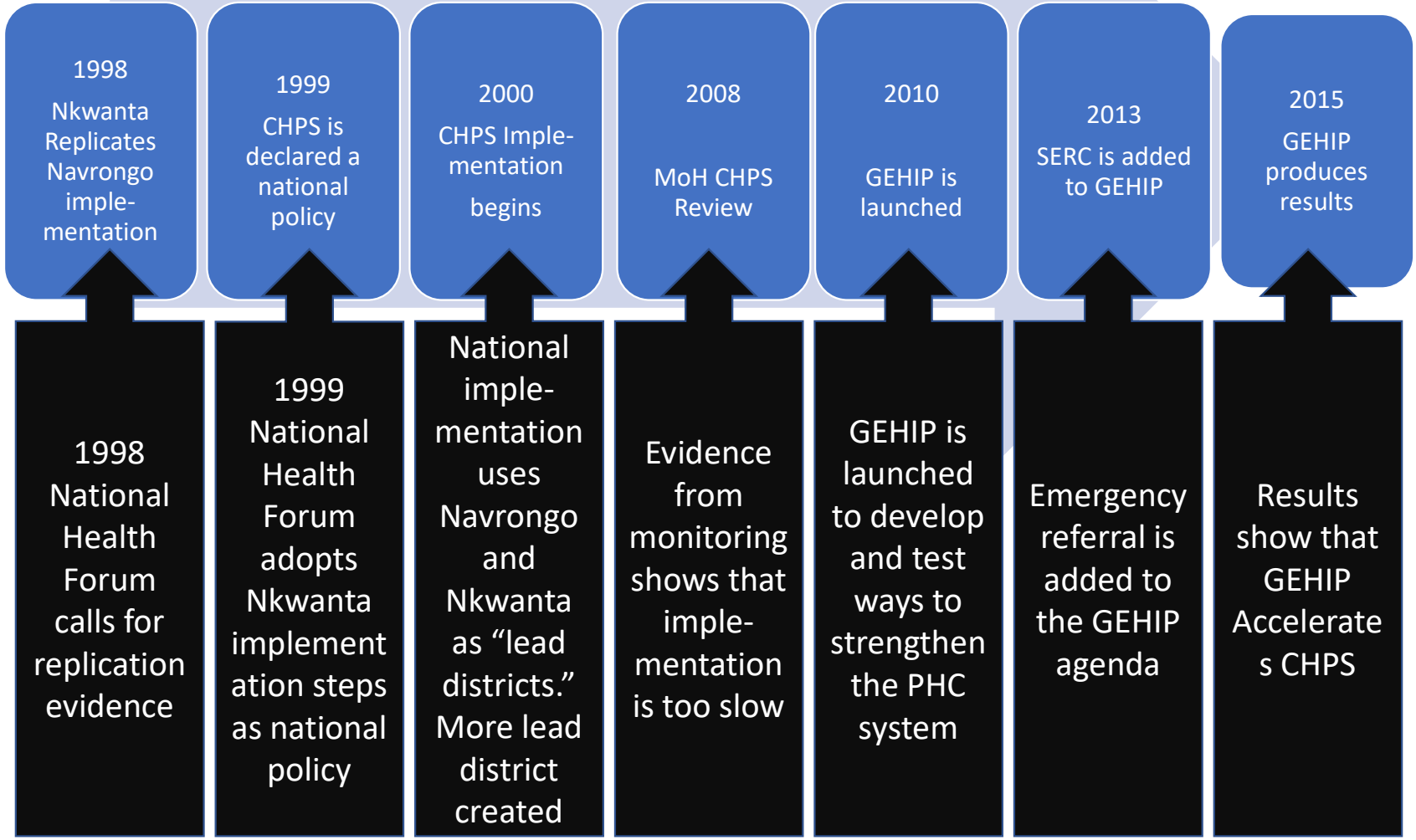
-Sophocles, 400 BC

Implementation science is not new

Events leading to the creation of PHC CHPS in Ghana



Events following the creation of PHC (CHPS) in Ghana



Resolving the primary health care service debate: The context

Economic and social conditions:

Sahelian Africa, neighboring northern Ghana, is the poorest region in the world.

Navrongo is the headquarters of a district of the most impoverished region of Ghana

- ✓ Subsistence agrarian economy
- ✓ No modern industry, traditional trade
- ✓ Low educational attainment, particularly among women

Patriarchy, gender-stratification, traditional social norms and extended family structure

Demographic context prior to the Navrongo Experiment

High fertility, maternal mortality, and childhood mortality:

Fertility

- Contraceptive prevalence: 1.7 percent of women of reproductive age.
- Total Fertility Rate= 5.2 births per woman
- Crude birth rate over 30 per 1000

Maternal mortality:

750 maternal deaths/100,000 births

Childhood mortality:

Infant mortality: 123 deaths per 1000 live births

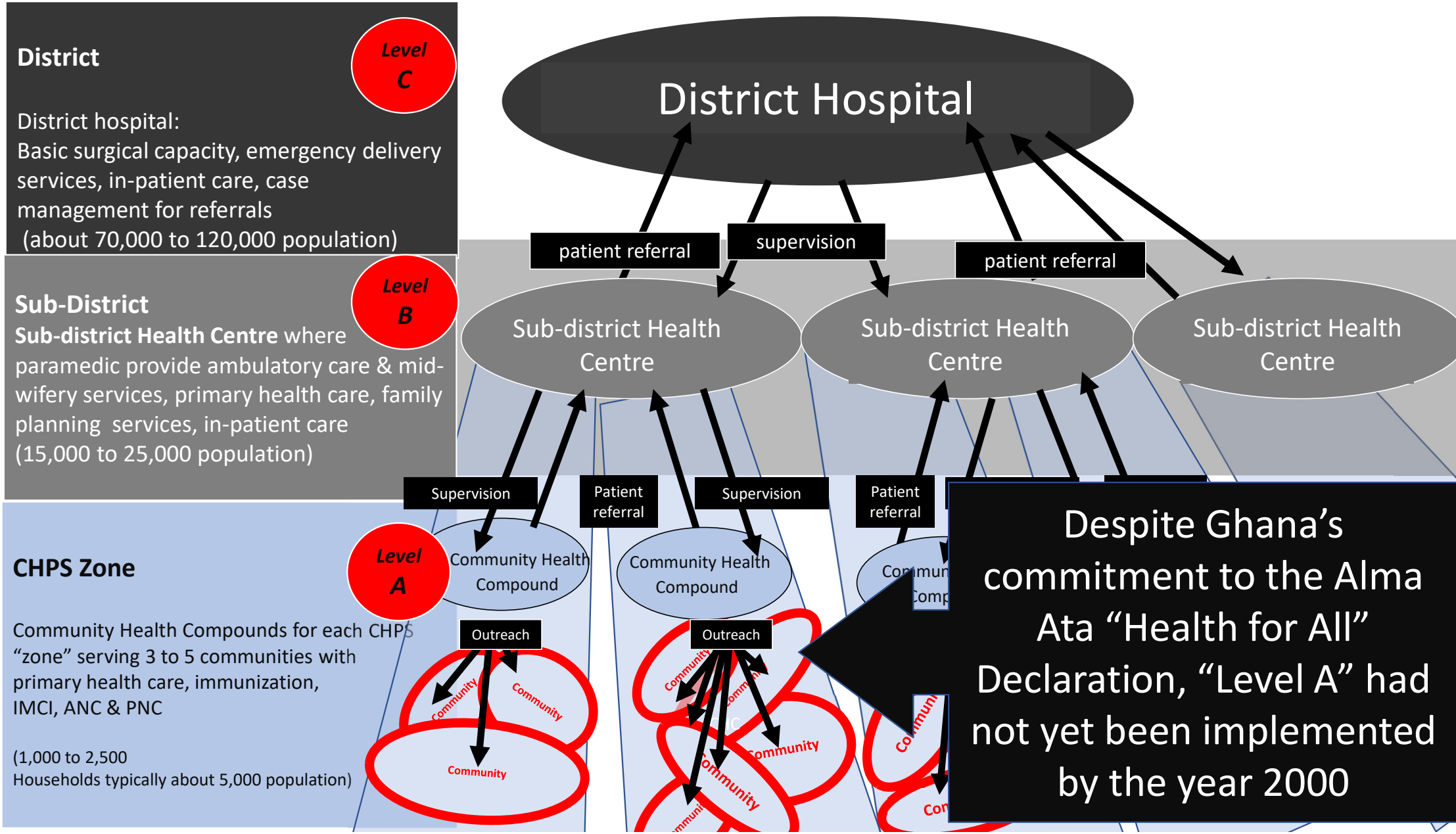
Probability of children dying before age five: 166/1000 (16.6%)

Life expectancy: 49.8 years

The service delivery context

The access problem:

In seeking clientele…	In seeking care….	
	…clients are passive.	…clients are active.
…the program is "passive" about seeking clientele.	**The situation as of 1996**	**Developing demand**
…the program is "active," taking services to people in their communities and homes.	**Mobilizing supply**	**Desired "Alma Ata" Program Outcome**


District
Level C
District hospital:
Basic surgical capacity, emergency delivery services, in-patient care, case management for referrals
(about 70,000 to 120,000 population)
Sub-District
Level B
Sub-district Health Centre where paramedic provide ambulatory care & mid-wifery services, primary health care, family planning services, in-patient care
(15,000 to 25,000 population)
CHPS Zone
Level A
Community Health Compounds for each CHPS "zone" serving 3 to 5 communities with primary health care, immunization, IMCI, ANC & PNC
(1,000 to 2,500 Households typically about 5,000 population)
District Hospital
patient referral
supervision
patient referral
Sub-district Health Centre
Sub-district Health Centre
Sub-district Health Centre
Supervision
Patient referral
Supervision
Patient referral
Community Health Compound
Community Health Compound
Outreach
Outreach
Community
Community
Community
Community
Community
Community
Despite Ghana's commitment to the Alma Ata "Health for All" Declaration, "Level A" had not yet been implemented by the year 2000

The problem: Lack of a primary health care service strategy

There was an immediate need to find ways to improve……

1) **Access** to primary health care services by establishing "level A" community-based primary health care.
2) **Resolve the debate about vertical programming** versus the integrated "Alma Ata" **comprehensive primary health care model.**
3) Strengthen **"weak systems"** for supporting and sustaining services:
   - Lack of essential resources for developing level A facilities
   - Lack of evidence-based strategies for strengthening systems
   - Lack of a social engagement perspective that would support creation of level A community-based care.

Developing an "Alma Ata" program would require primary health care strategies that respond to….

The "Demand side"

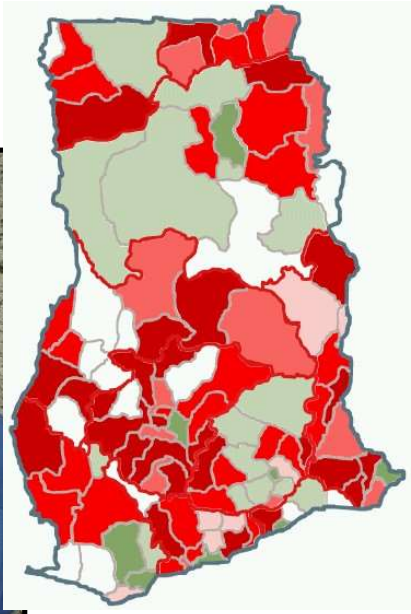
- ✓ **Community outreach** to social networks, traditional leaders, and political leaders for promoting all elements of care.
- ✓ **Governance:** Community health committees for sustaining system oversight and selecting and support of volunteers.

….and the "supply-side"

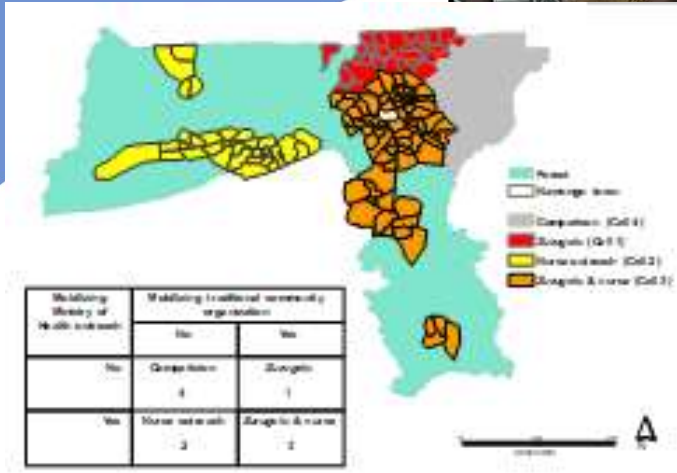
- ✓ Curative care for common childhood ailments such as malaria, acute respiratory infections, and diarrheal diseases.
- ✓ Comprehensive childhood vaccination.
- ✓ Family planning services for hormonal contraceptives; referral for long-acting methods.

