

A PROFILE

GHANA'S EXPANDED
PROGRAMME ON
IMMUNIZATION IN GHANA

WHO GHANA

TABLE OF CONTENTS

Background	4
Demography	4
Economy	4
The Health System Environment	6
The Health Sector Reforms	6
The Epidemiology and Surveillance of Vaccine Preventable Disease in Ghana.....	8
The Ghana Health Service	13
The Immunization System	13
The National EPI Policy	13
Programmatic Objectives.....	13
The Organization and Management of EPI Ghana	17
EPI Service Delivery Strategy	21
Routine EPI.....	23
Trends in Coverage	23
Progress on implementing relevant EPI WHO-AFRO Resolutions.	24
Summary table of PEI activities - Ghana 1996-2003.....	25
The Challenges.....	32
Innovations.....	37
Advocacy and Social Mobilization.....	37
Vaccine Safety and Management.....	38
Logistics	40
Human Resources	42
Financing the Cost Of Immunization Services	44
References.....	45

List Of Acronyms

5YPOW	Five Year Programme Of Work
AFP	Acute Flaccid Paralysis
AIDS	Acquired Immunodeficiency Syndrome
BCG	Bacille Camel Guillet
BMC	Budget Management Center
CDC	Center for Disease Control
CHPS	Community Health and Planning Services
CRS	Catholic Relief Services
DANIDA	Dutch International Development Services
DC	
DDHS	District Director Of Health Services
DFID	Department of International Development
DHMT	District Health Management Team
DISHOP	District Health and Operations Planning
DPT	Ditheria Pertussis Tetanus vaccine
EPI	Expanded Programme On Immunization
GDHS	Ghana Demographic and Health Survey
GDP	Gross Domestic Product
GHS	Ghana Health Service
GPRS	Ghana Poverty Reduction Strategy
GSS	
HbsAg	Hepatitis B surface Antigen
HBV	Hepatitis B virus
HCV	Hepatitis C Virus
HeB	Hepatitis B
HiB	Haemophilus Influenzae
HIPIC	Highly Indebted and Poor Country
HIV	Human Immuno Deficiency Virus
ICC	Inter Agency Coordinating Committee
JICA	Japanese International Cooperation Agency
MNT	Maternal and Neonatal Tetanus
MOFG	Ministry Of Finance Ghana
MOH	Ministry Of Health
NID	National Immunization Day
NT	Neonatal Tetanus
OPV	Oral Polio Vaccine
PEI	Polio Eradication Initiative
PLAN	
SDHT	Sub District Health Team
SIA	Supplemental Immunization Days
SIAs	
TBA	Traditional Birth Attendants
TT	Tetanus Toxoid
UNDP	United Nation Development Agency
UNICEF	United Nation's Children Fund
VPD	Vaccine Preventable Diseases
WHA	World Health Assembly
WHO	World Health Organization
WR	World Health Organization Representative

Background

Demography

Ghana shares common borders with Republics of Togo to the East, Burkina Faso to the North, and la Cote d'Ivoire to the West. The South is bounded by the Gulf of Guinea. The country has projected population (2002) of 19,886,066 based on the 2.6% annual growth rate indicated by the national population and housing census conducted in March 2000. The country is divided into 10 administrative regions and 110 decentralized administrative districts consisting of a total of 770 health sub-districts.

Summary of Relevant Development and Demographic Status [GDHS, GSS (1998)]

- Infant Mortality Rate 57/1000LB
- Under 5 year Mortality Rate 108/1000LB
- Public Health Expenditure as % of GDP (including Donor Funds) 1.9
- GNP/Capita U\$340
- GDP/capita (PPP adjusted) U\$1964

Each district is further divided into 5-7 sub-districts, each with a catchment population of between 20,000 and 50,000 people. However, the metropolitan sub-districts in Accra and Kumasi have significant higher populations.

About sixty-eight percent (68%) of the total population live in rural areas of which about two-thirds have access to some form of allopathic health care.

Economy

Ghana is predominantly an agricultural country although minerals and lately tourism also constitute significant sources of foreign exchange. Agriculture accounts for 50% of the labour force and 42% of GDP. Despite her endowment with rich natural resources the country is severely challenged economically.

The cumulative effect of poor terms of trade, arising from sharp declines in the world market prices of the country's main exports (cocoa and gold), marked increases in fuel prices, and the loss of control of monetary and fiscal policies by the government in the

wake of the 2000 elections virtually brought the country to a state of near bankruptcy by the time the current government took over the realm of state and governance (UNDP, 2004).

In fact, between 1997 and 2000, the health expenditure per capita declined from U\$9.75 to U\$6.14 although the government over the same period demonstrated increased willingness to spend on health. That willingness was evidenced by the steady increase in the proportion of total national expenditure spent of health between 1997 and 2000.

The new government therefore inherited a national debt of U\$7.2 billion, made of an external debt of U\$5.9 billion and a domestic debt of U\$1.3 billion. The per capita income was as low as U\$360 and the currency depreciation 100% while inflation was spirally at the rate of 41%. The foreign exchange reserves could barely cover a month's import (UNDP, 2004). Consequently, Ghana opted to join the Highly Indebted Poor Country Initiative in March 2001.

The main thrust of the new government's macro economic policy is to initially stabilize the macroeconomic environment and then facilitate growth with a focus on the private sector as the engine of growth. Macroeconomic and fiscal policy is geared towards the reduction of inflation to a single digit rate, arresting the depreciation of the local currency, reducing interest and lending rates and controlling money supply.

Ghana reached the decision point of the HIPIC initiative in 2002 thus enabling her to benefit from a comprehensive debt relief package amounting to about U\$3.7 billion. These resources would be channelled into the improvement of social services such as education, **health**, rural infrastructure development, water and sanitation, and other poverty reduction schemes.

The Ghana Poverty Reduction Strategy (MOFG, 2000; GPRS, 2003) provides the framework for utilizing such freed up resources to enhance economic growth and reduce poverty over the period 2002 –2004. The Ghana Poverty Reduction Strategy has identified three areas for priority intervention to improve the health status of Ghanaians. These are:

- Bridging the gaps in access to quality health and nutrition services
- Ensuring sustainable financing arrangements that protect the poor

- Enhancing efficiency in service delivery

The Health System Environment

The Health Sector Reforms

The overall goal of the health sector is to improve the health status of Ghanaians and all persons living in Ghana. This goal is to be achieved broadly by reducing the incidence and prevalence of illness, injury, and the prevention of premature death.

Both the first (1997-2001) and the second (2002-2006) 5-Year Program of Work (5YPOW) therefore broadly seek a significant reduction in infant, child and maternal mortality rates; effective control of risk factors that expose individuals to the major communicable diseases; increased access to health services especially in rural areas; establishment of a health system strengthened and reoriented toward delivery of public health services.

The disease control priorities of the second POW (2002 –2006) are HIV/AIDs, Guinea Worm, Tuberculosis, Malaria, and the Vaccine preventable childhood infections, including hepatitis and haemophilus influenza (MOH, 2002). The Expanded Program on Immunization, aimed at reducing morbidity and mortality due to vaccine preventable infections (VPDs), will also contribute towards the attainment of the Millennium Development Goals (UN, 2000) of reducing under-five mortality. The health SWAP budget is largely supported by partners such WORLD BANK, DANIDA, DFID, EUROPEAN UNION, and NETHERLANDS GOVERNMENT. Other target funds come directly to support program activities such as the NIDs, Measles SIAs etc. The EPI budget is largely , but not exclusively, borne by the development partners. For example, in the year 2000 out of a total estimated program cost of about U\$3.8 million, 78.6% was provided by development partners.

The health sector response to the GPRS is designed to protect the vulnerable (including children, the elderly) and marginalized/deprived populations within the society, and provide financial risk protection in times of emergency and catastrophe. The paradigm of health financing is in the process of changing from that of an “out of pocket” payment

scheme to a health insurance scheme. EPI service is exempted from cost recovery under the “Cash and Carry” policy and could remain free in spite of the paradigm shift.

The second 5-POW (2002-2006) focuses sharply on dealing with inequalities in access to quality health services and on diseases and health events associated with poverty and deprivation (including some vaccine preventable diseases) through extensive partnership with other providers, departments, agencies, sectors and the communities. Its theme is Partnership for Health: Bridging the Inequalities Gap” (MOH, 2002). Greater attention will be paid to populations hitherto not effectively reached by immunization services, amongst others.

EPI and the Health Sector Reforms

The MOH began implementing institutional health reforms in 1997. The thrust of the reforms is decentralization to the district (the operational) level and the integration of services at the district level. EPI services have therefore been decentralized to the district level where its operational activities are a component of an integrated package of health interventions provided by the District Health Management Teams (DHMT), the health providing institutions (public, private, and NGO), and the Sub district Health Teams. Though some targeted funds are still received for some EPI activities (RED approach, Surveillance, Training of Midwives in EPI, and Injection Safety), most of the funding comes through the “common basket”.

