THE ROLE OF COMMUNITY-BASED SURVEILLANCE IN HEALTH OUTCOMES MEASUREMENT

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SUMMARY

Setting: Community Health Planning and Service (CHPS) strategy was started in Ashanti Region in 2001. It aimed to improve geographic access to comprehensive health care. The Region used community-based surveillance (CBS) as an entry point.

Objectives: were to obtain baseline data and define the magnitude and extent of specific health outcomes.

Design: Districts were divided into health zones and health workers (HWs) assigned. CBS Volunteers were identified, trained to register households, births, deaths, diseases and vaccinations. The Regional level tracked the implementation process and HEALTH OUTCOMES which were evaluated after a year.

Results: Two hundred and eighty-two (282) zones were created, 1-8 per sub-district with populations 1,029-43,998 and communities 1-29. 86.2% zones had HWs assigned, 40.6% resident. Most HWs (89.3%) were community health nurses. 65.7% zones had health institutions, 20.6% chemical shops and 83.7% basic drugs. 2,325 (91%) communities had registers and 2,278 CBS volunteers. Twenty-six thousand, three hundred and sixty (26,360) births were registered (CBR 10.2/1000pop), deaths 5,694 (CDR 2.6/1000pop), Under-one deaths 967 (IMR 36.4/1000Lbs), child deaths 229 (CMR 8.3/1000Lbs), under-5 deaths 1,196 (U5MR 47.1/1000Lbs) and maternal deaths 76 (MMR 288.3/100,000Lbs). Reported diseases included AFP 18, Neonatal tetanus 38, Buruli ulcer 80 and Guinea worm 34. The challenges were in data management and use.

Conclusions: We conclude that health institutional data may only represent the ear of the hippopotamus and complimented by CBS, health outcomes can be well defined in the CHPS concept and thus contribute immensely to community action with stakeholders.

Keywords: Surveillance, CBS, CHPS, Health outcomes, Ashanti, Ghana, Africa.

INTRODUCTION

The Ashanti Region lies approximately between longitude 0.15°-2.25° west and latitude 5.50°-7.40° north. The land area is 24,390sq km., representing 10.25% of the total land area of Ghana. The region is the most populous region in Ghana with a 2001 population of 3,270,478. There are 18 districts in the region, 99 sub-districts, and 2532 communities. Kumasi, the capital of the region has approximately one-third of the regional population. There are 395 health facilities in the region, made up 86 hospitals, 91 health centres and 218 clinics. Ghana Health Service institutions account for 32% of all health institutions in the region. There are 104 Doctors, 1061 Nurses and 285 Midwives giving a Population: Nurse Ratio of 3,082:1, women in fertility age (WIFA): Midwife ratio 2,3001:1 and Population: Doctor Ratio 31,447:1.

In Ashanti Region community health planning and service (CHPS)²,³ has been viewed as a strategy. This strategy is well known and finds its root in the primary health care component of community participation in health care. CHPS “seeks to enable District Health Management Teams (DHMTs) throughout Ghana to adapt and develop approaches that are consistent with local traditions, sustainable with available resources and compatible with prevailing needs” to give access to primary care services. We observe that the first step in any meaningful community health planning process is the definition of a problem. The problem we believe must and should always be defined in outcomes: birth, service coverage, satisfaction, disease, disability, death, cost, etc. It is only when the magnitude and/or effect of such a problem is of public health importance to a community that it

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would spend time and energy to undertake remedial actions. To obtain the epidemiological data required to define the magnitude and extent of such issues in the region, there was the need to establish a broad-based and effective surveillance system, both community and institutional.

In general we were also of the view that the service in CHPS must be specific and focused. In particular the service among others must be one of or a combination of the following:
1. Health promotion to improve health-seeking behaviour and reduce health risk behaviour.
2. Disease prevention through orally administered drugs, vaccines and contraceptives.
3. Disability and death prevention through prompt treatment of the sick and early case/epidemic detection and control.
4. Increased client and job satisfaction through humane care, bottom up decision-making and reward for underserved area service and
5. Moderate and affordable service cost through efficient use of resources and risk-sharing pre-payment schemes.

Community members can plan to provide most of the health promotion services and some of the disease and death prevention activities. Health professionals at the community and zonal levels can facilitate some of the community actions and also provide specific technical functions.