The problem: Lack of clarity about how this set of goals could be implemented.

A research strategy for dealing with complexity:
4 Phases



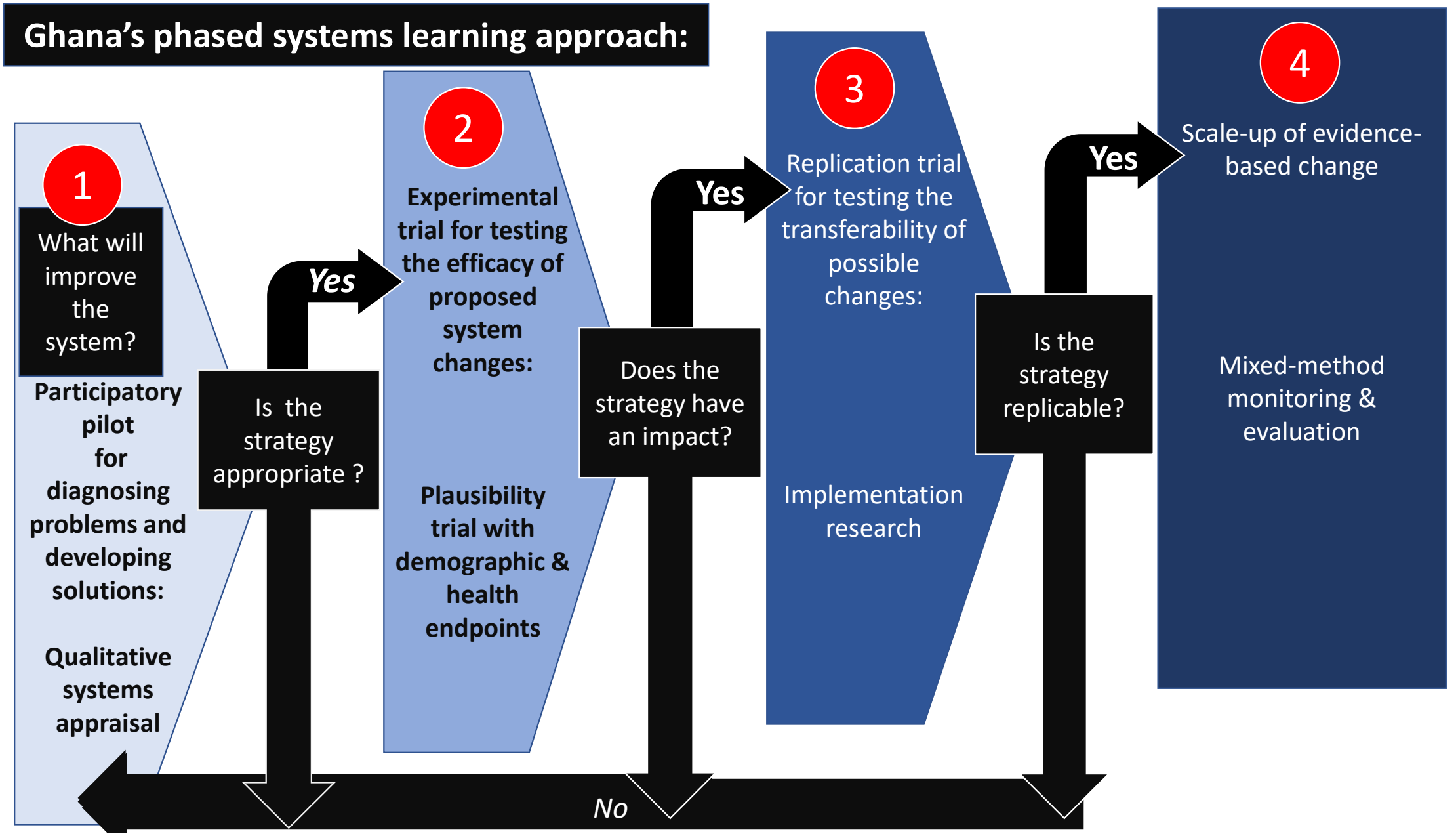
Phase 4: Systems Monitoring



Phase 3: Implementation research on replication

Phase 2: Experimental trial in a district

Phase 1 Pilot with qualitative appraisal


Ghana's phased systems learning approach:
1
What will improve the system?
Participatory pilot for diagnosing problems and developing solutions:
Qualitative systems appraisal
Is the strategy appropriate ?
Yes
2
Experimental trial for testing the efficacy of proposed system changes:
Plausibility trial with demographic & health endpoints
Does the strategy have an impact?
Yes
3
Replication trial for testing the transferability of possible changes:
Implementation research
Is the strategy replicable?
Yes
4
Scale-up of evidence-based change
Mixed-method monitoring & evaluation
No

Phase 1:
Participatory ("Baobab") planning:
Qualitative research & quantitative investigation + implementation

Phase 1: Participatory ("Baobab") planning: Qualitative research & quantitative investigation + trial

Diagnose problems, develop strategies…

Describe problems, text hypotheses, evaluate solutions

Micro-implementation

With each strategic change that is tried, repeat investigation is taken up.

The "*Zurugelu*" (*volunteer*) dimension (promoted by UNICEF):

The Zurugelu dimension mobilizes traditional…

..patriarchy…

male social networks

Communication mechanisms

The *Zurugelu (volunteer)* dimension

Women's groups

Volunteers

Health committees

Questions

The participatory “phase 1” investigation showed that….

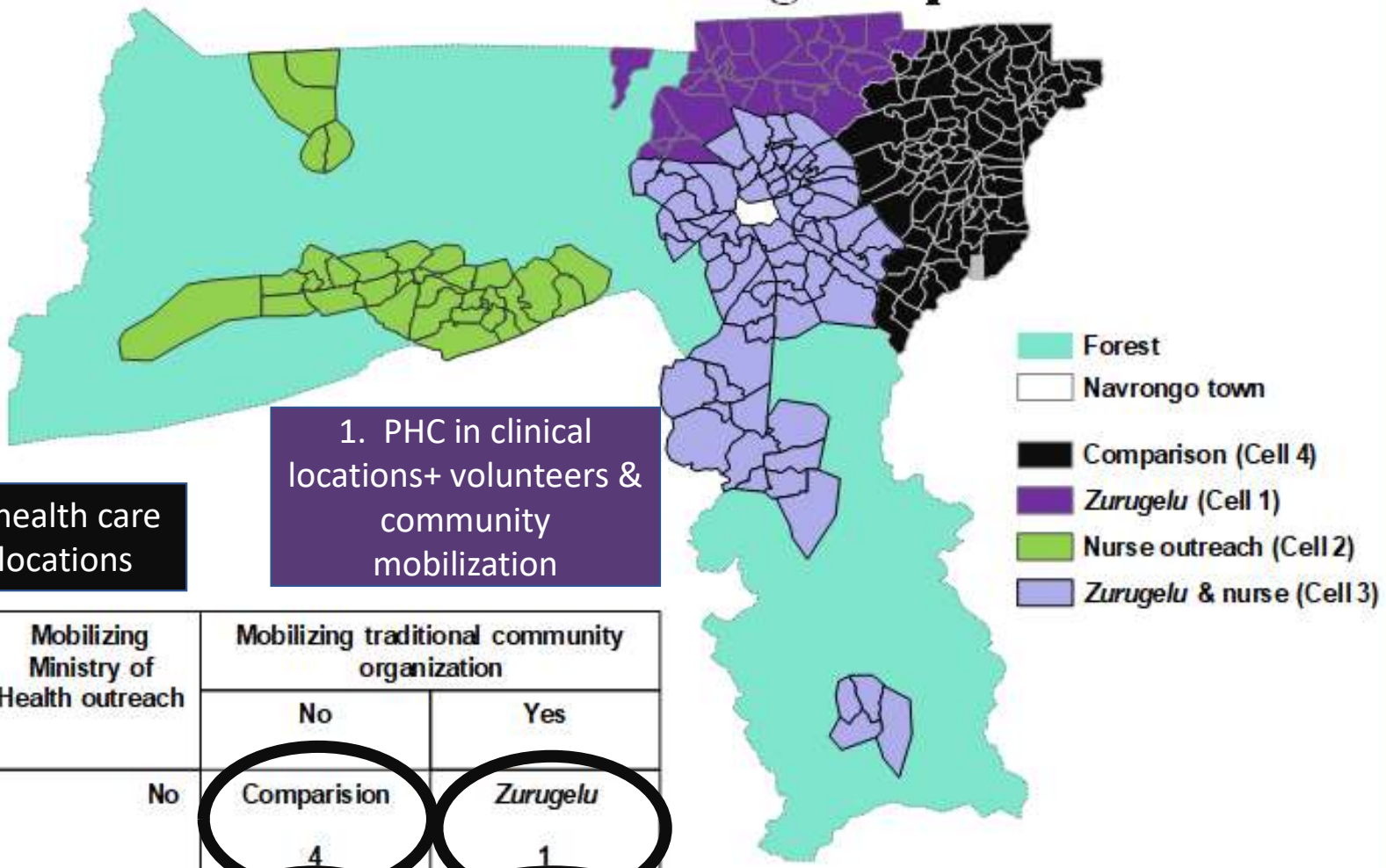
1) Community mobilization for primary health care was possible.
2) Communities could be organized to develop interim facilities where nurses could live and work.
3) Nurses and volunteers could be trained, deployed and equipped to provide care.

What the “phase 1” pilot could not show:

1) Would the deployment of these workers save lives?
2) Can volunteer deployment save lives (avoiding the cost and complexity of nurse deployment) ?
3) Are nurses more effective than volunteers?

Problem: The system that is developed in Phase 1 might not have its intended impact. There is a need to validate it with an experimental trial with statistically rigorous methods (Phase 2)

Phase 2: The Navrongo Experiment



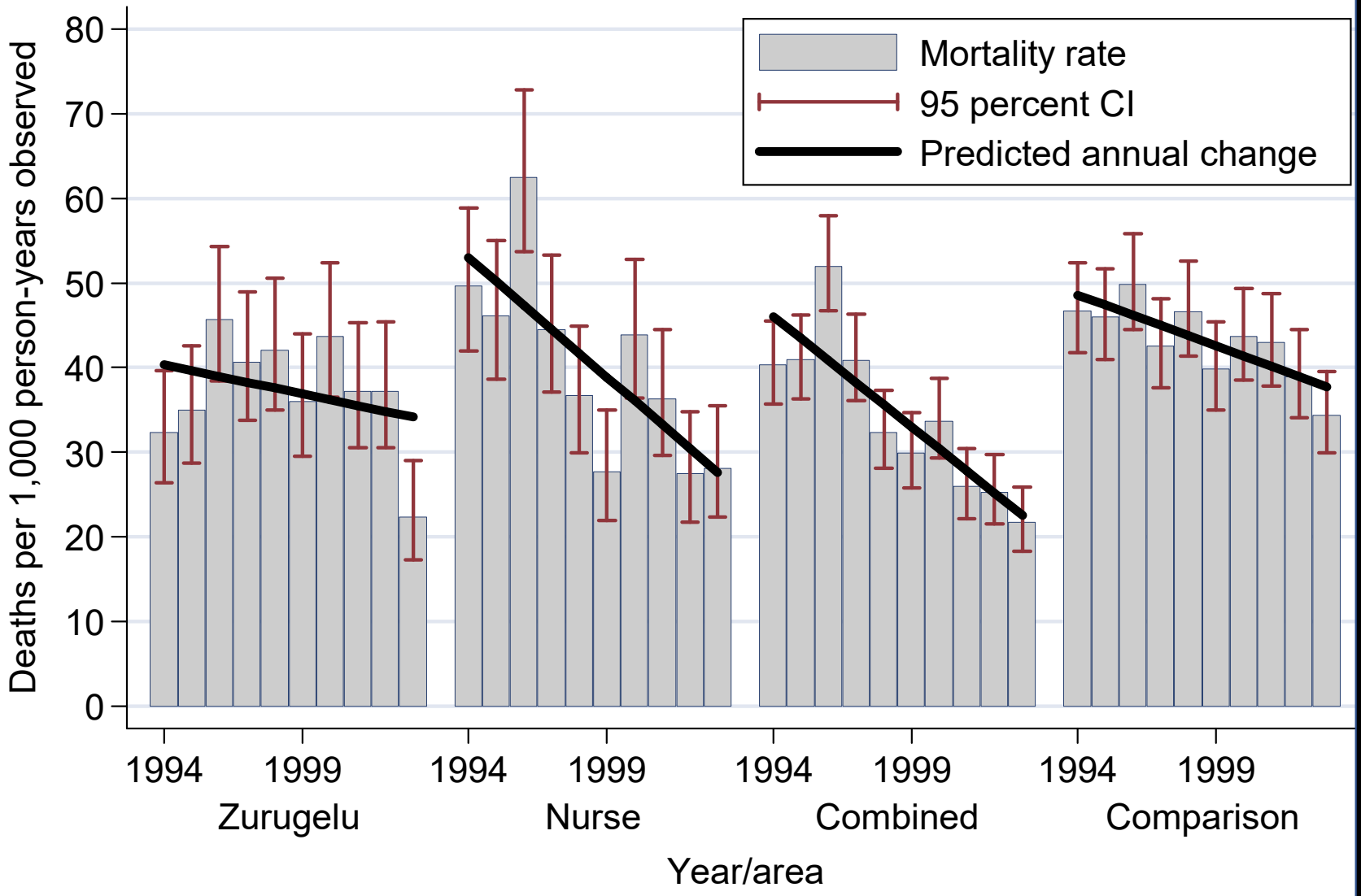
1. PHC in clinical locations+ volunteers & community mobilization