The capacity of the district level to operate as a viable efficient and technically competent unit was enhanced by several initiatives and policies. The Strengthening of District Health Systems (SDHS) initiative (between the late 80s and early 90s) was geared towards strengthening the capacity of the District Health Management Teams to undertake situational analysis, problem identification and analysis, planning, implementing and evaluation their work. The District and sub districts were therefore trained to strengthen the planning process of district operations. The District Health System Operation (DISHOP) training in the late 90s followed this intervention. The District Director Of Health Services (DDHS) is ultimately responsible for the

Management of EPI in the District. This responsibility is often delegated to a DHMT member who is either a Technical Officer (DC) or a Public Health Nurse.

The creation of Budget Management Centres (BMCs) envisaged that funds are made available to meet the operational cost of implementing the operational plans of such BMCs. The operational planning and funding of EPI activities within the district and sub districts is very much dependent on the availability of funds to the DHMT and the Sub district Health Teams (SDHT). It is also very much dependent on the discretion and priorities of the leadership of especially the DHMTs. EPI service delivery is actually done by the Sub district Health Teams, consisting largely of Community Health Nurses, Field Technicians, Midwives, and Public Health Nurses. Inadequate or non-release of BMC funds to the Sub districts by the DHMT remains a real threat to the effective EPI service delivery in the country.

The Epidemiology and Surveillance of Vaccine Preventable Disease in Ghana

Policy

Ghana has adopted an integrated approach to Disease Surveillance and Response. The diseases targeted are those for elimination, eradication, of epidemic potential, and special diseases of public health concern. Of particular concern are the Vaccine Preventable Diseases such as Measles, Polio, Neonatal Tetanus, and Yellow Fever, while two sentinel sites at Korle Bu and Komfo Anokye Teaching Hospitals are monitoring Paediatric meningitis.

Trends in Incidence of Vaccine Preventable Infections (VPDs)

The table below describes the reported incidence of vaccine-preventable diseases from 1994 through 2002.

Table: Trends In Reported Cases Of EPI Diseases, Ghana 1994-2002

	1994	1995	1996	1997	1998	1999*	2000	2001	2002	2003
Measles	34,671	43,177	34,273	37,281	23,335	15,895	23068	13476	12296	2642*
Neonatal Tetanus	144	165	105	109	100	78	80	64	70	37
Confirmed Polio	-	-	9	2	23	3	1	0	0	8
Yellow Fever	79	0	13	6	0	0	0	1	0	0

Source: Administrative Data: Surveillance Unit, 2003

* Suspected Cases. However, Lab Confirmed Cases = 46

Polio

Many of the isolated wild poliovirus cases in 1998 came from hard to reach communities. These communities could neither be reached by routine health services (including EPI) nor during the NIDs. For example, eight (8) of such cases came from communities living along the waterways cutting across the country (from Buipe in the west to Kpandai in the east). These communities are very **hard to access** because they are cut off, most of the year, from the rest of the country by **high water levels** or floodwaters.

After a two-year period of “silence”, polio cases re-emerged from February to Sept 2003. The current cases of wild polioviruses seen are from the physically or socio-culturally hard to reach but eligible population of children in the Northern, Eastern, Brong Ahafo, Ashanti, Greater Accra, and Western Regions. The case from the Jomoro district of the Western region, for example, was from the migrant Fanti fishing community.

Some of the other confirmed cases live in areas where mothers or caretakers have to **walk long distances** to an EPI outreach centre in another community or **are socially or economically prevented from accessing locally available services**. A few, however,

live in newly established **settlements not yet included in outreach service schedules** of the various districts. The AFP performance indicators have not been sustained due to the apathy and lack of commitment of some institutional care providers and in some cases the District Directors of Health Services.

Measles

Since the introduction of EPI in the late 1970s, there has been a dramatic decline in clinically diagnosed cases of measles. The incidence of the disease during the peak epidemic years has declined from 140,000 cases in 1975 to approximately 2,642 cases in 2003. Until recently there was no further decline in measles cases even though vaccination coverage increased from 49% to 82% between 1994 and 2001. This could be due to the persistent inability to reach susceptible “hard to reach” populations and communities in different parts of the country. Available data indicate that 30-50% of measles cases occur in children above five years of age. The incidence of the disease has drastically reduced by 95% after the 2002 Measles SIAs. The total suspected cases in 2003 was 2642. Case-Based Investigation forms were completed for 1158 (43.8%) out of this total. Of these (1158) and only 46 (4%) were IgM positive for measles.

Neonatal tetanus (NT)

Approximately 100 cases of neonatal tetanus are reported each year. This is certainly only a fraction of the true number of cases or the “tip of the iceberg” since supervised delivery rates are low nation wide but worse in the rural communities that form about 70% of the population. The current neonatal tetanus death rate is estimated to be 2 per 1,000 live births. There were 37 reported cases of Neonatal Tetanus in 2003 in Ghana. Case based surveillance of NT was rather limited thus more reliance has been placed on proxy indicators to estimate the extent of the problem. For example in the Western Region, where unsupervised deliveries are very prevalent, a survey conducted in 2003 showed rate of protection at birth (from NT) to be below 50% in all districts in the region (EPI Survey Report, 2003).

Yellow fever

Yellow fever outbreaks have been reported in Ghana since the early 1900s. Most of these outbreaks occurred in the northern parts of Ghana. During the most recent outbreak in 1997/1998, which was concentrated in Bawku East District in Upper East Region, 54% of the cases were children aged between 0 and 5 years. Yellow fever vaccination was subsequently introduced into the EPI in Ghana in 1992. There were no confirmed cases of the disease in 2003 and a gradual progress is being made in the quality and coverage of case-based surveillance of the disease.

Pertussis

The number of reported cases of pertussis has been decreasing since the commencement of the EPI program in Ghana, from 13,509 cases in 1981 to 523 in 2001. Local outbreaks occur periodically, this usually happens in areas where DPT vaccination coverage is low. The disease is no longer a VPD surveillance priority.

Hepatitis:

Hepatitis B virus (HBV) infection is highly endemic in Ghana as demonstrated by the high rates of Hepatitis B infected blood donors. The sero-prevalence rate was found to be about 15% in some studies (Martison, FEKA. Weigle, I K, Mushahwar, D J, et al, 1996). Sero-prevalence surveys indicate that HbsAg carriage rates range from 4.8% in Greater Accra Region (Acquaye, 1991) to 21% in the Upper East Region (Sarkodie, 1992; MOH, 1999). A small but significant number of infants get hepatitis in the neonatal period but childhood infection is very high. It has been estimated that 15% of the HBV carrier rate in the Ghana population is acquired through vertical transmission (Acquaye and Mingle 1994). Prevalence of HbsAg among Ghanaian rural children aged 1-16 years was 21% (carriers of HbsAg indicate recent or chronic infection with HBV) and of any HBV marker (anti HBV, HBV Ag or Hbe Ag) was 75% (Martinson FE, Weigle KA, Royce RA, et al., 1998).

Sero-prevalence of hepatitis C virus infection in pregnant women and blood donors in Kumasi was 2.8% while the overall Sero-prevalence of anti-HCV among school children (6-16 years) and blood donors were 5.4% (Martinson et al., 1996) and 8.4% respectively (Ampofo W, Nii-Trebi N, Ansah J, et al. 2002)

Bacterial meningitis

Bacterial meningitis accounts for about 6-10% of childhood mortality in Ghana (Commey, 1994). The main causative organisms of bacterial meningitis in children aged 2 months to 12 years in southern Ghana are *Streptococcus pneumoniae* (48%), *Neisseria meningitides* (38%) and *Haemophilus influenzae* (10%). Most of the complications were related to *S. pneumoniae*, however, it should be noted that the *H. influenzae* isolates were restricted to children less than 3 years of age (Commey JO, Rodrigue OP, Akita FA et al, 1994). Rapid assessment conducted to estimate Hib meningitis among children <5 years, revealed an estimated incidence of 72/100,000 in Ghana. This is higher than the rates used found in Northern Europe and the USA before the introduction of the vaccine in their countries. The Hib vaccine was introduced in 2002 as part of the Penta-valent vaccine.

Rubella

Serologic surveys conducted in Ghana in the early 1980s showed that more than 70% of women of childbearing age had rubella antibodies (Mingle, 1985). Sporadic cases of Congenital Rubella Syndrome (CRS) have been reported. Eighteen (18) cases were reported from the Komfo Anokye Teaching Hospital (Kumasi) in 1996 and eight (8) cases from Korle Bu Teaching Hospital in the capital city of Accra in 1998. Data on disease burden are lacking because currently rubella is not a reportable disease and also because it is difficult to distinguish from measles clinically. The initiation of case/laboratory based measles surveillance in all regions has shown that most of suspected cases of measles (after the Measles SIAs) were non-specific rashes. In 2003, 46 out of 2642(1.7%) were IgM positive for Measles.

