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# Urban EPI in Mali: A Brief Assessment

October 2 - 4, 1991



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**Urban EPI in Mali**  
**A Brief Assessment**

October 2 - 4, 1991

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## ACRONYMS

<b>AID</b>	Agency for International Development
<b>BCG</b>	Bacillus Calmette Guerin
<b>CNI</b>	Centre National d'Immunization
<b>EPI</b>	Expanded Program on Immunization
<b>IEC</b>	Information, Education, and Communication
<b>MOH</b>	Ministry of Health
<b>NGO</b>	Non-governmental Organization
<b>PHC</b>	Primary Health Care
<b>PVO</b>	Private Voluntary Organization
<b>R&amp;D/H</b>	Bureau for Research & Development (Health)
<b>REACH</b>	Resources for Child Health Project
<b>SCF</b>	Save the Children Federation
<b>WHO</b>	World Health Organization
<b>UNICEF</b>	United Nations Children's Fund
<b>USAID</b>	United States Agency for International Development

## I. Introduction

With the concurrence of USAID/Mali, a two member REACH team visited Bamako from October 2 - 4, 1991 to explore possibilities for special urban and measles control efforts within the existing national Expanded Program on Immunization (EPI). This visit coincided with AID/R&D/H intentions to begin initiatives in urban EPI and measles control in selected African countries.

The team consisted of an EPI specialist and an urban health planner. Discussions were held with staff of USAID/Mali, MOH, UNICEF, WHO, CARE, Africare, Peace Corps, SCF-USA and the PVO Pivot (Appendix 1).

As the team was present in Bamako for only two working days, and had insufficient time to travel to the field, the team concentrated on determining whether interest in and need for an urban EPI initiative with a focus on measles control existed in Mali.

## II. Background

Mali suffered a severe measles epidemic during the past year. The epidemic is said to have had its inception in Bamako, from which it spread throughout the country. The epidemic was attributed to low measles immunization coverage and accumulation of susceptibles. It is likely that the epidemic in Mali was related to the one in neighboring Niger. A copy of the investigation report was not provided to the team.

On their tour through Africa in January 1991, The Honorable Louis W. Sullivan and The Honorable Ronald W. Roskens, in a report to the President of the United States of America, reaffirmed their commitment to increasing immunization coverage in order to maintain the advances in child survival made in the last decade. They stated that: "U.S. assistance efforts should focus on sustaining efforts in targeted child survival activities in such ways that develop indigenous primary health care systems." They also stated that the USAID Measles Initiative, announced by President Bush at the World Summit for Children in October 1990 and intended to reduce deaths from measles by 95 percent by 1995, should be focused in Africa, where one-third to one-half of measles deaths now occur.

Mali suffers from some of the worst health conditions in Africa. The infant mortality rate is reported to be 167 per 1000 live births and the under 5 mortality rate is approximately 290. According to the UNICEF State of the World Children's report for 1990, only Afghanistan and Mozambique have worse values for these indicators. Mali's rate of decline over the past thirty years in the under 5 mortality rate is also one of the slowest in the world.

Approximately 25% of the population of 8.5 million is considered to be urban. The average annual growth rate of the urban population is 4%, while the country as a whole has a growth rate of approximately 2.8%.

Mali also has one of the highest birth rates in the world. UNICEF estimates that 27% and 48% of the urban and rural populations, respectively, lived below the absolute poverty level in the period 1977-1987.

### III. Status of the Mali EPI

Although the MOH, with donor support, has made considerable investments in the EPI in Mali, immunization coverage remains disappointingly low. Organizational and structural constraints within the health sector are said to be impeding further progress. The need now is to achieve and sustain coverage levels to a point where reduction of morbidity and mortality follows.

The EPI in Mali has traditionally relied upon three strategies to deliver services: fixed sites, outreach from fixed sites, and mobile teams to cover areas more distant from the fixed sites. Current low EPI coverage figures still do not reflect the considerable amount of effort that has already been devoted to establishing a solid infrastructure.

Significant problems must be overcome within the EPI and in the health sector in general. Delivery of services must be integrated. Authority and budgetary allocations need to be decentralized. Data are either unavailable or, even when available, infrequently used or fed back to lower levels to inform rational decision-making.

Given the underdeveloped state of the health infrastructure in Mali, donors need to lengthen their traditional planning horizons and formulate sector-wide as well as project-specific goals. Regular collaboration and joint planning among donors with the Ministry of Health (MOH) should be encouraged.