4. Primary health care in clinical locations

Mobilizing Ministry of Health outreach	Mobilizing traditional community organization	
	No	Yes
No	Comparision 4	*Zurugelu* 1
Yes	Nurse outreach 2	*Zurugelu* & nurse 3

2. PHC + community-based nursing care

3. PHC in clinical locations+ volunteers & community mobilization + community-based nursing care

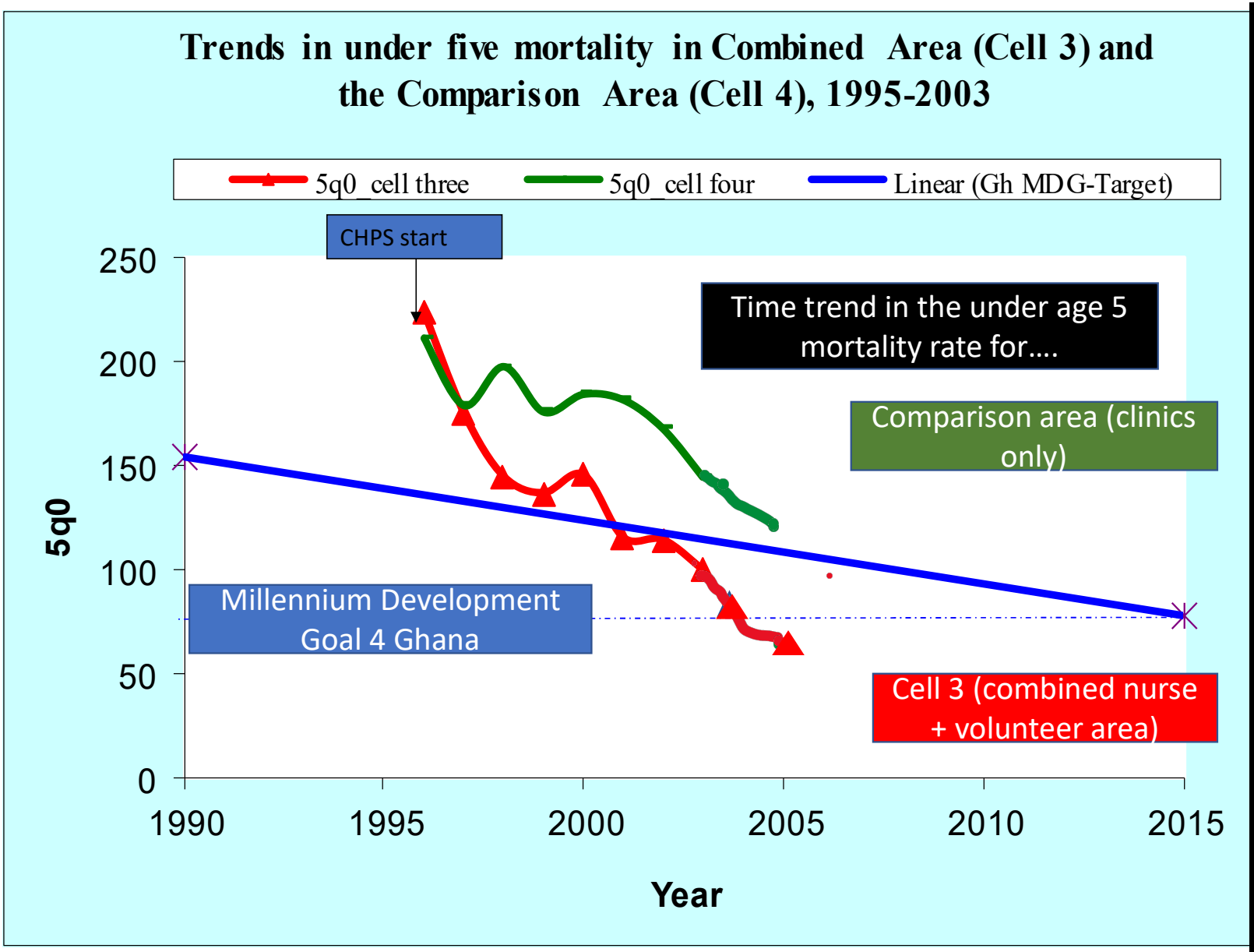


Conclusions:

1) Child survival improved in all four areas.

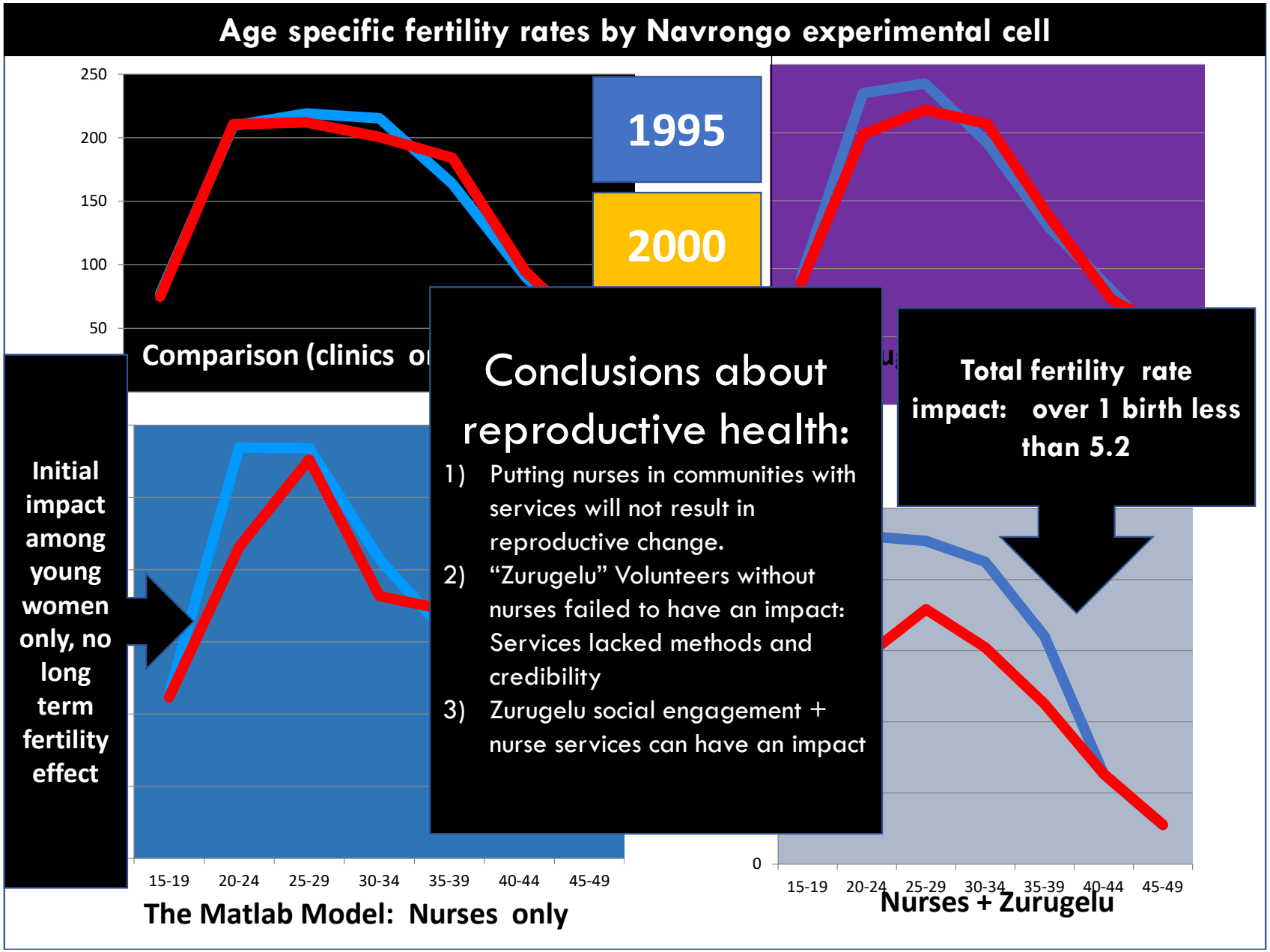
2) The pace of improvement in "Zurugelu" (volunteer) areas was equivalent to the pace in comparison areas, that is **no impact.**

3) Wherever nurses were posted, mortality declined more dramatically than in comparison areas (Cells 2 & 3), but adding volunteers had no incremental effect.



Conclusions:

1) **Achieving the global "Millennium Development Goal" 4 is possible (75% reduction in child mortality) if CHPS is implemented.**
2) **Mortality decline is accelerated by shifting the comparison area to CHPS in 2003.**


Age specific fertility rates by Navrongo experimental cell
250
200
150
100
50
1995
2000
Comparison (clinics o
Initial impact among young women only, no long term fertility effect
Conclusions about reproductive health:
1) Putting nurses in communities with services will not result in reproductive change.
2) "Zurugelu" Volunteers without nurses failed to have an impact: Services lacked methods and credibility
3) Zurugelu social engagement + nurse services can have an impact
Total fertility rate impact: over 1 birth less than 5.2
15-19
20-24
25-29
30-34
35-39
40-44
45-49
0
The Matlab Model: Nurses only
Nurses + Zurugelu

Phase 2: Results of the Phase 2 Navrongo Experiment

Mobilizing resident community nurse health services	Mobilizing Traditional Community organization & deploying volunteers: No	Yes
No	Comparison	**Zurugelu (Volunteers)** ***No impact***
Yes	**Nurses in the community** Slight fertility impact but major mortality impact)	**Combined:** Significant fertility + major mortality

Questions about the research origins of community-based primary health care in Ghana

Evidence for scale-up presented at the 1998 National Health Forum:

"Navrongo services reduced fertility by 1 birth, child mortality by half, and maternal mortality by a third. The changes in comparison areas have been much less."

Dr. Fred Binka: Director, Navrongo Health Research Centre (at the time of the project)

Yes, but that was in the north. In southern Ghana everything is different…. The languages, people, culture, geography. Everything. And, we do not have the funding that you have had.

Conclusion:
Results were controversial. To move forward, the replication question would have to be addressed.