The Ghana Health Service

The Immunization System

The system in Ghana consists of the Operational Components (Immunization Service, Vaccine Management, Logistics, Surveillance of Vaccine Preventable Infections, and Advocacy and Social Mobilization) and the supportive components (Management, Capacity building and Financing) of immunisation services.

The National EPI Policy

National EPI Policy is that each child should receive one dose of BCG at birth, three doses of DPT, (at 6, 10 and 14 weeks), four doses of OPV (at birth, 6, 10 and 14 weeks) one dose of measles (at 9 months) and one dose of yellow fever (at 9 months). Every woman of childbearing age (12-44 years) should receive 5 doses of tetanus toxoid.

In 2002, Ghana replaced DPT in the scheme with the pentavalent vaccine (DPT-Hib-HeB).

Programmatic Objectives

These objectives have been set within the context of the five pillars of the first and second Five Year Program of Work and the desire to achieve the relevant Millennium Development Goals (especially Goals 4 and 5).

The specific objectives are:

1. Achieve at least EPI 80% coverage in 80% of districts by 2005 (using DPT3 as a proxy indicator)
2. Attain Polio free Certification by 2005
3. Reduce measles morbidity by 90% and mortality by 95% by 2005
4. Eliminate maternal and neonatal tetanus by 2005
5. Prevent, detect cases early and provide timely response to yellow fever outbreaks from 2002
6. Introduce Hepatitis B and Haemophilus influenzae type b vaccine into routine EPI by 2002

7. Determine the disease burden of vaccine preventable diseases of public health importance (ARI, meningitis, congenital rubella syndrome).
8. To reduce wastage of OPV and TT vaccines to 10% by 2005
9. Improve vaccine and data management

The program objectives will be achieved through the strengthening of district health services to improve the coverage and quality of health care and to provide it in an efficient and effective manner.

The broad strategic components are as follows:

- a. **Increase Access physical, social, and economic access to immunization services through the provision of**
 - a. Regular **static services** at health facilities (public and private)
 - b. Regular **outreach services** to communities without access to health facilities (because of geographical or socio-cultural barriers)
 - c. Periodic catch-up campaigns targeting hard-to-reach populations (e.g., those living in “overseas” or “over bank” areas, mountainous areas, and those who are not reached due to cultural and religious barriers).
 - d. Periodic limited and targeted mass campaigns (mop ups) in high-risk populations {(e.g., areas or populations with poor EPI vaccination coverage; high incidence of cases or outbreaks of vaccine-preventable diseases; poor surveillance information; densely populated areas (cities) and slums; displaced persons; migrant populations (farmers, fishermen), or persons living along borders and in areas with heavy migration}.
 - e. Generalised periodic national immunisation days.
 - f. Placement of community health nurses within communities without access to health facilities (CHPS)
 - g. Enforcement of the existing **policy of free immunisation services**, and non-collection of token fees. The exemption funds will be used to pay for any costs associated with immunisation (e.g., paracetamol).

- h. Social mobilisation to increase demand for immunisation and Vitamin A supplements;
- i. Using surveillance information to identify and target at risk populations and to prevent epidemics
- j. Introduction of Vitamin A and new vaccines (e.g., Hepatitis B) into routine immunisation.

2. Improve the Quality of immunization services

The specific strategies for providing better quality immunisation services in health facilities and during outreaches include

- Implementation of national EPI policies and standards (e.g., routine screening and immunisation of all women and children visiting a health facility; only true contra-indications are followed; all vaccine doses for which a child is eligible at the time of each visit are provided simultaneously);
- Implementation and monitoring of national injection safety policies and standards;
- Improvement in technical and communication skills of immunisation service providers;
- Improvement in motivation of immunisation service providers;
- Implementation of locally appropriate approaches for improving client satisfaction (e.g., changing service delivery times to suit the community; decreasing immunisation session waiting times; etc.);
- Information, education and communication about immunisation targeting mothers
- Tracking of defaulters
- Monitoring of adverse events associated with vaccination
- Monitoring vaccine potency

3. Improve Efficiency

The specific strategies for improving EPI Programme efficiency at the sub-district and district levels include:

- a. Improving vaccine management (starting with bundling of syringes and needles, use of open vial policy);
- b. Maintenance of an up-to-date cold chain inventory;
- c. Preventive maintenance and repair of cold chain equipment;
- d. Improvement in Transport availability and management;
- e. Strengthening Data management.
- f. Reduction of missed opportunities (e.g. by the provision of daily immunisations services)

4. Forging Linkages with other sectors and stakeholders

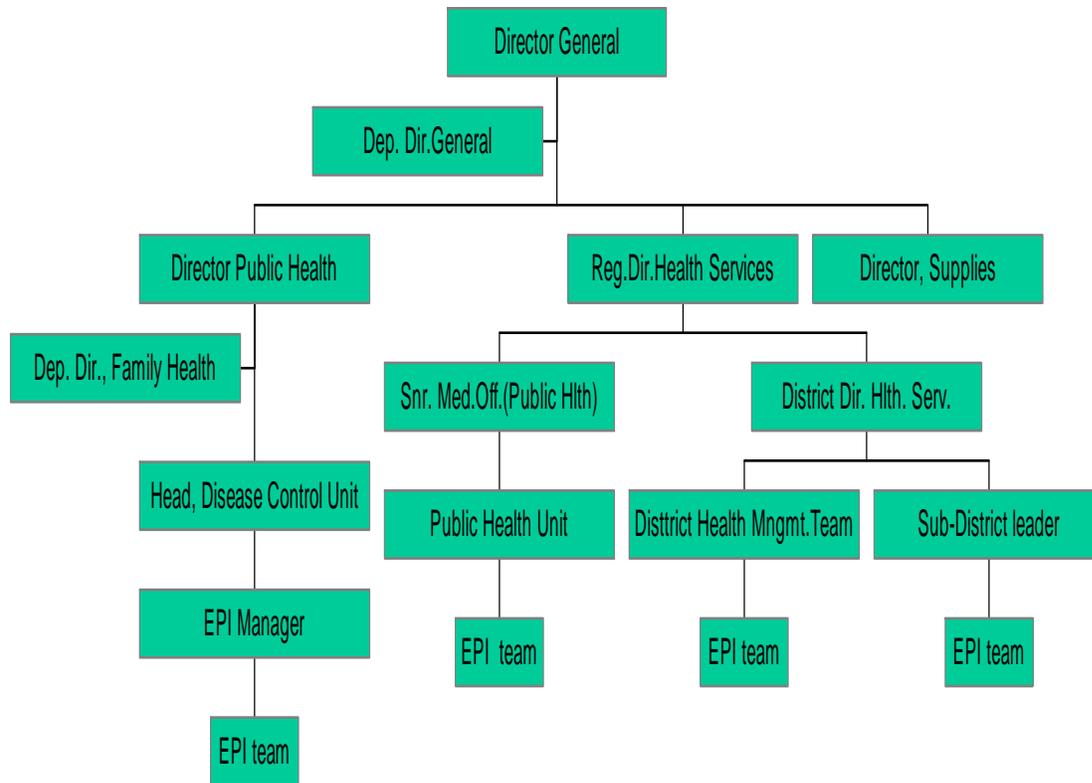
Specific strategies for fostering closer collaboration and partnership between the EPI programme and communities, other sectors and providers include:

- a. Social mobilisation to increase awareness at the community level about the importance of immunisation;
- b. Involvement of private sector in delivery of immunisation services, particularly in urban areas;
- c. Involvement of Village Health Committees, District Assemblies and Unit Committees in management and monitoring of local immunisation services.

The Organization and Management of EPI Ghana

Structures

The Figure below illustrates the organizational structure of the health sector with particular emphasis on the management and coordination of EPI program in Ghana.



Source: Ghana Health Service EPI 5YPOW (2002-2006), October 2002

Inter Agency Coordinating Committee (ICC)

The main function of the ICC is to foster solid partnerships by coordinating all inputs and resources available from within and outside the country in order to maximise resources for the good of the child. Its terms of reference (TOR) includes (but not limited to):

- Support national level to review and endorse EPI (annual and 5YPOW), NIDS, and VPD surveillance plans, amongst others.

- Assist EPI program in enhancing transparency and accountability in the application of EPI funds
- Ensure that EPI program Managers receive both technical and political support
- Support improved communication and feedback amongst all stakeholders – local and international on EPI.

The Inter Agency Coordinating Committee in Ghana was initially constituted in 1998 response to

- the planning needs of Polio Eradication Initiative in Ghana,
- the desire to successfully apply for GAVI funding, and
- need to resolve other issues on EPI.

These other issues include assistance in the areas of policy formulation. It also includes the mobilization, coordination, and efficient use of all available financial and material resources, appropriate dissemination of relevant information to all stakeholders, and ensuring transparency and accountability in the use of available funds for EPI.