MATERIALS AND METHOD

Given the above, the regional public health unit set out in January 2001 to implement CBS system by first working with the District Directors to identify community-based surveillance (CBS) volunteers from existing village health committee (VHC) members. The communities were grouped into zones and in some zones, the CBS system was launched. To establish the community systems that will help define health problems, registers were designed, printed and distributed in most communities. These were supplemented with UNICEF registers as effort to secure funding from some Donors to print more of locally designed registers failed. The volunteers were then trained in lay case definition of some diseases under surveillance, registration of births and disease and social mobilization. Health professionals were assigned to the zones to provide a package of services and given responsibility for service coverage, births, deaths and disease registration and control. Construction of community health compounds, a key component in the CHPS strategy, was given less premium at this initial stage, given the cost. At the end of a year’s implementation we evaluated the system and this paper presents what was found. The evaluation process involved a visit to all the 18 districts (Table 1) and communities to interview District Health Management Teams, selected Community Health Officers (CHOs) and CBS volunteers. All zones and communities were visited and available community plans, maps, registers and reports on zoning, training and durbars reviewed. The evaluation tried to capture the zoning profile, assignment of service providers to zones, capacity building for CHPS strategy and CBS system, distribution of health infrastructure, community level documentation of births, selected diseases and deaths, case investigation and challenges.

RESULTS

Table 1 Names of Districts covered in Ashanti Region and their abbreviations

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<th>District</th>
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<td>Adansi East</td>
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<td>Adansi West</td>
<td>ADW</td>
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<td>AFS</td>
<td>Ejisu-Juaben</td>
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<td>Ejura Sekyere-Dumase</td>
<td>AAN</td>
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CBS Profile

A total of 282 zones were identified in the 98 sub-districts. Most sub-districts (46%) had 2 zones, with zones per sub-district ranging from 1 to 8. There were a total of 2318 communities in all the sub-districts. The zones had communities ranging from 1 to 29 with 45% zones having 5-9 communities. A total of 283 health institutions were also mapped out with 67.4% of the zones having 5-9 communities. The zonal population ranged from 1,029 to 43,998 with 86.8% of the zones having populations under 14,000.

Programme and strategic planning

In 97.8% of the zones, communities had been selected for CBS and the initial durbar had taken
place to share the principles of CBS and to identify CBS volunteers. From a total of 2318 communities CBSs had been selected in 2217 (98%). The trained CBSVs numbered 2112 (91.1%). There were community registers in 2,096 (90.4%) of the communities. Functional VHCs were however present in only 208 (8.9%) communities.

Staff in all the zones had been sensitized. A greater majority of the zones (86.2%) had CHO assigned. CHO were resident in 40.6% of the assigned zones. A greater majority of the CHOs (89.3%) were community health nurses; the rest were midwives, disease control officers, public health nurses and environmental health officers. Only 35 (12.7%) of the CHO had received any in-service training in any of the following essential implementation elements of CHPS:

1. Community-based surveillance (disease and nutritional case detection, investigation, reporting and outbreak management).
2. Integrated management of childhood illness (IMCI: malaria, diarrhoea, pneumonia, malnutrition, measles and immunization) and
3. Communication and social mobilization.

Health Outcomes
The community volunteers in their registers recorded the outcome measures presented here. The data were taken directly from these registers.

Births
A total of 26,360 births were registered with a male: female ratio of 1.02:1. The median crude birth rate (CBR) was 10.2/1000pop.

Deaths
The total deaths recorded under the CBS system were 5,694. These included under-one deaths of 967, child (1-4 years) deaths of 229, under-5 deaths of 1,196 and other deaths of 4,432. There were also 76 maternal deaths.

The following mortality rates were determined (Note: Asante Akim South provided no information on births, deaths and disease and Kumasi did not receive registers).

The regional median Crude Death Rate (CDR/1000pop) was 2.6

![Figure 2](image1)

**Figure 2** Community documented crude death rate by district

The Regional median Infant Mortality Rate (IMR/1000Lbs) was 36.4

![Figure 3](image2)

**Figure 3** Community documented infant mortality rate by district

The Regional median Child Mortality Rate (1-5MR/1000Lbs) was 8.32, ranging from 0.8 to 48.6. The Regional median Under-5 Mortality Rate (<5MR/1000Lbs) was 47.12.

![Figure 4](image3)

**Figure 4** Community documented Under-5 Mortality Rate by district
The regional median Maternal Mortality Rate (MMR/100,000Lbs) = 288.3

![Community reported maternal mortality rate by district](image)

**Figure 5** Community documented Maternity Mortality Rate by district

**Disease**
The following new cases were registered by the communities: Measles 1,194, Acute flaccid paralysis (AFP) 18, Cerebrospinal meningitis (CSM) 60, Neonatal tetanus (NT) 38, Buruli Ulcer (BU) 80, Guinea worm (GW) 34, Jaundice 5 and others (e.g. cholera) 4.