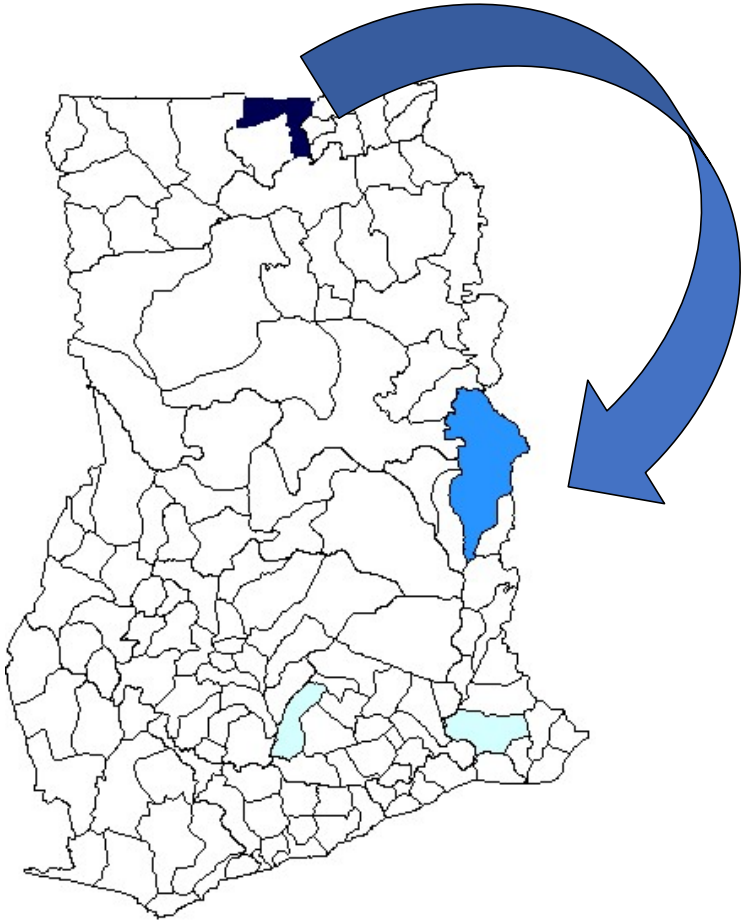
Why focus on CHPS?

It has been proven to save lives +
It can help couples with
reproductive health needs +
It is affordable.
It fosters equity & access (UHC)

but….

1) **The pace of national CHPS scale-up is *too slow*.**
2) ***Services were not achieving their full potential*: The focus of CHPS has drifted from its original evidence based focus on people-centered programming**
   - ✓ **Leadership at the district level is not developed.**
   - ✓ **Contemporary implementation has a facility focused approach.**
   - ✓ **Key components of care were not developed: Emergency public health and saving newborn lives**

Phase 3: Transferring the Navrongo model to Nkwanta: The creation of CHPS



Impressive research results from Navrongo lacked *operational credibility.*

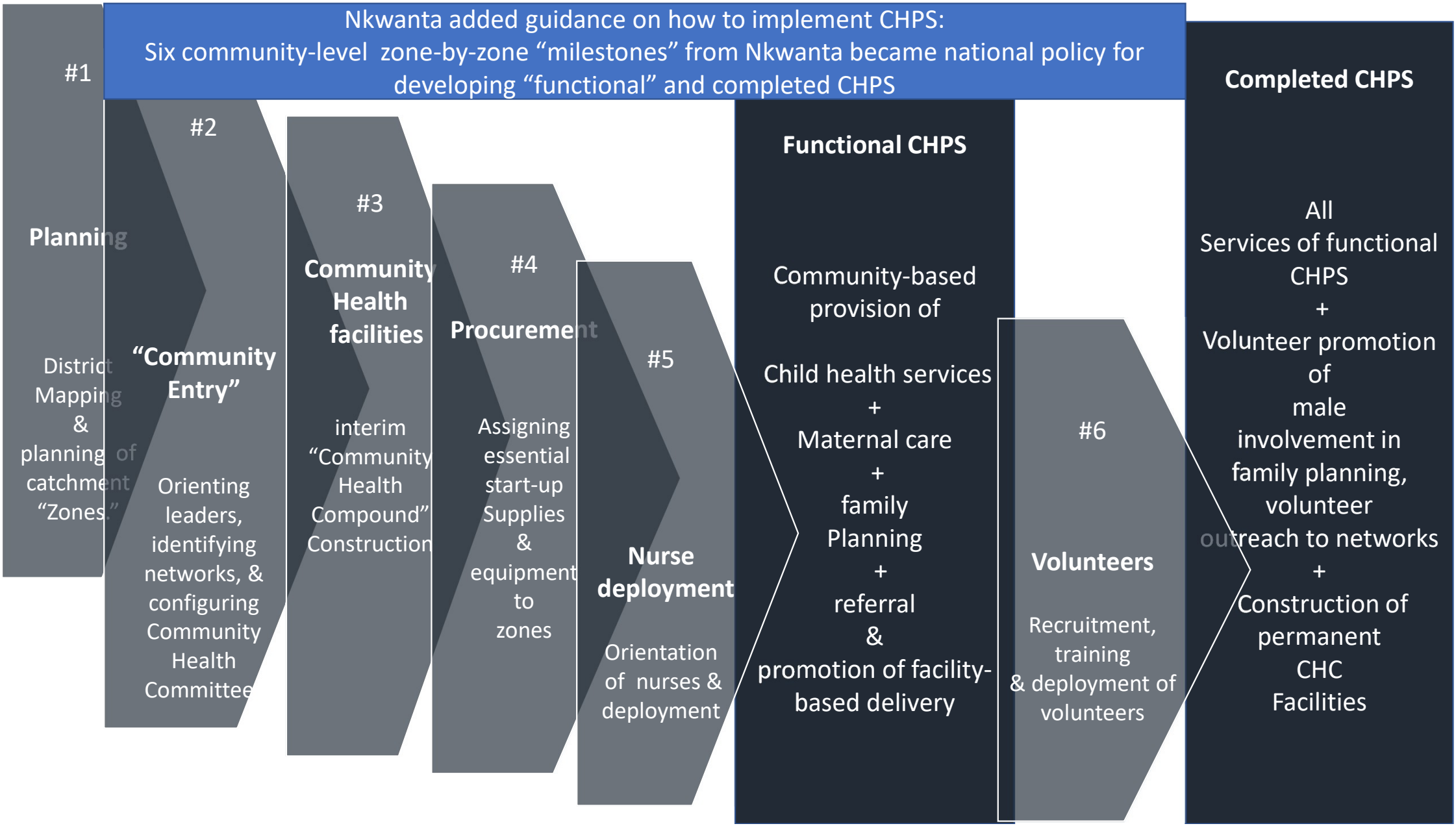
- Would the system work in a setting that lacked research resources?
- Was the model uniquely suited to the Navrongo cultural environment?
- How do you scale up Navrongo? What are the essential milestones? Resource development?
- Does system transfer have a level of impact that is equivalent to Navrongo results?

The Nkwanta replication strategy:

- ✓ Start in three communities, scale-up to other communities over time.
- ✓ Maximize community involvement in construction & governance.
- ✓ Add service zones over time as resources are found.
- ✓ Replicate Navrongo community-based service operations, but adapt strategies to local needs.

The Nkwanta research strategy:

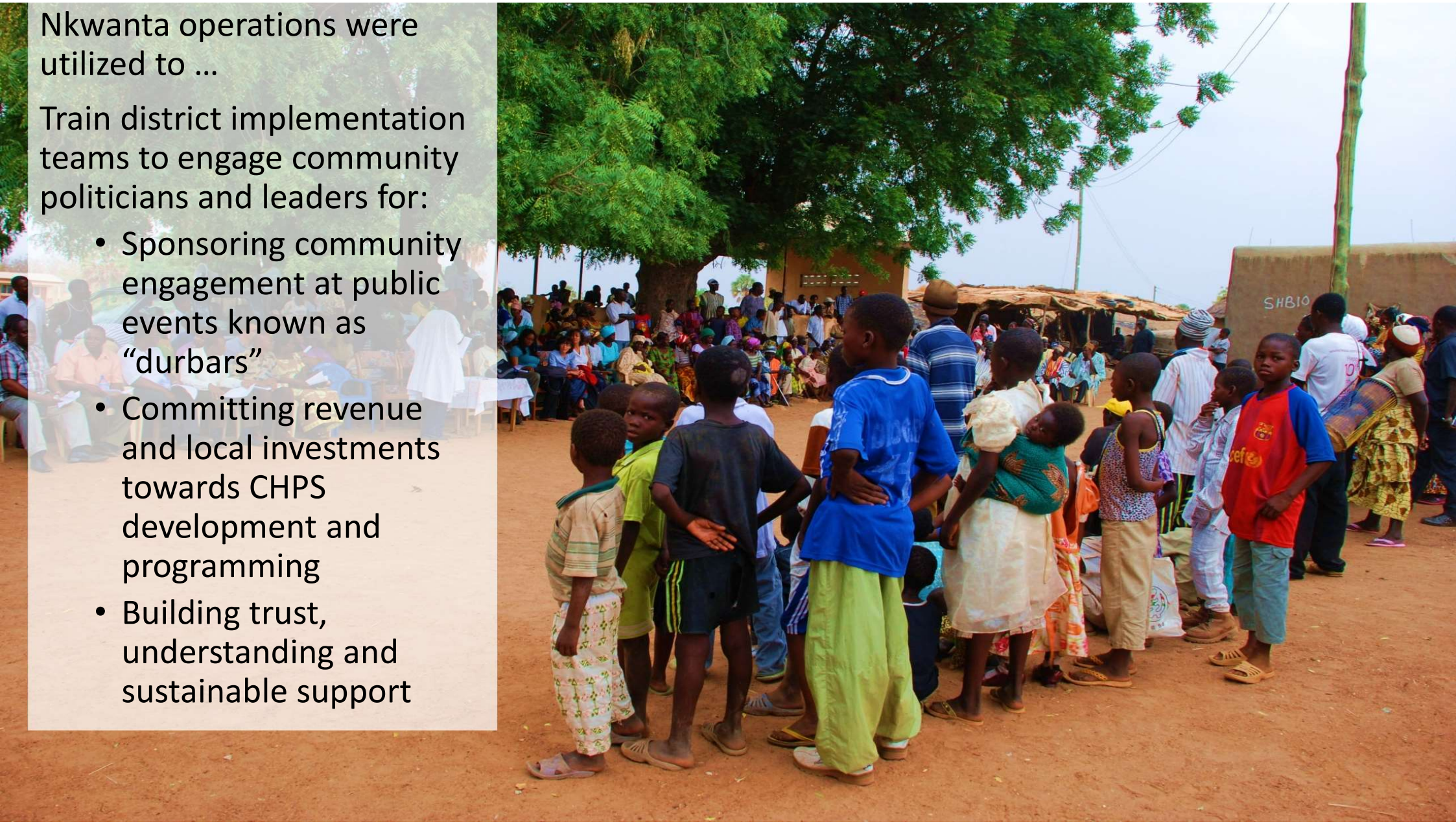
- ✓ Conduct quick-to-conduct **cluster surveys** with samples stratified to permit comparison of responses in CHPS exposed communities with responses in communities not yet exposed (a research strategy termed “stepped wedge)
- ✓ Conduct “**qualitative systems appraisal**” studies continuously to gauge stakeholder reactions and advice (as in the Navrongo phase 1 studies)


Nkwanta added guidance on how to implement CHPS:
Six community-level zone-by-zone "milestones" from Nkwanta became national policy for developing "functional" and completed CHPS
#1
Planning
District Mapping & planning of catchment "Zones."
#2
"Community Entry"
Orienting leaders, identifying networks, & configuring Community Health Committee
#3
Community Health facilities
interim "Community Health Compound" Construction
#4
Procurement
Assigning essential start-up Supplies & equipment to zones
#5
Nurse deployment
Orientation of nurses & deployment
Functional CHPS
Community-based provision of
Child health services
+
Maternal care
+
family Planning
+
referral
&
promotion of facility-based delivery
#6
Volunteers
Recruitment, training & deployment of volunteers
Completed CHPS
All Services of functional CHPS
+
Volunteer promotion of male involvement in family planning, volunteer outreach to networks
+
Construction of permanent CHC Facilities