The membership of the committee consists, amongst others, of: -

- Director of Public Health, Ghana Health Service – Chairman
- The Deputy Director General, Ghana Health Service
- Health Partners – WHO, UNICEF, USAID, DFID, Japan Embassy
- Non-Governmental Organizations – Rotary International (Ghana), PLAN etc
- Paediatric Society Of Ghana
- Public Institutions and Private sector organizations involved in Immunization
- The National EPI Team (GHS)
- Health Promotion Unit (GHS)

It also has technical and social mobilization subcommittees that play very significant roles in the EPI programme enhancement. The scheduled meetings are held quarterly but more frequent meetings are held when necessary.

The Regional NID/SIA Committee

The Regional Health Administrations, in collaboration with the Regional Coordinating

Councils (Government at the Regional Level) have set up intersectoral NID/Subcommittees at the regional level. These committees play significant roles in advocacy, social mobilization, planning and implementation of Polio NIDs and Sub-NIDs, and the Measles SIA. The membership includes, the Regional Coordinating Director, The Ghana Education Service, Red Cross Society Of Ghana, Rotary International (Western Region Branch), National Mobilization Programme, Ghana Health Service, Economic Planning, Ministry Of Agriculture, and Non Formal Education

The District Level

Both political authority and health services management have been decentralized to the district level. The District Health Management Teams collaborate with other decentralized agencies and departments of the District Assemblies (the Local Government) to plan and implement Polio NIDs and other SIAs. The District Assemblies also support other EPI activities. The newly established District Health Committees, of the Ghana Health Services Council, are potential structures through which social mobilization and community participation in routine EPI activities can be intensified.

Partners

	PARTNER	NATURE OF SUPPORT
1	The World Health Organization (WHO)	Provides overall technical direction and strategic planning for the management and coordination of the implementation of WHA resolutions on control/elimination/eradication of Vaccine Preventable Diseases in Ghana through its regional [WHO (AFRO)] and the Country Office. Plays the lead role in ensuring certification standard VPD surveillance (including lab network), resource mobilization for routine and accelerated control of VPD, donor coordination, advocacy (e.g. for political commitment), and communication information on VPD control. Coordinates operational research, operational support to the MOH/GHS in the form of training and the deployment of human resource such as local and international consultants.
2	The United Nations Children Fund (UNICEF)	Provides support in the supply of vaccines and cold chain logistics. Supports advocacy and social mobilisation Support MNT elimination program
3	Rotary International	A key partner in the Polio Eradication Initiative worldwide. Provides funding through its Polio Plus Program for the planning and implementation of NID and vehicles to strengthen surveillance of VPDs.
4.	Japanese International Cooperation Agency (JICA)	The Japanese Government supports Ghana EPI, through UNICEF, with Vaccines, cold chain equipment such as cold boxes, Vaccine Carriers, and refrigerators. The Japanese Government is a key partner in Ghana's effort at eradicating poliomyelitis. For example, in 2000, 109 million yen was provided as a grant to support the PEI in Ghana.
5	Centre for Disease Control (CDC)	The Centre provides Technical Support in the areas of VPD disease (especially polio) surveillance, using a state-of-the-art virological surveillance and expertise (genetic finger printing) to identify the strain of the polio virus involved and pin-pointing its exact geographical origin It provides assistance in developing the polio laboratory network
6.	International Federation of Red Cross and Red Crescent Societies/ Ghana Red Cross Society	The Red Cross mobilized its volunteers to support the Measles SIAs initially in the Central Region of Ghana, and subsequently in the entire country in 2002.
7	USAID	In 1996, USAID in collaboration with UNICEF provided resources for instituting an arrangement to ensure Vaccine

		Independence of Ghana. The Vaccine Stabilization Fund thus established was to assist Ghana avoid unforeseen shortfalls in National EPI vaccine supply.
8	DFID	
9	Govt of Norway	
	GAVI	<p>Ghana applied for GAVI support to introduce under-utilised vaccines and also to strengthen immunization services in June 2000.</p> <p>The application was approved in September 2000 with an agreement to release U\$530,000 in two tranches annually</p> <p>GAVI funds have been used to facilitate the introduction of New Vaccines (U\$100,000)</p> <p>Ghana received a five-year grant for the supply of yellow fever, Hepatitis B and <i>Haemophilus influenzae</i> type b vaccines from the Global Alliance for Vaccine and Immunization (GAVI) in 2000.</p> <p>GAVI funds have been used for procurement of computers to improve data management in 30 selected districts.</p>

EPI Service Delivery Strategy

There are more than 2,000 health services providing institutions in Ghana. These include hospitals (10%), health centres/posts (45%), and clinics (45%). The population served per institution varies from less than 7,000 in Greater Accra Region (where most of the population live in urban areas) to 18,000 in Northern Region (where most of the population lives in rural areas). About 40% of the population live more than 14 kilometres from a health facility. In the rural areas, a greater proportion of the population live more than 14 kilometres from a health facility.

Regional Distribution of Institutions providing static and Outreach health services in the country

REGION	Total No Villages & Urban Sub Districts	No. of Villages & Urban Sub-Dist. Served	Percent Villages Served (C/B)*100	No. of GHS Institutions	No. of Out-Reach Sites	Outreach Per GHS Institution (F/E)
A	B	C	D	E	F	G
ASHANTI	3,018	2,520	83.5%	142	1,239	8.7
BRONG AHAFO	2,908	2,201	75.7%	109	1,080	9.9
CENTRAL	2,666	2,379	89.2%	73	1,216	16.7
EASTERN	3,413	2,444	71.6%	191	1,254	6.6
GREATER ACCRA	834	770	92.3%	54	809	15.0
NORTHERN	3,969	3,017	76.0%	95	2,017	21.2
UPPER EAST	922	852	92.4%	72	366	5.1
UPPER WEST	963	882	91.6%	84	508	6.0
VOLTA	3,999	3,532	88.3%	209	1,381	6.6
WESTERN	1,849	1,557	84.2%	115	963	8.4
REGIONAL TOTAL	24,541	20,154	82.1%	1,144	10,833	9.5

Each sub district health team (SDHT) provides an integrated static and outreach EPI services to the communities in their catchment areas. The team often consists of Community Health Nurses, Field Assistants and Midwives. It is supervised by a Technical Officers (Disease Control) or more often by a Public Health Nurse. The Disease Control Officers/Field Assistants often manage the district and sub district cold chain whilst vaccination is given largely by the Community Health Nurses.

The static services are held at the institutional levels whilst the outreach services are held for a cluster of communities within a designated community and involve transporting service providers into these communities.

The outreach services also require good community entry skills. It is envisaged that through the Community Health and Planning Services (CHPS) community health nurses will be placed within communities especially the remote ones to bring services as near to clients as possible. Other service delivery strategies used are mass immunization or mop-ups such SIA (NIDs and TT SIAs).

Routine EPI

Trends in Coverage

Table 1: EPI coverage - Ghana 1994 – 2002 (routine data)

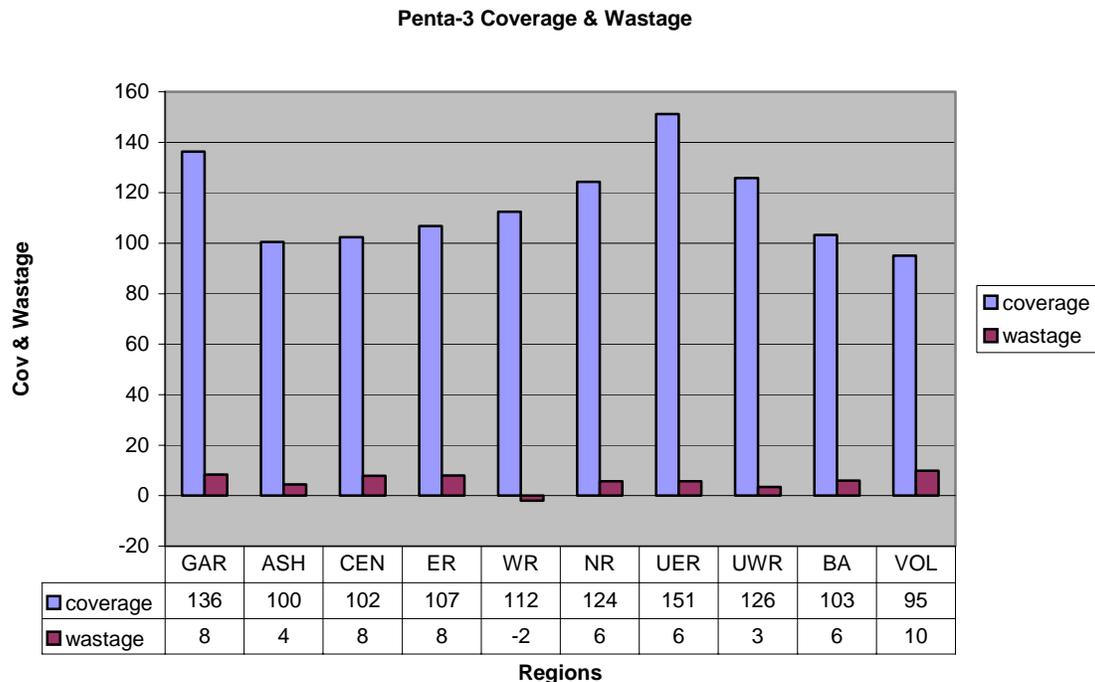
	1994	1995	1996	1997	1998	1999	2000	2001	2003
BCG	61%	67%	65%	70%	77%	85%	94.5%	91.3%	93%
DPT3	48%	52%	51%	56%	68%	73%	83.8%	76.2%	76%
Measles	49%	51%	53%	57%	67%	71%	83.8%	81.9%	80%
Yellow Fever	22%	25%	28%	41%	41%	64%	73.7%	76%	73%
TT2+ (WCBA)	18%	20%	14%	17%	18%	21%	**73%	**87	N/A
Drop out rate*	12%	16%	12%	23%	10%	14%	9%	14%	14%