**Coverage**
In this report it was not possible to establish community-specific or zonal coverage for the following essential components of effective community health service: immunization, ITN use, market sale of iodated salt, household use of iodated salt, vitamin-A supplementation, childhood adequate weight gain through community-based growth promotion (CBGP), exclusive breastfeeding rate and home management of fevers.

**Data Entry**
Most register entries were timely and accurate. However, there were differences in tallying. A few records were incomplete and some summary records were not supported by tallies.

**DISCUSSION**

The outcome measures from the community records open a whole new chapter into community participation in the region, a key component of primary health care. The information generated however has to be used to be relevant. Unfortunately monthly community durbars to discuss these records took place in only 3.6% of the zones. There were no quarterly zonal durbars to discuss the births, diseases and deaths in any of the districts. The promising events during the period however were that 41.7% of the sub-districts held quarterly health management information system (HMIS) meetings to share health facility information with stakeholders. District level HMIS took place in 12 (66.7%) of the districts and annual district conference took place in 7 (38.9%) districts. If these meetings and conferences are sustained, the districts and sub-districts will eventually be strengthened to support community/zonal durbars and CBS data interpretation and use.

Comparing the CBS data with the health institutional data, there were some similarities and differences. Live birth record from health institutions (less Kumasi and Asante Akim North) was 52,263, twice what was recorded by the communities. It appears the communities did not record all births, especially those occurring in health facilities. The institutional IMR and under-5MR of 7.6 and 10.9 per 1000Lbs respectively were far lower than the CBS rates. The institutional maternal mortality rate of 232/100,000Lbs was also lower than the 288/100,000Lbs obtained from the registers. The CBS IMR, CMR and <5MR per 1000Lbs of 36.4, 8.3 and 47.1 respectively, were however lower compared with the respective figures of 41.9, 37.9 and 78.2 published in the 1998 GDHS for Ashanti Region.

On disease report, the CBS cases were lower compared to the institutional cases except in neonatal tetanus where the institutions recorded only 4 cases compared with the 38 reported under the CBS system. Interestingly, all the 18 AFP cases recorded in the registers were also captured in the recorded 19 institutional cases and case-based investigation was conducted on each case. Most of the diseases recorded in the registers were however not reported by the health staff through the weekly communicable disease (CD-1) forms. Again no case-based investigations were done for the measles and jaundice cases recorded in the registers.

If all CBS case and death reports were investigated, it would have been possible to validate them and obtain an outcome measure that takes both community and institutional records into account and provides a complete view of the outcome measures used for the surveillance.

**CONCLUSION**

It has been possible within a year of CHPS implementation using a CBS system as an entry point to gather baseline data on births, deaths and diseases of public health importance which improvement constitute the key “benefits of using the CHPS process”10. From these data it has been possible to generate some rates and ratios that will form the basis to assess CHPS future performance based on
If institutional health rates are complimented with CBS data which over time will include records from bone setters, traditional healers and conditions managed at home, “the body of the hippopotamus” will be seen and health records will no more be based solely on institutional records which are generally said to represent “the ear of the hippopotamus”.

We recommend that District Assemblies work with Ghana Health Service to introduce registers in all communities to measure health outcomes. These outcome measures may be used to select and award communities with “good” health status. Chiefs, Queen mothers and Unit Committee chairpersons could be directly responsible for the entries and the organization of durbars to discuss the outcomes for health improvement decision-making and actions.

We also recommend that the Ghana Health Service Council adopts institutional and community outcome measures (e.g. fertility, births, coverage, cost, satisfaction, disease and deaths) and apply them strictly to assess the performance of Regional and District Health Directorates. Unless health problems are defined in outcomes and objectives set in outcomes, no significant change could be expected in morbidity and mortality reduction in the medium to long term.

Constraints
Inability to secure funding to print more locally designed registers limited planned complete registration of all households. This made it difficult to track in and out migration and to link diseases and deaths to households. Where pregnancies were not obvious to people, maternal deaths through abortion may not have been captured. The low specificity and high sensitivity of the lay definitions used under the CBS system could have increased some case report as in Buruli Ulcer. Inadequate supervision and monitoring by the district and sub-district teams might have contributed to the limited review of entries in the registers and subsequent minimal dissemination at durbar.

ACKNOWLEDGEMENT
We express our most profound gratitude to the District Directors of Ghana Health Service, Ashanti; they showed great commitment. We are very grateful to UNICEF for supplying some of its registers originally designed for Northern Region. The CHO trained the CBS volunteers and supported them and we are very grateful. To all the communities which records we have shared, we say “ayekoo”.

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