Nkwanta operations were utilized to …

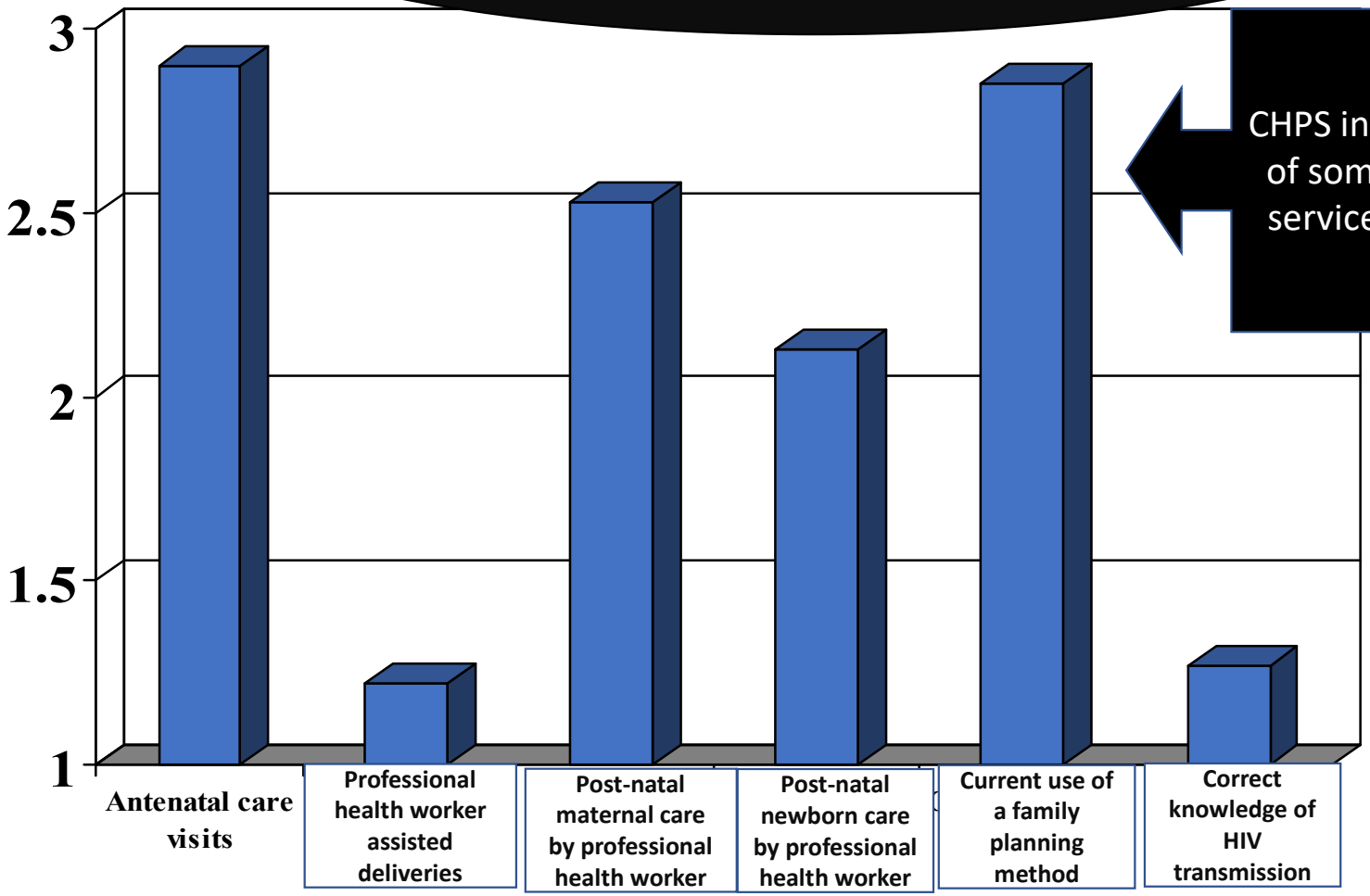
Train district implementation teams to engage community politicians and leaders for:

- Sponsoring community engagement at public events known as “durbars”
- Committing revenue and local investments towards CHPS development and programming
- Building trust, understanding and sustainable support



Lesson learned: If implementation is adapted to local conditions, Navrongo effects are replicable

The impact of community-based primary health care exposure relative to services limited to clinical facilities

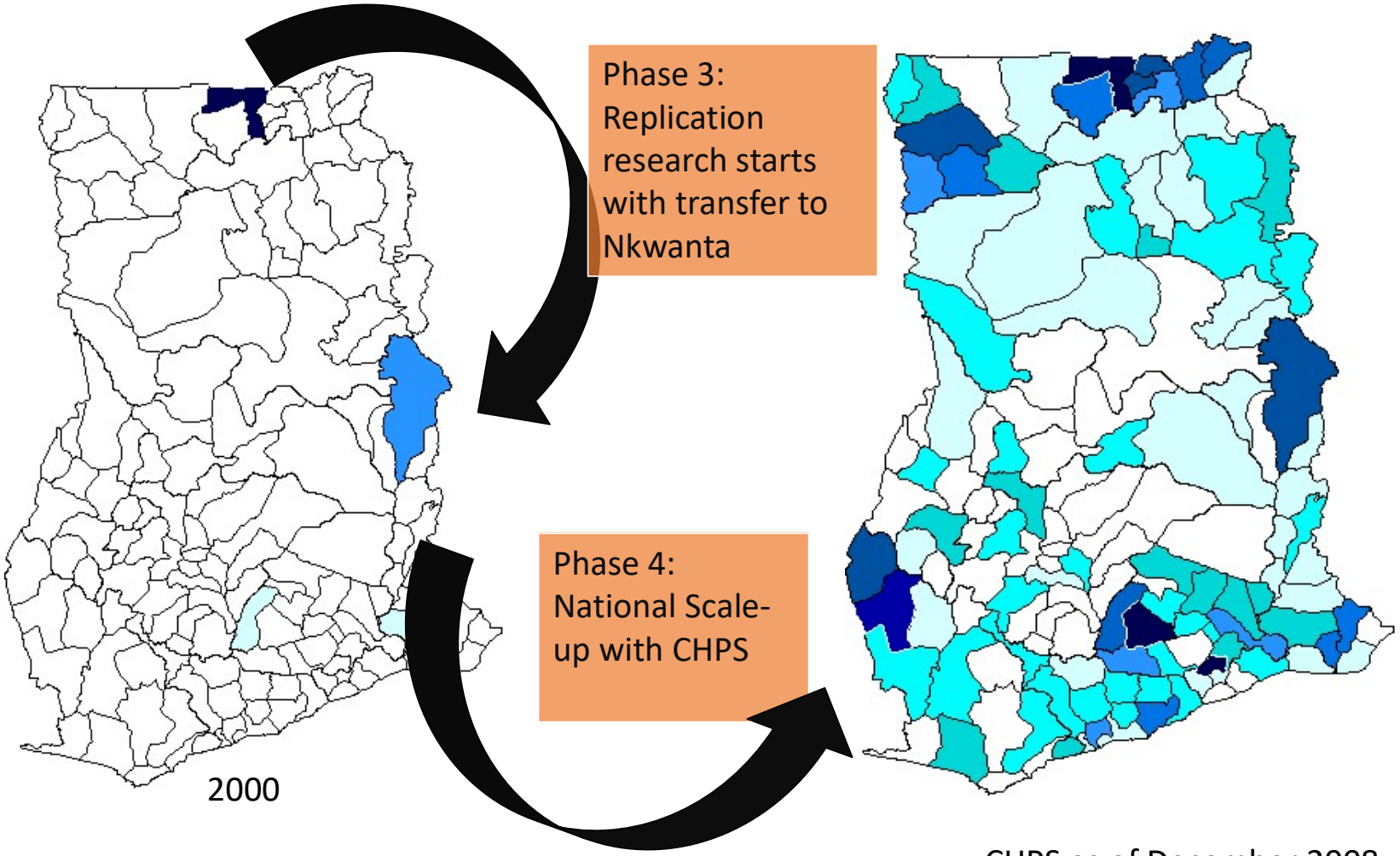


CHPS increased utilization of some Primary Health services by nearly ***3 fold***

If the odds of service use for CHPS exposed/CHPS unexposed is null, this ratio is 1.0


Questions about the Nkwanta replication trial and its policy impact

Phase 4: Community-based Health Planning and Services (CHPS) Scale-up



Using the participating districts as “Lead Districts” in their home region: “Scaled-down” pilot communities disseminated to demonstration districts

- Small groups were posted to demonstration communities for peer mentoring on CHPS development and best practices
- Included health staff from several levels of the health system (vertical engagement)
- Addressed the ‘fear of the unknown’ (horizontal engagement)

Peer exchanges enabled participating district implementation teams to understand methods of community engagement. This accelerated start-up operations despite limited resources

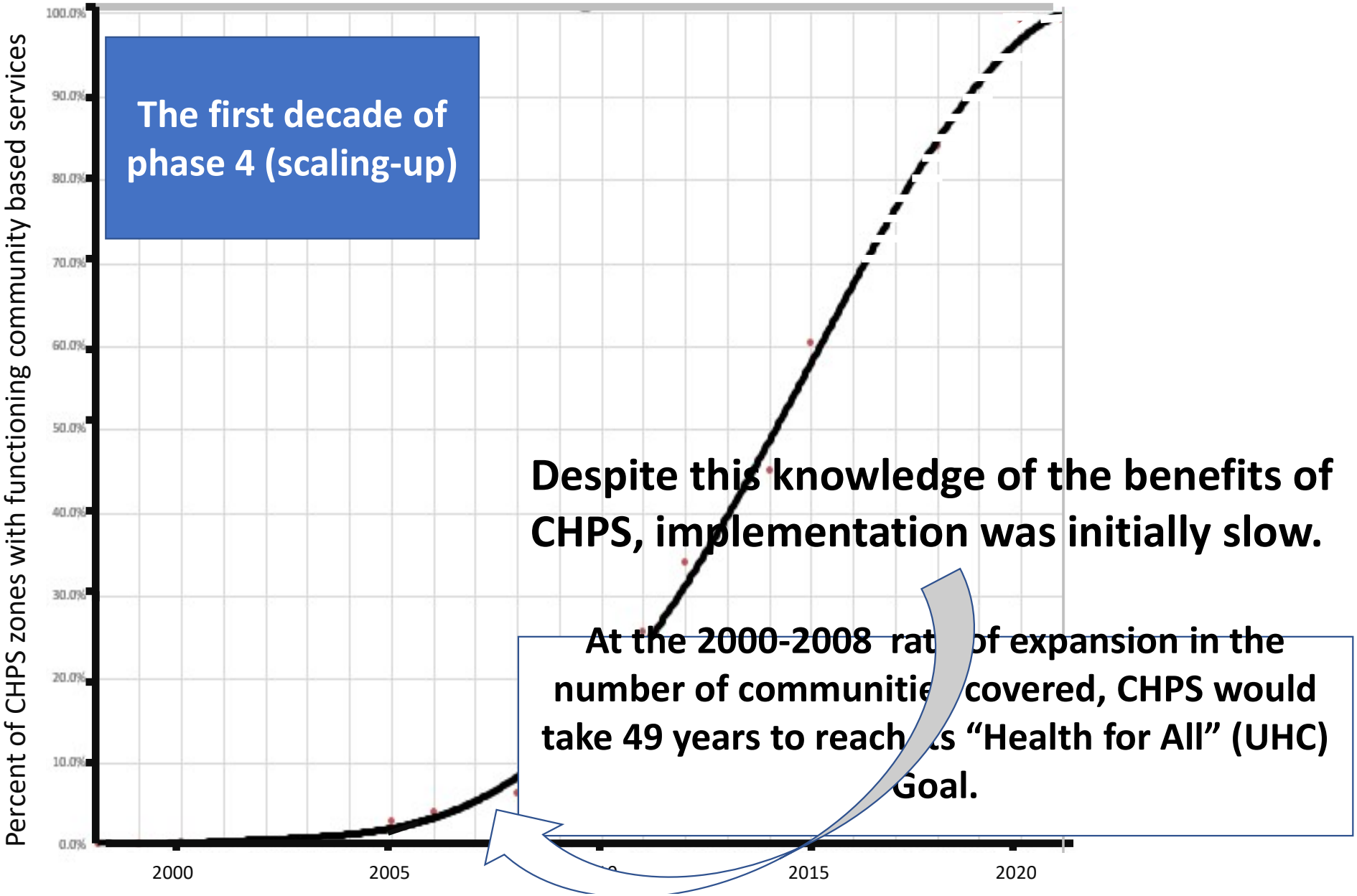
- Communities were empowered to initiate CHPS in their locality.
- Enhanced the 'learning by the doing' principle: Communities learned from other communities
- CHPS spread in the manner of a diffusion process

If community-engagement was successful, volunteer groups constructed community health posts where nurses could live and work. This enabled CHPS to launch services without delay. Costly construction of permanent facilities was not delaying implementation

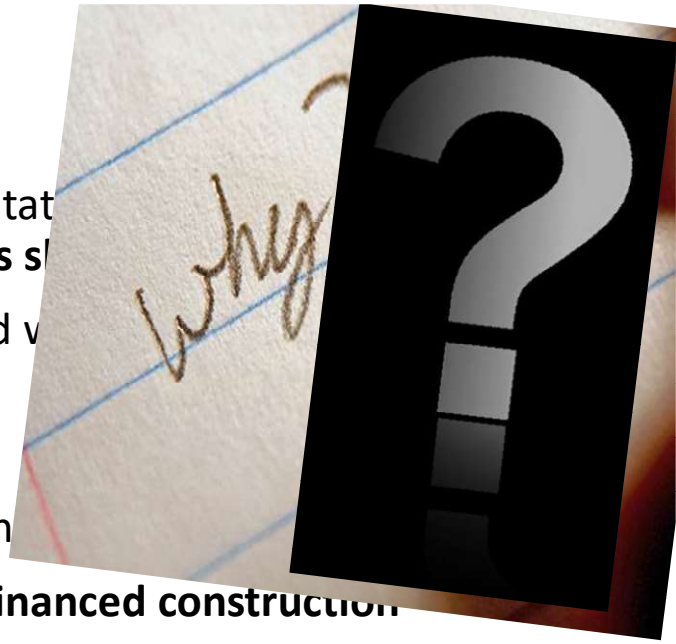
What was known by 2008?