*drop out rate: (BCG-Measles) Source: Administrative data, EPI Programme, 2002

** TT2+ in pregnant women

Performance Inequalities – Using Penta-3 as a Proxy Indicator

2002



Progress on implementing relevant EPI WHO-AFRO Resolutions.

Polio eradication effort

In 1995, African Ministers of Health adopted a resolution urging member states to implement Polio eradication strategies. The Heads of State Summit in Yaonde, Cameroon, adopted that resolution and also the creation of a Regional Committee for Polio Free Africa – “Kick Polio Out of Africa.”

The National Certification Committee for Polio Eradication was constituted with the support of the WHO and in accordance with the WHO guidelines in 2001. There is much optimism that polio could be eradicated in Ghana through the intensified implementation of quality National Immunisation Days with house-to-house immunisation in high risk areas and mopping up (2 rounds of house-to-house immunisation) in areas where wild polio virus has been isolated. In addition there should be vigilant active AFP surveillance to guide the programme and sustaining high coverage of OPV3 in routine immunisation

in all districts. Subsequently, the Polio eradication initiative PEI implementation intensified in Ghana in 2000. The Surveillance system has been strengthened through training, supportive supervision; deployment of local and international consultants, and the provision of financial and logistics support.

The National Polio Certification Committee was inaugurated in mid 2000 and has been working since then in preparation towards polio free certification. The target date for achieving successful interruption of wild poliovirus has been extended to 2005.

Summary table of PEI activities - Ghana 1996-2003

Year	Target 0-59 months	Coverage		Non Polio AFP rate /100,000 <15 yrs	2 stools within 14 days	Confirmed wild Polio Virus
		Round I	Round II			
1996	3,584,643	88%	96%	.01	73%	9
1997	3,612,811	98%	102%	0.18	56%	2
1998	3,804,129	104%	105%	0.59	56%	23
1999	3,835,551	107%	110%	0.66	62%	3
2000	680,000 (SNID) 4,250,000 (HH)	93% 102%	108% 107%	2.7	47%	1
2001	2,478,000 (SNID)	2,410,997	2484610	2.0(Dec 31 st)	67%	0 virologically 66 Compatibles
2001	4,716,831 (NID)	4,662,768	4,733,220			
2002	2,065,112 (SNIDs)	96%	97%	2.8	87%	28 Compatibles
2003	791,402 (SNIDs)	98.7% (780,989)	102% (820,624)			8*

*Data as at November 2003; Source GHS National Surveillance unit and EPI program

In year 2003 after two years of silence in 2001 and 2002, there were total of 8 wild Polioviruses isolated with onset of paralysis between February-September. The wild polioviruses were detected from AFP cases in Yendi, East Maprusi, East Gonja Northern region), Kwabebrim (Eastern Region), Kintampo (Brong Ahafo Region), Atwima (Ashanti Region), Jomoro (Western Region) and Accra Metro (Greater Accra Region).

Summary table of the AFP cases with wild Polioviruses isolated in 2003

EPID NO	Date of onset	Age	Vaccination status
GHA-NOR-YEN-03-001	02/02/2003	1yr 3 months	2 doses
GHA-NOR-EMA-03-001	26/04/2003	1yr 3 months	4doses+2roundNIDs
GHA-NOR-EAG-03-001	07/05/2003	1yr 8 months	one dose (Hx)
GHA-EAS-KWA-03-001	04/06/2003	4 yr	Not vaccinated
GHA-BAR-KPO-03-002	03/07/2003	8 months	Not vaccinated
GHA-WES-JOM-03-001	08/07/2003	6 months	One dose
GHA-ASH-ATW-03-001	23/09/2003	2 yrs	3 doses
GHA-GAR-ACC-03-024	15/09/2003	14 yrs	3 doses

Source; National surveillance unit Ghana Health Service

Neonatal tetanus elimination

A global partnership to eliminate neonatal and maternal tetanus was established in May 1999. The partnership agreed that UNICEF takes the lead in advocacy, information, and in country support for implemental immunization activities while WHO supports surveillance, monitoring, and evaluation at regional and country levels.

Ghana is still far from reaching the neonatal elimination target, less than one (1) neonatal tetanus case per 1000 live births in each district. Both the 1998 Ghana Demographic and Health Survey (GDHS) and the 1995 Ghana Ministry of Health - UNICEF Multiple Indicator Cluster Survey (MICS) indicate that tetanus toxoid immunisation coverage among pregnant women in Ghana is relatively high. Ghana DHS data indicate that for about half (52%) of births between 1993 and 1998, mothers received 2 or more doses of tetanus toxoid (TT) during pregnancy, while 29% received one dose (which could have been their second, third or fourth dose). Significantly, 15% of mothers of firstborns received no TT during pregnancy and 29% received only one dose indicating that 44% of

firstborns were not protected at birth. The GDHS indicated that 68.5% of all deliveries between 1993 and 1998 were supervised by medical personnel or trained traditional birth attendants (TBAs). Untrained TBAs supervised 18% of births.

Ghana has endorsed Accelerated efforts to eliminate MNT in 2005 using the high-risk approach to intensify control activities. Fifty-nine out of the 110 districts were identified as high risk of not reaching the goal. A five-year program is currently in place to eliminate the disease. The five-year program is expected to cost U\$165,984.

After a formative research on Neonatal Tetanus, two pilot districts were selected from the Western Region in 2001. These were the Juabeso Bia and Wassa Amenfi districts. These districts are vast with hard to reach areas, low TT coverage, Low DPT3 coverage, and reported cases of NT in 2000. Both districts have completed two rounds of TT SIAs in all their sub districts. The third round has also been completed in some of the districts.

Juabeso-Bia District - Western Region

Total number of women targeted: 88366 **86838**

TT dose	# During round 1 (A)	# During round 2 (B)	# During round 3 (C)	% Overall coverage (A+B+C)/# targeted
TT1 (only by SIA*)	75777	10234	0	99
TT2 (only by SIA*)		69682	0	80
TT3 (only by SIA*)			0	0
Already completed 5-dose series according to card & therefore not dosed	1230	298	0	1.8

**These calculations do not include doses received through routine immunization services*

**Target population is minus already completed 5 dose*

Wassa Amenfi District

Total number of women targeted:

20590

20583

WASA AKROPONG)

TT dose	# During round 1 (A)	# During round 2 (B)	# During round 3 (C)	% Overall coverage (A+B+C)/# targeted
TT1 (only by SIA*)	14579	607	0	74
TT2 (only by SIA*)		10592	0	51
TT3 (only by SIA*)			0	0
Already completed 5-dose series according to card & therefore not dosed	6	1	0	0.0

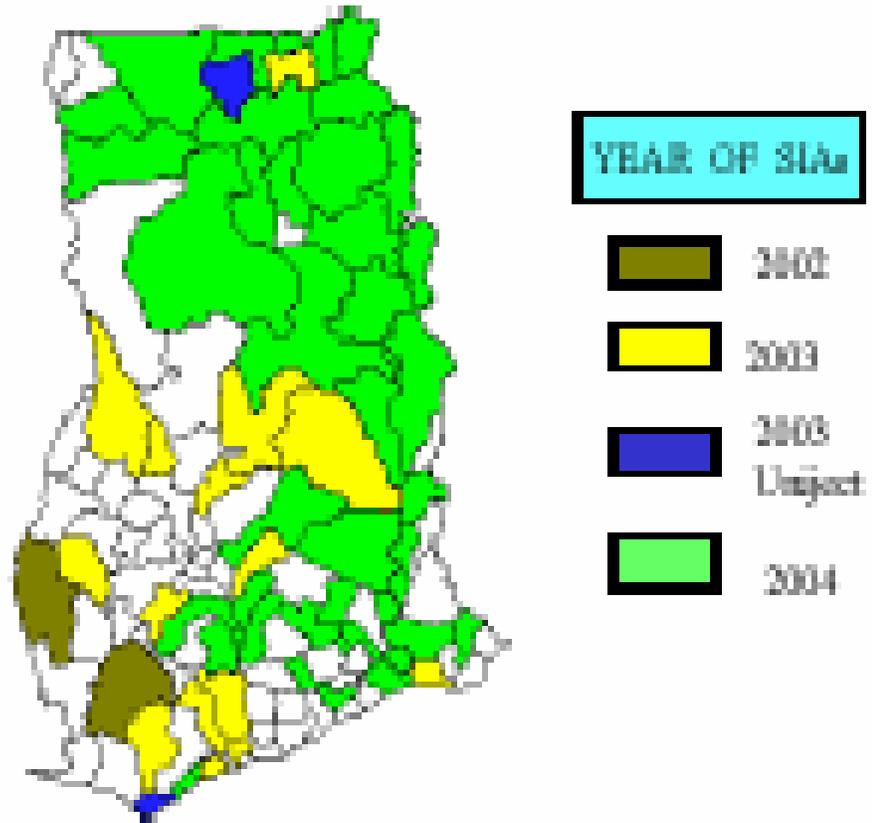
**These calculations do not include doses received through routine immunization services*

In 2003, the number of participating districts was scaled up to include 17 others. Ahanta West district in the Western region conducted a trial of using UNIJECT syringes and needle for the TT SIAs in 2003. TBAs were also trained to administer TT alongside health workers using the UNIJECT. The TBAs used the UNIJECT properly and majority of recipients either preferred or saw no difference between an injection given by TBA and that by Health worker. The UNIJECT was fitted with VVM and thus significantly reduced cold chain requirements.

This evaluation demonstrated high levels of acceptability of TT-Uniject and proved that TBAs can be effective vaccinators when using TT-Uniject. These positive elements must be balanced against the significantly higher costs associated with purchasing TT-Uniject. The challenge, in future TTUniject programs, will be to maximize these benefits to increase coverage in ways that standard syringes and vials cannot. Such situations might include programs where TBAs conduct outreach into isolated communities that cannot be reached by trained health workers. In these cases the increased coverage may justify the higher costs. The initial experience in Ghana, while important for gaining acceptance of TBA vaccinators, suggests that simple substitution of TT-Uniject for multi-dose vials in

standard campaign settings will not be cost-effective; however, it also demonstrates opportunities to develop focused strategic programs around TT-Uniject and TBA vaccinators to extend TT immunization coverage beyond current limitations. (Fleming J, Leving C, and Nelson C, 2004)

GHANA HIGH RISK MNT DISTRICTS



Accelerated control of measles – WHA 56.20 (Agenda 14.7)

Both the World Health Assembly in 1989 (WHA 42.32) and the World Summit for Children in 1990 set goals for measles morbidity and mortality reduction by 90% and 95% respectively compared with pre-vaccine levels. The UN Millennium Development Goals, ratified in September 2000 also set goals for the reduction of child mortality. The reduction in child mortality targets the reduction of VPDs including measles.

In 2002, the UN General Assembly special session on children resolved to reduce measles mortality by half by 2005 compared with the 1999 levels.

Ghana has developed and endorsed (by ICC) a five-year Accelerated Control Plan for Measles. The plan is focused on reducing measles morbidity and mortality by implementing SIAs to provide second opportunity, enhancing VPD surveillance and strengthening /sustaining a high routine coverage against measles and all VPDs.

Within the next five-year period, the country plans to progress from the strategy of control to that of accelerated control and ultimately to elimination of measles. A Phase 1 mass measles campaign targeted at children aged nine months to less than 15 years was done in one region (Central) in 2001. Figures from case based surveillance for the first half of the year 2002 shows an 88% drop in number of reported cases compared to the previous year. The Phase 1 mass measles campaign was followed by Phase 2, a nation wide Measles “Catch up” SIA, in December 2002 during which 99% of targeted children (age 9months to 15years) were vaccinated. A national case-based virological surveillance has been put in place to detect and respond to any measles cases and also to help establish the burden of Rubella infection.

2002 National Measles SIA Coverage

Region	Target Pop. 9mths- 14years	Total Eligible Immunized	% Coverage	Children Immunized receiving Zero dose	% Total Children Receiving Zero dose
GAR	1,298,010	1,372,323	106	1944	0.1
ASHANTI	1,622,398	1,583,765	98	371	0
BAR	801,070	815,697	102	0	0
VOLTA	647,253	612,911	95	0	0
ER	923,424	963,428	104	3875	0.4
WR	863,196	873,384	101	2155	0.3
UWR	257,728	251,131	97	31159	12.4
UER	392,394	395,982	101	0	0
NORTH	802,147	854,997	107	155	0
TOTAL	7,607,620	7,723,618	102	39659	0.5

Yellow fever control:

All of the epidemics of Yellow Fever that occurred in central and northern Ghana between 1977 and 1983 were contained via mass immunisation campaigns in which mobile teams moved to yellow fever affected areas and vaccinated the at-risk populations. In addition, special campaigns (Yaws-Yellow fever control) were conducted between 1981 and 1984, which aimed to cover 80% of the population in northern Ghana and 80% of children less than 10 years of age in southern Ghana. Targeted mass vaccination campaigns were also conducted in affected parts of northern Ghana during the 1993 and 1996 outbreaks. In a recent attempt to pre-empt further outbreaks, about four million people living in Northern Ghana were vaccinated against yellow fever in 1998 and 1999.

Yellow fever vaccine was finally introduced into the national EPI in 1992. However, the funding of the vaccine procurement has been a problem until recently. The current national yellow fever control strategies include - increasing yellow fever vaccination coverage in infants to 90%, institution of case/laboratory based surveillance-using sensitive case definition for suspected cases for early detection on yellow fever outbreaks, monitoring yellow fever vector indices and implementing vector control

interventions in high risk areas, preventing outbreaks through mass vaccination of populations at risk beginning in northern Ghana, controlling outbreaks through immunisation, case management, vector control, and health education.

The Challenges

Access Hard to Reach Populations / Areas

Geographical access to immunization services is one of the key challenges confronting the program in Ghana. The regions mostly affected are those that share the Volta Basin. These are the Volta, Eastern, Ashanti, Brong Ahafo, and Northern Regions. Most communities in the Volta Basin can only be accessed by boats or by very poor road networks – a costly and perilous venture.

Apart from the Volta Basin, other regions have areas or districts that are not adequately covered by immunization or health teams due to access difficulties. For example, the Western Region, home to the largest reserve of tropical rainforest in Ghana, has a poor road network and a prolonged rainy season. Together these factors and inadequate or inappropriate vehicles make access to most communities difficult and hazardous for sub district teams.

The Geographical Coverage Support

Eight poor performing districts, 6 in the Volta Basin, one in the Western Region, and the other in the Ashanti Region were selected for support. The Sene (BAR), Krachi, Jasikan, Kpando, and North Tongu districts (all in the Volta Region) were selected for additional support to improve access to immunization services. A visit to these districts in August 2002 indicated that a considerable number of numerous communities in the lake basin were not visited by any immunization team for more than 6 month due to lack of boats, breakdown of outboard motors and the lack of motivation of the operational staff to embark on a somewhat perilous trip over the Volta Lake.

The other two low performing districts selected were Mpohor Wassa East and Sekyere East districts of the Western and Ashanti Regions respectively. An amount of U\$62,000 has been committed to improving access to immunizations services through effective micro planning, supportive supervision and logistic support.