- ✓ CHPS was proven to be a life-saving approach.
- ✓ "Horizontal" Alma Ata program implementation is possible; replication was known to be feasible.
- ✓ Nurses are effective; deploying volunteers without nurses does not work.
- ✓ No new technologies were needed: Existing and proven modalities could enable Ghana to achieve its health development goals.
- ✓ Costs were manageable if the Nkwanta implementation strategy was used.

What went wrong?


Percent of CHPS zones with functioning community based services
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
2000
2005
2015
2020
The first decade of phase 4 (scaling-up)
Despite this knowledge of the benefits of CHPS, implementation was initially slow.
At the 2000-2008 rat of expansion in the number of communitie covered, CHPS would take 49 years to reach s "Health for All" (UHC) Goal.

What went wrong?

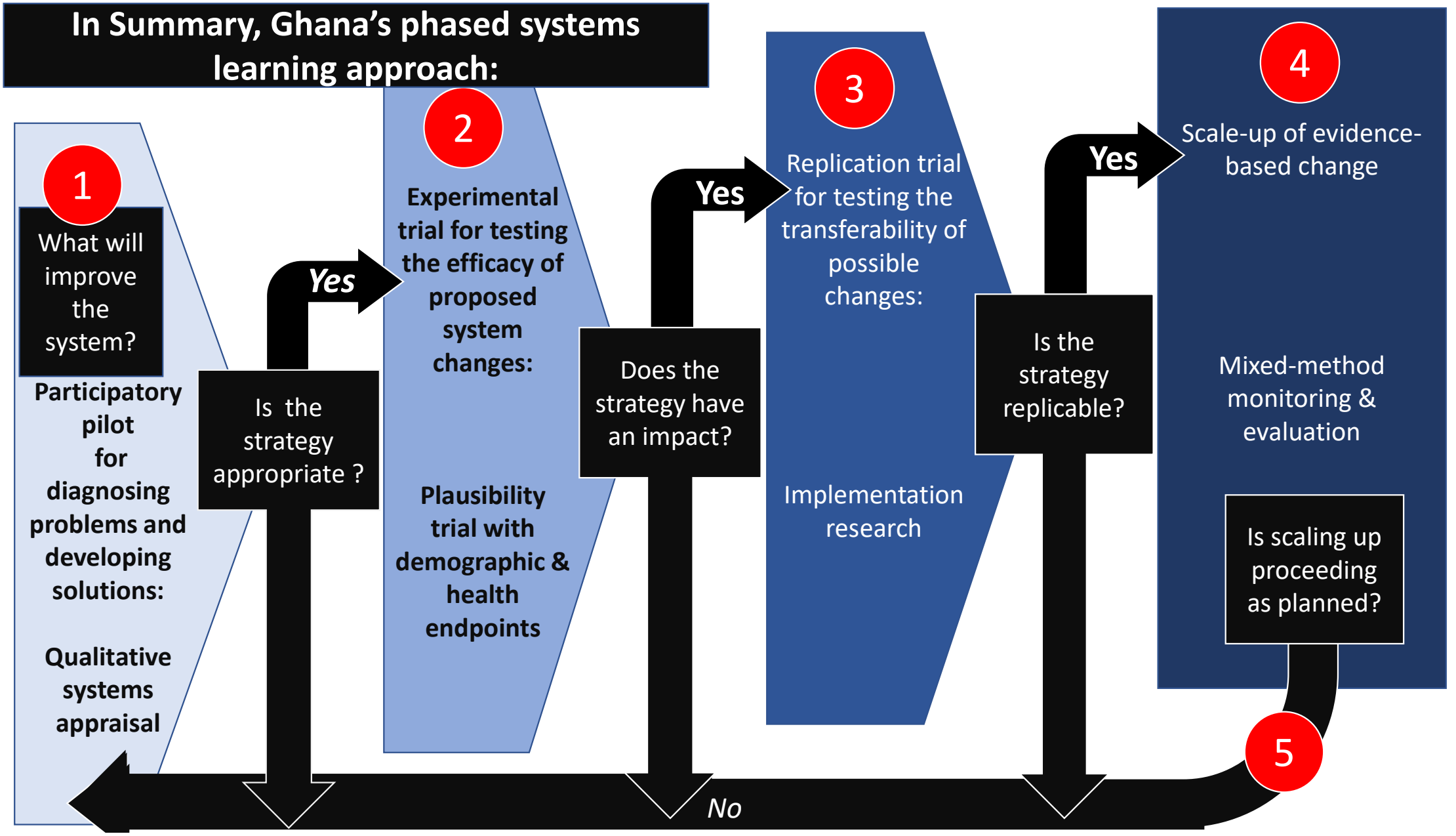


1. **Coverage gap:** Implementation concentrated in 32 districts where implementat
   CHPS implementation. Elsewhere in Ghana, the **pace of implementation was s**
2. **Implementation gap:** District health service planning was often unassociated v
   planning
3. **The "fidelity gap" CHPS drifted from its original community driven design:**
   - Launching **community health committees abandoned**: Volunteers no lon
   - Community mobilization not emphasized; priority **shifted to externally financed construction**
   - Counter-systemic donor support:
     - **Donor arranged ownership**: External technical assistance instead of GHS peer leadership.
     - Donor-funded contracts that had **no link to implementation research** results, even though the research was donor funded.
   - **Diluted programming**: As time progressed, CHPS increasingly failed to address crucial CHPS components including:
     - Family Planning: Outreach to men, community engaged promotion of services.
     - Outreach Activities – programs were becoming more static, less 'doorstep' focused and increasingly focused on fixed facility clinical service

In order to understand what went wrong in 110 districts, first consider what worked in 32 districts?

"Scaling Down" in 32 districts that were successful in implementing CHPS involved….

1. **Implementation leadership:** Nkwanta conducted 32 peer leadership and exchanges to spread small scale replication sites from Nkwanta to "innovator" districts in each region. District leaders understood the value of demonstration.
2. Participating district management teams were **trained in scaling down** CHPS to a few service catchment zones in their district for convening community-based demonstrations for spreading CHPS from community to community. This involved…
   - ✓….developing grassroots political engagement (by including District Assembly leaders in durbars)
   - ✓….planning decentralized within-district scale-up, service catchment areas known as "zones." Each zone had its own separate implementation plan and process.
   - ✓….utilizing the concept of focusing on six Nkwanta implementation milestones and how to achieve them.
3. <u>Catalytic financing:</u> Creating these small scale replication sites for catalyzing CHPS scale up were **financed** in these "System learning districts": Rapid start-up of CHPS with limited resources, often supported by political support for the allocation of district development revenue.


In Summary, Ghana's phased systems learning approach:
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Qualitative systems appraisal
Is the strategy appropriate ?
Yes
2
Experimental trial for testing the efficacy of proposed system changes:
Plausibility trial with demographic & health endpoints
Does the strategy have an impact?
Yes
3
Replication trial for testing the transferability of possible changes:
Implementation research
Is the strategy replicable?
Yes
4
Scale-up of evidence-based change
Mixed-method monitoring & evaluation
Is scaling up proceeding as planned?
5
No

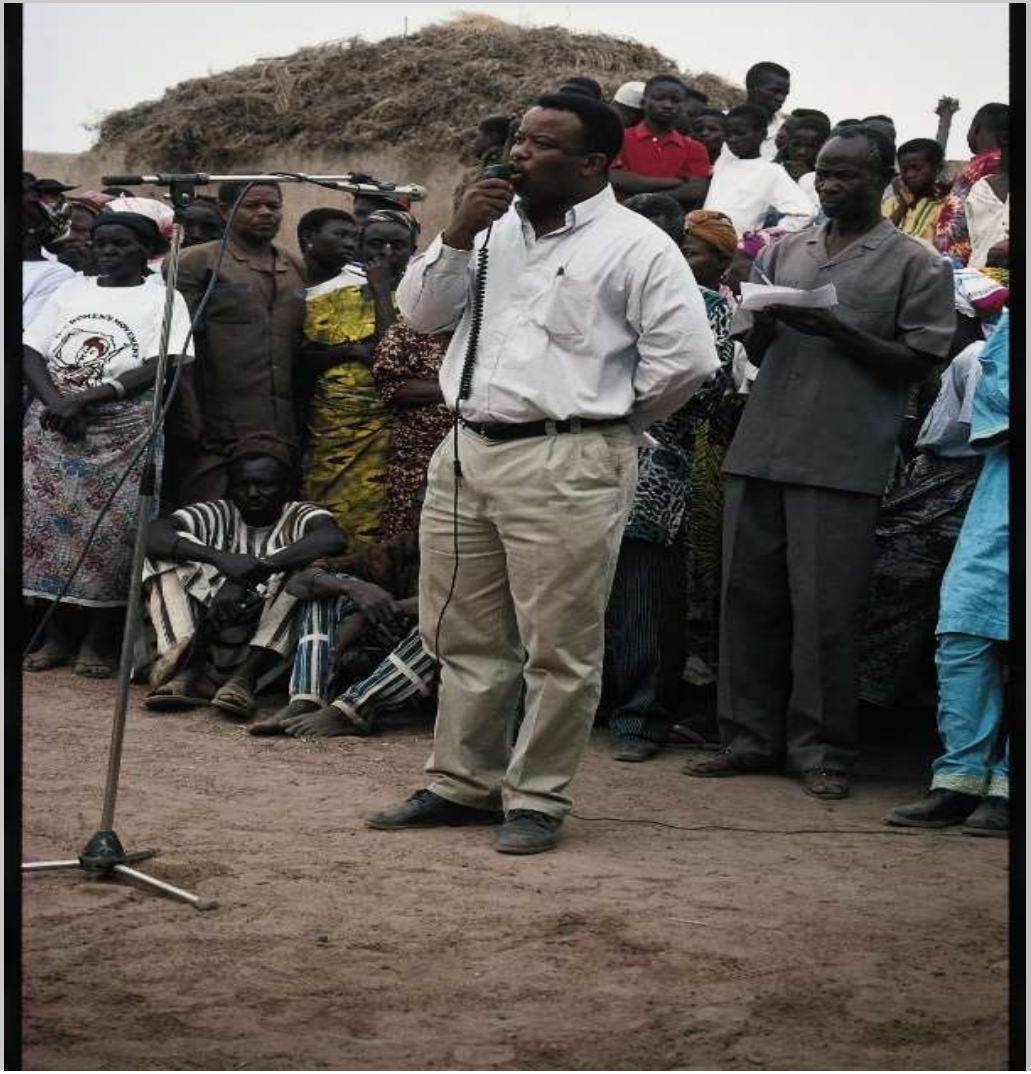
A new Phase 1 for reforming CHPS

The 2009 Binka, et al. Qualitative Systems Appraisal: Organizational diagnosis

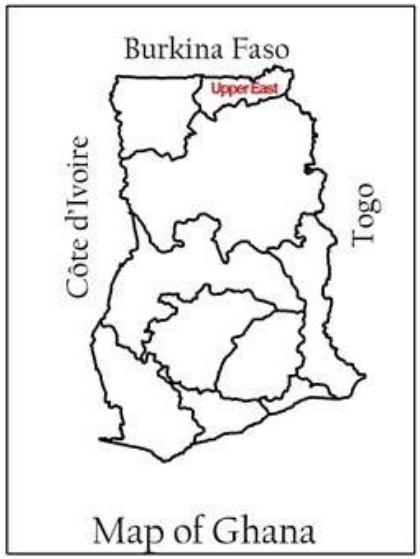
- ✓ **Lack of district leadership** is the problem (leadership training is not working; the National Health Insurance Scheme is focused on facility based curative care)
- ✓ Absence of **budget lines** for start-up costs
- ✓ Funding that is available is focused on building health posts (**the "edifice complex")**
- ✓ Medicalization: Absence of **community engagement**.
- ✓ Procedural confusion: **Milestones** are not pursued (lack of fidelity to the implementation model).