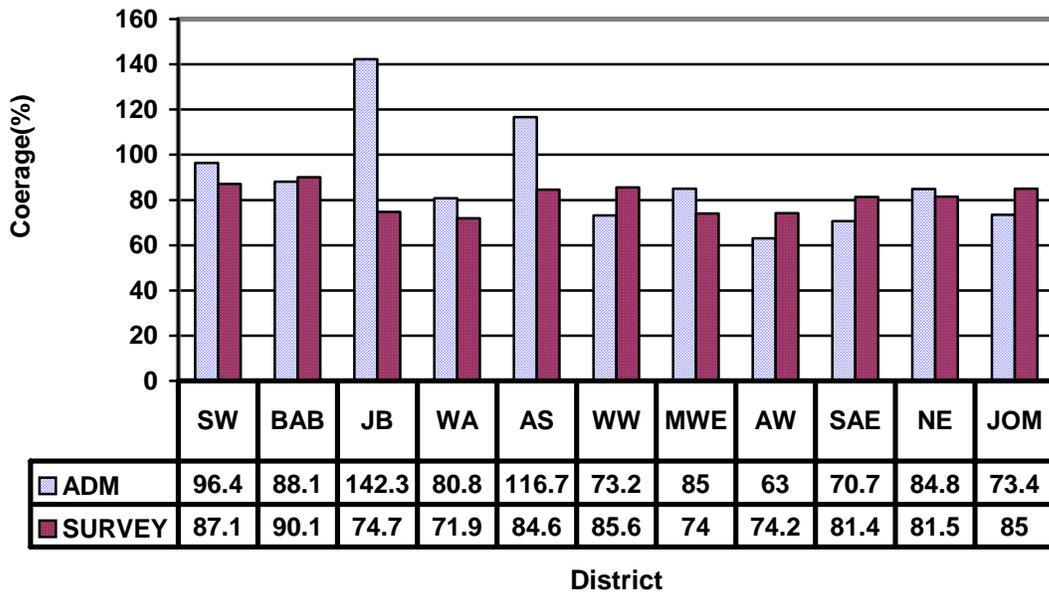
The Donkokrom and Ho declarations (MOH, 2002) both demonstrate efforts to ensure that the Health Sector, in collaboration with other sectors and development partners, extend services to the Hard to Reach areas of the Volta Basin and the riverside communities of the Afram Plains. These intentions need to be backed up by action from all stakeholders, each showing commitment to her specific role and obtaining the necessary funding to implement its component of the intersectoral plans.

The Uncertain Denominator and Data Quality

Uncertain denominator or poor data quality could be responsible for the rather inexplicable > 100% administrative coverage figures after the 2000 census figures were released. The population figures of the 2002 census, as released by the Ghana Statistical Services in April 2002, are officially accepted and cannot be disputed by Ghana EPI. It is therefore imperative not only to scrutinize and improve data quality, but also to conduct periodic coverage surveys to validate the administrative coverage figures and monitor trends.

A recent survey in the Western Region (2003), showed a large disparity between administrative and Survey coverage figures, especially in the cocoa growing districts (see Graph).

Penta 3 Coverage 2002 Administrative(GHS/WR, 2003) Data And Survey Results Compared-Western Region



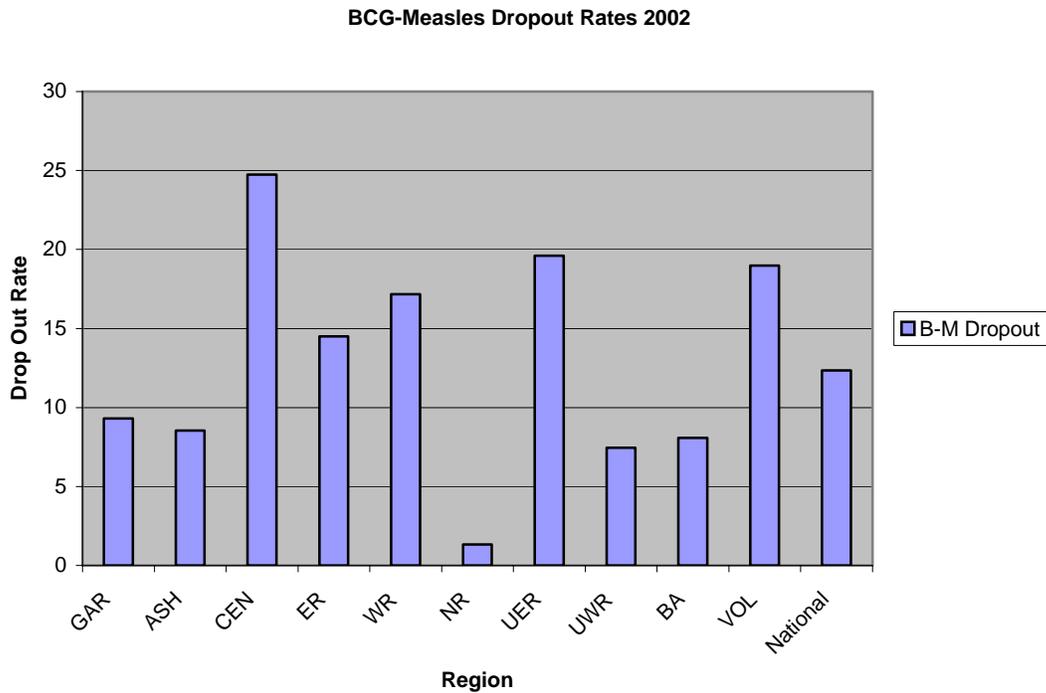
Data Quality Audit (DQA) to evaluate the EPI data management was undertaken through the support and collaboration with GAVI in July 2002. The Audit was a condition for being a beneficiary of GAVI support. The objectives of the exercise was to

- assess the quality, accuracy, timeliness, and completeness of Administrative Reporting Systems.
- audit the reported DPT3 vaccinations given to children under one year of age and the estimate the National Verification factor.
- Assist Ghana to improve the quality of her information systems for immunization.

A verification factor of 0.872 was obtained. This suggests that the quality and reliability of the EPI data management process in the country was 87.2%. However there were problems with the recording, reporting, monitoring and evaluation that need to be solved.

There is the need to train or stimulate the interest of the operational staff in data quality by building their capacity to use local data in micro planning their operations. Computers have been purchased for three districts in each region to strengthen data management.

Drop Out Rates as a proxy indicator of Quality of Services



Introduction of New Vaccines

Hepatitis B and Haemophilus Influenza B control:

The national Hepatitis prevention and control objective is the reduction of morbidity and mortality due to Hepatitis through blood screening; infection control; promotion of safe sexual practices; and the incorporation of Hepatitis B vaccine into EPI. The EPI Programme has been advocating for the inclusion of Hepatitis B vaccine into the EPI vaccination schedule since early 1994. This desire was finally achieved with the introduction of the Penta Vaccine (Hib-HeB-DPT) in January 2002 through GAVI support. Sentinel surveillance has been put in place at the Paediatric Unit of the Korle

Bu Teaching Hospital to monitor the incidence and trends of meningitis due to Haemophilus Influenza Type b and the impact of the new vaccine. The incidence of purulent meningitis has reduced from 8.2% (August 2001-July 2002) to 5.9% (August 2002 – July 2003).

Integrated Disease Surveillance and Response

Vaccine preventable disease surveillance is a major part of the IDSR. Ghana has completed the adaptation of the Regional (AFRO) IDSR strategy package and is in the process of its implementation. The adapted IDSR guideline has been distributed to all stakeholders. Nationwide orientation training workshops will soon be held to update surveillance staff in the country on the appropriate use of the guidelines.

Health workers at all levels are responsible for the reporting of all suspected cases of immediately notifiable diseases to the next hierarchical level (e.g., AFP, yellow fever, CSM, cholera). Disease control staff, on behalf of the Sub district Health Team (SDHT), the District Health Management Teams (DHMTs) are responsible for responding to all reports of unusual health events from health facilities and/or from communities. The SDHTs and the DHMTs are expected to use the local integrated disease surveillance data to plan, implement and monitor public health interventions.

Community based surveillance (CBS) is being implemented in several regions throughout the country. Some regions have expanded the role of the guinea worm volunteers to include surveillance of other health events and others are working with community health committees. Community-based surveillance in the Northern and Ashanti Regions has been responsible for the detection and rapid response to several focal outbreaks of cerebrospinal meningitis and cholera and has resulted in the identification of several cases of wild poliovirus. The greatest challenge confronting the strategy is how to keep the volunteers motivated.

Innovations

BD Solo shot

As part of its injection safety policy Ghana plans to use AD syringes for vaccination purposes. Currently, AD Syringes are being used for the administration of Measles and the Penta Valent Vaccine (DPT-Hib-Heb). The trial was undertaken in the Juabeso Bia and Shama Ahanta East districts to generate information that would inform program managers and their partners in making decisions on BD Solo Shot LX (AD Syringe and needle) for BCG vaccination. Specifically, the study evaluated user acceptance and preference of the BD Soloshot™ LX Auto-Disable (AD) Syringe and Needle when compared to the use of conventional or AD syringes and needles presently used at the investigative sites for BCG vaccination. The criteria for the evaluation were Ease of use, Usability, and Effectiveness of AD mechanism. Amongst others, the study indicated that the overall usability of the Soloshot LX™ was considered Excellent by 84.8%(n=178) (95% CI – 78.7% to 89.8%) of respondents and acceptable by 100% of them.

The UNIJECT Trial

In 2003 Health Workers and TBAs were trained on the use of UNIJECT, an AD Syringe, for TT SIAs in the Ahanta West district. (See section on Neonatal Tetanus).

Advocacy and Social Mobilization

A GAVI funded study by the Health Research Unit on Reducing Missed Opportunities (GHS, 2002) concluded amongst others that the following factors were often responsible for missed opportunities:

- Inadequate knowledge of both health workers and staff on vaccine policies
- Insufficient health education/lack of awareness of carers on vaccination schedule
- Misconceptions regarding vaccines e.g. use in sick child

Health education was therefore recommended as a key strategy in creating demand for EPI services.

A National EPI Integrated 5-Year Communication Strategic Plan 2003-2007 has been developed through the support of GAVI and other Partners. In broad terms the strategic plan focuses on Advocacy, Social Mobilization, and Program communication. Research and the use of research findings to constantly refine programs constitute an important component of the broad strategies (GHS, 2003).

Operational Challenges

Each region has a trained health promotion officer at the regional level. At the operational levels (District and Sub district) health promotion is carried out by health staffs that do not have professional training in the planning and implementation of health education. Human resource capacity development in health education and communication has not been given the desired level of attention. There is a need to **motivate and strengthen the capacity of the districts and sub district staff** to plan and implement appropriate health education interventions.

Vaccine Safety and Management

A **Vaccine Management Assessment** was conducted in 2001. The overall vaccine management assessment score was 3.3 points out of a maximum of 5 (66% satisfactory). A summary of the indicators explored and the "satisfactory scores" obtained, as shown below, indicated performance variance in the key indicators examined.

Indicator	Score	Some Suggested Actions
Flexible cold chain for all vaccines	4.1	Improve storage & labelling
Adequate quantities of vaccines always available	3.3	Train in vaccine estimation
Stock recording system for vaccines and diluents	1.0	Standardize stock control
Efficient Vaccine distribution system	3.3	Establish min. & max. Stock levels
Reliable cold chain for Vaccine storage	4.4	-Standardize temp recording -Institutionalise preventive maintenance
Proper diluents used for freeze dried vaccines	4.2	Monitoring system for diluents
Effective VVM Use	4.2	

Multi-dose Vial Policy	3.4	Guideline and Training at lower levels
Vaccine Wastage	1.7	Improve Wastage monitoring

Vaccine Wastage and stock control appear to be the most pressing issues to be addressed through improved practices and training

Policies to reduce Vaccine Wastage

Multi dose Vial Policy

The policy states that:

Multi-dose vials of OPV, DTP, TT, DT, hepatitis B, and liquid formulations of Hib vaccines from which one or more doses of vaccine have been removed during an immunization session *may be used* in subsequent immunization sessions for up to a maximum of 4 weeks, *provided that all of the following conditions are met:*

- The expiry date has not passed;
- The vaccines are stored under appropriate cold chain conditions;
- The vaccine vial septum has not been submerged in water
- Aseptic technique has been used to withdraw all doses;
- The vaccine vial monitor (VVM), if attached, has not reached the discard point.

Vaccine Vial Monitor (VVM)

The vaccine vial monitors are heat labile indicators on vaccine vials that measure the individual vials exposure to heat and give an indication of the viability of the vaccine in the vial

Vaccine Management targets for the EPI Program of Work (2002-2006)

- Zero stock outs of vaccines
- Decrease in Vaccine wastage
- Monitor vaccine stocks at all levels beginning at the sub districts
- Budget line is created for the procurement of vaccines in MOH budget

G/Accra	6	4	0	0	1	0	3	0
Total	282	75	20	8	26	7	57	8

The cold chain facilities were expanded in 2002 by 30% to cater for the requirements for the introduction of New Vaccines. Recent landmark improvements in the cold chain include the building of a second national cold store, the establishment of a sub national cold store in Tamale (Northern Ghana), the procurement of a new Cold Van, and the training of regions and districts on the MLM Module on Logistics management. The printing of the adapted MLM modules for distribution to the regions was funded through the Vaccine Fund.

Injection Safety Policy

The Ghana Health Service pursues the policy that 100% of injections given in public and private sectors for any purpose be safe. (GHS, Injection Safety and Strategic Plan 2002-2006). A safe definition is defined as that which does no harm to the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous for other people. This means that every injection must be given using a single sterile syringe and needle combination that is then safely disposed of after use. Currently, plastic auto disable disposable syringes are used for routine and supplemental vaccination activities for all the antigens except BCG. The country plans to introduce BCG AD syringes by 2003. BD Solo shot Trial has just been completed in parts of the Western region of Ghana.

The Measles and MNT SIAs have been a timely entry point to improve Injection safety and waste management in the country. Prior to these SIAs the injection waste management for example was characterized by crude disposal of injection waste, use of shallow pits for dumping, and irregular surface burning. The post Measles SIAs era is however characterized by the use of properly dug pits for burning and the construction of De Monfort incinerators in all the 110 districts in the country for the use of both the clinical and public health services.

Challenges

The emerging challenge is how to change the behaviour of the health workers since the incinerators are not being used by some for various reason that need to be further investigated.

Human Resources

Capacity Building – Middle Level Management Training

Some of the key challenges confronting the EPI program are the need to sustain - the gains in access to immunization services, and the low wastage rates (especially of the expensive pentavalent vaccine); the implementation of new policies such as the MDVP, VVM injection safety, amongst others. The training of health staff is one of the key strategies of addressing these challenges confronting the improvement of the quality and access to EPI services. Training would improve the local management of EPI services at all levels, strengthen the planning and implementation of IEC and social mobilisation activities, and consequently improve the demand for EPI services and community participation.

Ghana participated in the Abuja EPI Middle Level Management (MLM) Training in July 2001. A national team of EPI MLM Trainer of Trainers was trained during that workshop. The team that attended the Abuja workshop developed a national EPI MLM Training plan (Abuja Plan) by the end of that workshop. The National EPI Program management finalized the plan. The key elements of the plan were as follows:

- Building core Trainer of Trainers at Regional Levels
- Cascading Training to District Level
- Revision, adaptation of MLM Modules

The progress made so far include:

1. Training (TOT) and Module Adaptation Meeting held in Accra, Jan 7th to 12th 2002. The participants were Regional EPI Managers, and representatives from

- the Nursing Training Schools and the Kumasi Learning Centre. The training focused on the Role of EPI Manager within context of HSR and EPI Strategic Plan 2000 – 2004, Management of Immunization system Components, and the adoption and adaptation of the revised EPI MLM Modules.
2. Selected Abuja EPI MLM Training Modules were adapted for Ghana EPI. These modules were - Introduction (1.0), Role of EPI manager (2.0), Planning immunization activities (4.0), Increasing immunization coverage (5.0), Reduce missed opportunities (6.0), Vaccine management (7.3), and Supervision by EPI manager (15.0)
 3. In addition 3 out of 10 Regions have completed Regional and district level training – 3rd qtr 2002. These workshops were partly pre-financed by regions.

Much progress has been made in human resource capacity building within the health service at the regional and to some extent the district levels. The same cannot be said for the sub district levels and pre-service institutions.

The MLM modules need to be adapted to suit the **specific operational needs of the sub district or operational teams.**

The focus of the adaptation of the training module to the sub district level should be to strengthen the capacity of the operational teams to use local data to micro plan and manage the immunization services in order to improve both the access and quality of services and thereby create demand for the services.

Training of EPI staff in the provision of appropriate supportive supervision, during which supervisors could do microteaching on site, is also critical for an effective and efficient program. Ghana should strengthen program management at the sub district level through the “Reaching Every District” approach.

Though the Nursing Schools were represented in the initial EPI MLM training, they were inadequately represented. Training institutions such as those that train Doctors, Medical Assistants and Community Health Officers, were excluded from the initial training. In fact, it is estimated that a total of 51 Training institutions require training. These include 44 Nursing and midwifery schools, 3 Medical Schools, University of Ghana School of

Nursing, School of Allied health Science, Rural Health Training School, and School of Public Health. Funding is required to address this need. In the long term, EPI training should be an integral part of the in-service Training scheme of the Ghana Health Service.

Financing the Cost Of Immunization Services

GAVI, through the Vaccine Fund, will provide support for the implementation of EPI Programs in Ghana for the period 2002 –2006. A total of U\$68.5 million will be required for Routine Immunization and an additional U\$19.9 million for accelerated disease control activities.

It is estimated that the post Vaccine Fund support era 2007-2011 will require about U\$81.65 million for EPI activities.

The proportion of vaccine procurement undertaken with GAVI funds will be reduced from 85% in 2003 to 50% in 2006; whilst the Health Partners and the GOG mobilize funds pay for increasing proportions of vaccine requirement (from 15% in 2003 to 100% in 2011).

A financial sustainability road map has been developed and submitted to GAVI and the Vaccine Fund towards the attainment of these goals (Financial Sustainability Plan, 2002)

Donors finance about 80% of the cost of the NIDs. In 2000, the Government of Ghana and the District Assemblies 13% whilst Japan and Rotary International provided 37% and 30% respectively of the total funding of the NIDs. (Levin A et al, 2001). However the Government of Ghana dramatically increased its funding of NIDs. Out of the total cost of U\$12.7 million of the 2003 Mop Up NIDs, the GOG provided U\$1.0 million.

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