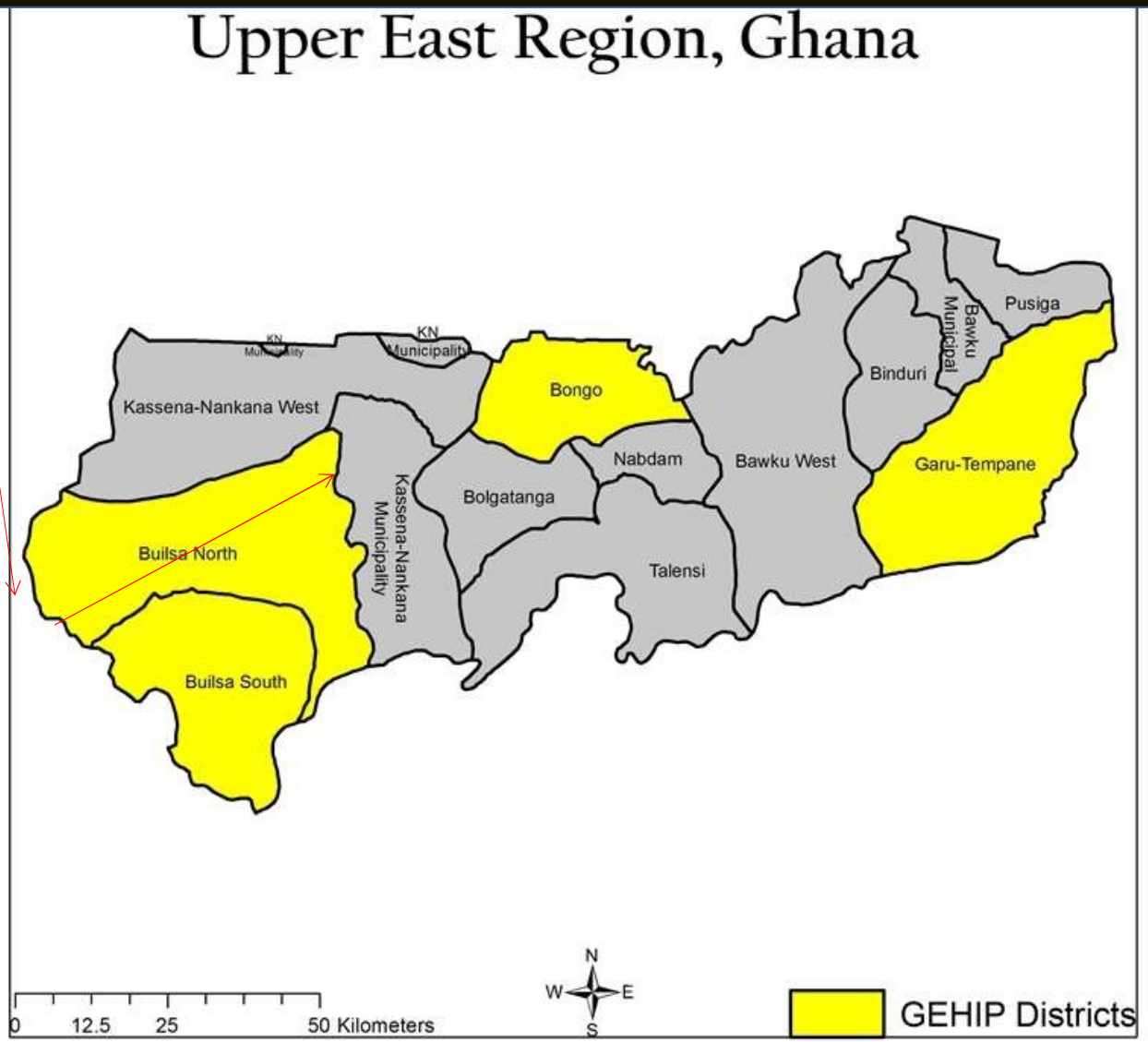
Other observations……

- ✓ Donor mandated **counter-systemic strategies** that lacked grounding in evidence.



Phase 2: The Ghana Essential Health Interventions Program (GEHIP)





Research for reforming CHPS, Phase 2

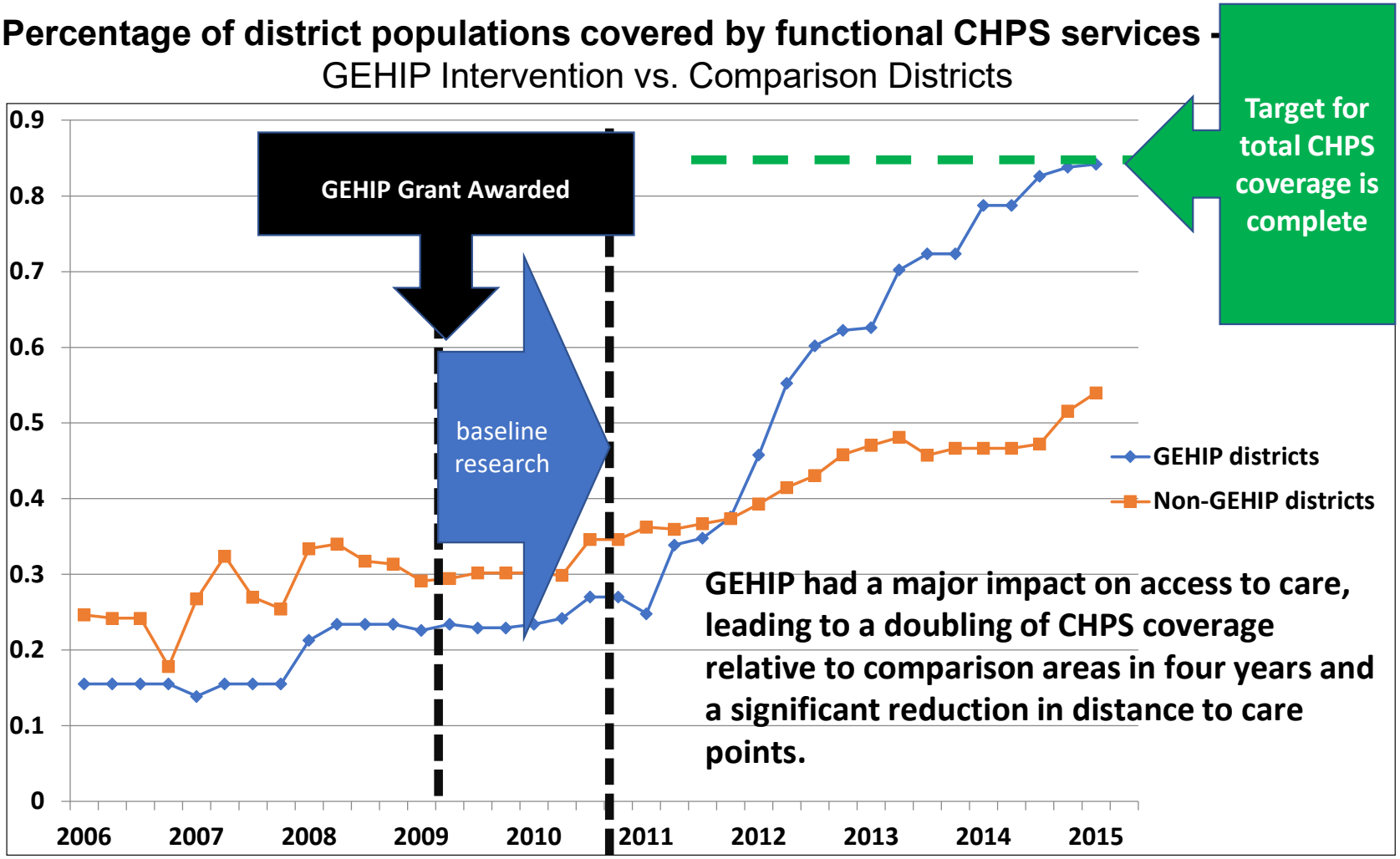
In one region, implement the recommendations of phase 1 in 4 districts as GEHIP treatment areas.

Set aside 7 districts as a comparison area where national reform directives are implemented without GEHIP systems strengthening

No research in 2 districts where the Navrongo experiment was conducted.

5 general themes of systems functioning	Routine operations for comparison areas	System strengthening activities in 4 treatment areas comparison areas with strategies that emerged from "phase 1" baseline investigation of ways to improve CHPS coverage:
#1 **Impro** **ac**cess to essential health technologies	Goal: Full C… Coverage by end 2015 (unattainable)	Target: Full CHPS Coverage by mid-2014 (ac…eved at end of 2015)
	Referrals via district hospital-based ambulances	Organization of communication systems, basic equipment and case management systems for emergency public health
	Standard services provided	Additional maternal and newborn services at CHPS, SDHCs, & DHs
# 2 **Improve capabilities** of trained manpower	1 nurse per community service zone	2 CHO per CHPS Zone Minimum (one with basic midwifery training) OR 1 CHO + 1 midwife per CHPS zone
	Nurse largely facility based	Nurse encouraged to focus on doorstep care; supervisors oriented to community-based services.
	Regular training for nurses	Additional training for nurses in neonatal care Volunteers trained in supporting nurses
#3 **Improve Information systems** for decision-making	Existing paper-based information system	Reformed and simplified health management information system with provision for feedback and supervisory support
#4 Bringing **revenue into the health sector** and develop appropriate budgeting	Routine Government of Ghana funding	Add $0.85 per capita over 3 years in flexible funding to fill gaps in CHPS scale-up and other district activities that can reduce child and maternal mortality.
	Standard budgeting	Tools for evidence-based budgeting, prioritized according to the Burden of Disease
	GHS Leadership program for DHMT	Leadership demonstration and exchanges
#5 **implementation leadership** and governance	Classroom leadership training without links to local governance	Participatory engagement of grass-roots politicians, outreach and leadership training for integrating development and health leadership

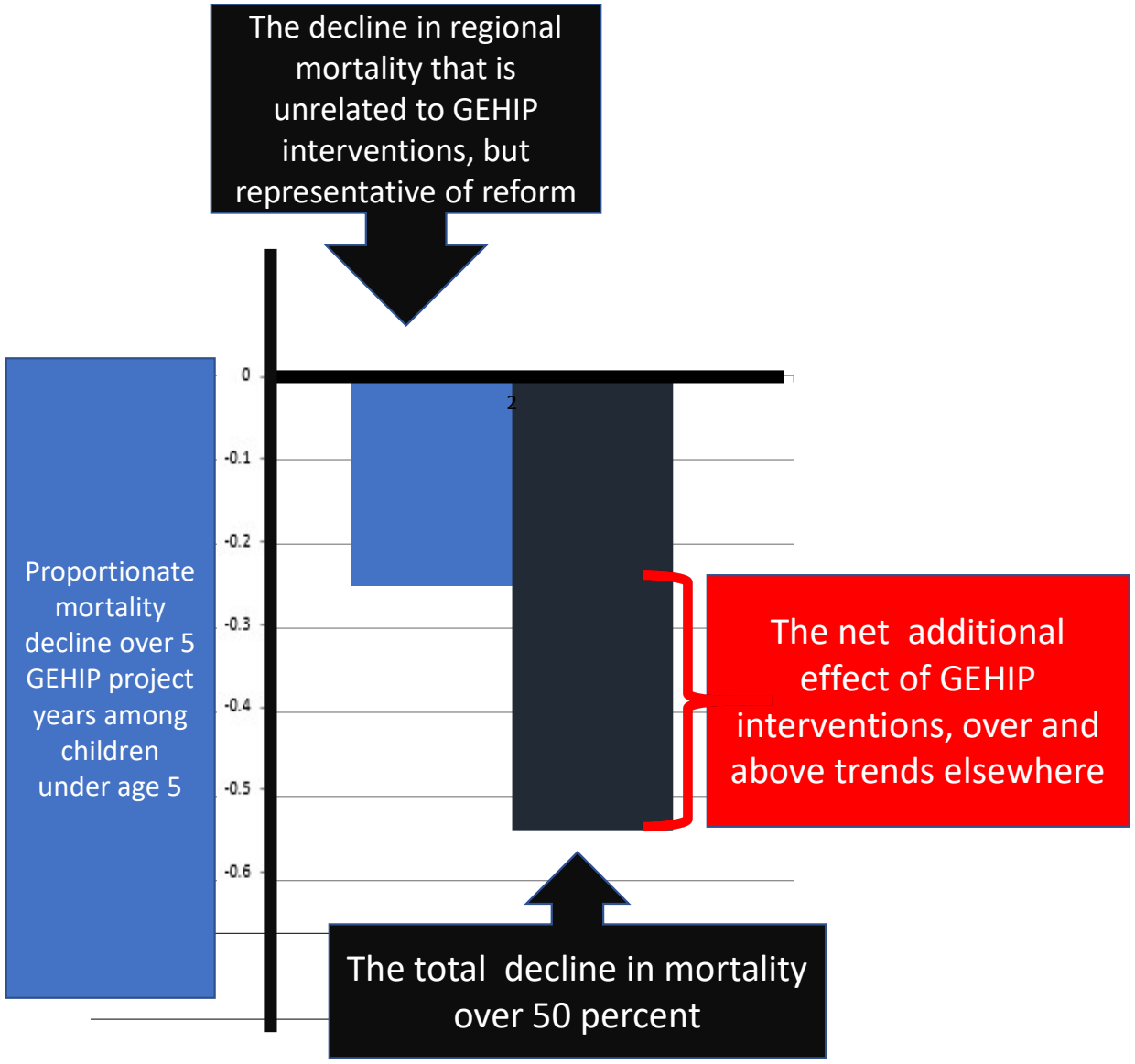
CHPS Scale-up



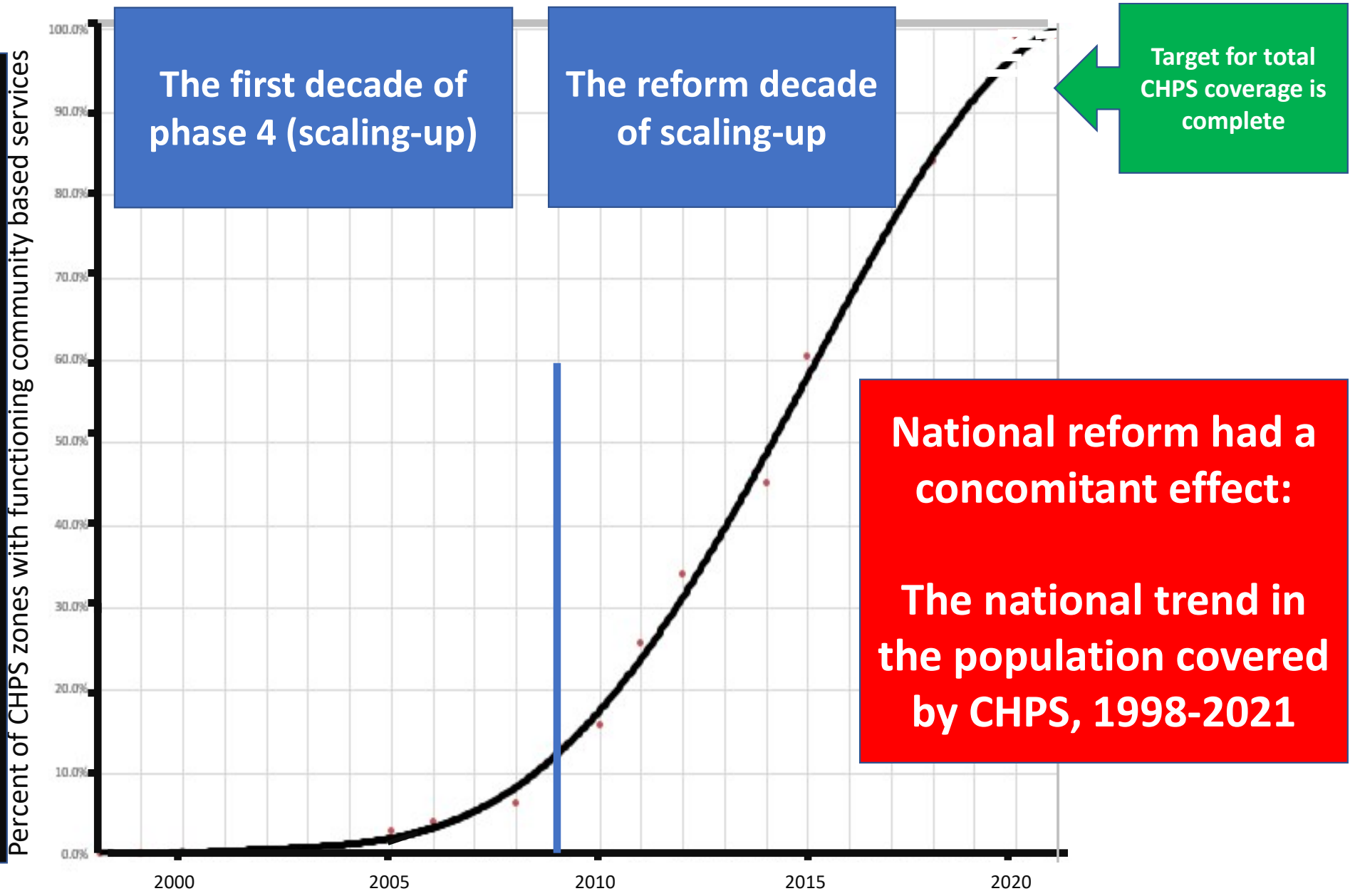
Results:

GEHIP had a major impact on child mortality, all due to improved CHPS coverage and improved emergency referral.

Also, GEHIP had significant effects on fertility

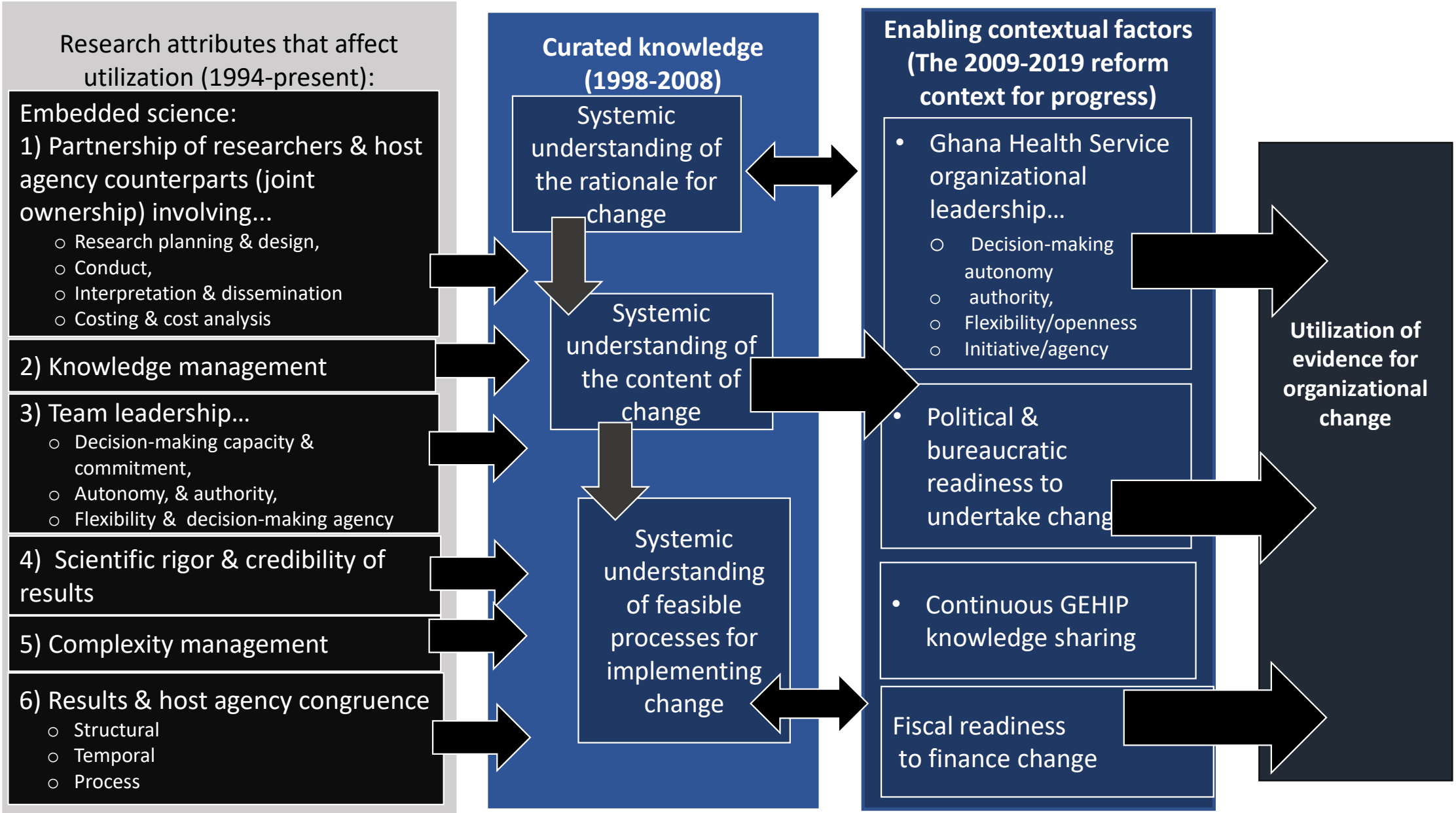


What turned CHPS around ?



National reform had a concomitant effect:

The national trend in the population covered by CHPS, 1998-2021


Research attributes that affect utilization (1994-present):
Embedded science:
1) Partnership of researchers & host agency counterparts (joint ownership) involving...
Research planning & design,
Conduct,
Interpretation & dissemination
Costing & cost analysis
2) Knowledge management
3) Team leadership…
Decision-making capacity & commitment,
Autonomy, & authority,
Flexibility & decision-making agency
4) Scientific rigor & credibility of results
5) Complexity management
6) Results & host agency congruence
Structural
Temporal
Process
Curated knowledge (1998-2008)
Systemic understanding of the rationale for change
Systemic understanding of the content of change
Systemic understanding of feasible processes for implementing change
Enabling contextual factors (The 2009-2019 reform context for progress)
Ghana Health Service organizational leadership…
Decision-making autonomy
authority,
Flexibility/openness
Initiative/agency
Political & bureaucratic readiness to undertake chang
Continuous GEHIP knowledge sharing
Fiscal readiness to finance change
Utilization of evidence for organizational change

So how did research in Ghana contribute to resolving global debates?

The "Vertical" vs. "horizontal" debate	**The "health for all" goal is achievable**, despite profound development and resource challenges. CHPS has achieved total coverage, although this required 2 decades of effort. **Total systems thinking is required**: Ancillary support systems are essential Total primary health care is essential: CHPS still lacks emergency public health capabilities, non-communicable disease capabilities, and adequate adaptations to urban public health needs.
The great population debate	Unmet need for contraception is pervasive, even in a rural traditional pronatalist societal setting. **Fertility will decline if culturally appropriate services are rendered**. However, simple clinical distribution and improved access to care is insufficient.
Volunteers vs. trained professional nurses	**Volunteers as stand-alone providers will have no impact** on reproductive or child health. All volunteer initiatives should be carefully investigated, as results can be counterproductive.
	Nurse deployment can have pronounced survival impact, but social engagement provides essential support for community-based care.


Questions?
Send comments or questions for Koku to
kawoonor@gmail.com