Immunization coverage remains very low in Mali relative to other African countries (Appendix 2 - 4). With the global goal of Universal Child Immunization by 1990 having already passed, Mali risks losing donor attention at a critical period in its EPI development unless the Government can re-commit itself to the task at hand. EPI is breaking new ground for health care in Mali and deserves unwavering support. EPI is paying a disproportionate share of costs for developing the infrastructure which, in fact, will benefit the entire Primary Health Care (PHC) system which is slowly developing.

A noteworthy problem which EPI specifically faces is the high drop-out rate between successive doses. A series of WHO standard 30-cluster surveys was conducted in 1991 in seven regional capitals. Appendix 5 and 6 show that access to BCG, traditionally the first dose in the series, is fairly high. However, measles coverage is strikingly low compared to BCG. Children simply do not return for subsequent vaccinations, or opportunities to complete their vaccination series are missed by the health establishment. There is also a fairly high drop-out between BCG and the first dose of DPT, which indicates that health workers are not sufficiently motivating mothers to return. There are large disparities in coverage between the regional capitals, as well as between the communes within Bamako. Typically, 40% of the children in Bamako's communes who begin their vaccinations (as measured by BCG coverage rates) do not complete them (as measured by measles coverage rates).

The consequences of this low level of measles coverage is that while an estimated 6500 deaths due to measles are currently being prevented each year by EPI in Mali, some 11,500 deaths from measles alone continue to occur annually. (These calculations assume a national population roughly of 36,000 children surviving to one year of age, 40% coverage with measles vaccination of 90% efficacy, universal measles infection in the absence of immunization, and a case fatality ratio of 5%)

#### IV. Observations

In light of the general underdevelopment of the health sector, it is important that parochial, project-specific interests should not be allowed to dominate. Donor preoccupation with one specific topic or another should be restrained for the overall benefit of PHC development. Projects will succeed or fail to the extent that the primary health care (PHC) infrastructure can be developed and decentralized and an integrated package of services delivered. Without these necessary preconditions, any single vertical approach is doomed to failure.

Nevertheless, individual projects such as EPI can aid this overall PHC development, and in the process help itself, by finding linkages with other projects - e.g., family planning, trachoma control, etc. Mali's EPI currently makes between 500,000 to 750,000 contacts per year with families. This is an opportunity to deliver other messages and services which the country cannot afford to miss.

Within EPI, the overriding need appears to be to increase the quantity, quality, and efficiency of immunization services in existing health facilities. While strengthened IEC (information, education, communication) activities are essential to increase the demand for services and reduce drop-out rates, EPI must especially concentrate on reducing missed opportunities for immunization, particularly given the concerns expressed about the availability of future resources. Staff at every health facility need to screen and immunize infants and women of childbearing age, regardless of the reason for the encounter. Resources should also be provided to permit regular outreach visits from every health facility as another means to increase immunization coverage. Special efforts will need to be directed at identifying and providing services to under-served regions of the country. The goal of EPI is not to improve immunization coverage, but to reduce morbidity and mortality. Strategies to control infectious diseases should be epidemiologically sound. For example, improving immunization coverage in dense overcrowded urban areas, without detracting from rural activities, is likely to lead to less frequent outbreaks. Low immunization coverage, high population density, high birth rates, and high rates of in-migration of susceptible children into Mali contributed to rapid transmission among the very young, for whom measles is particularly severe. Due to the early age of infection, intensity of exposure, and prevalence of malnutrition in vulnerable low income settlements, cities require higher immunization coverage than sparsely settled rural areas in order to reduce more effectively mortality from measles. More effective measles prevention in cities and densely settled areas results in less frequent exportation into rural areas. Despite having the highest measles immunization coverage in the nation, Bamako was

nevertheless the source of the recent epidemic, and was responsible for introducing measles throughout the country.

An epidemiologically sound strategy is to identify pockets of low coverage. EPI managers in Mali need to be alert to the special challenges and unique opportunities for creative approaches in urban and densely settled areas. For example, seasonal population movements and locational aspects are well-known and provide an opportunity to reach these otherwise inaccessible populations with essential services. Information from existing early warning systems which monitor impending food shortages can also be used to prepare for movements of populations which need immunization.

Census figures should be analyzed and catchment populations calculated for each health facility. Immunization coverage targets can then be established and staff trained to monitor progress. As the former Director of the WHO/EPI programme stated: "in public health, what gets measured gets done." An assessment tool which has been used elsewhere in Africa with great success is the "nearest 100 households survey." The purpose is for the health worker and community to ascertain immunization coverage in the immediate vicinity of the health facility. The level of coverage is often found to be surprisingly low despite easy access. By venturing into the community, the health worker learns about some of the constraints which must be overcome.

Over the next few years, the extension of immunization and adoption of innovative delivery strategies to ensure the immunization of each cohort of children in each geographic area will largely determine the magnitude of the next measles epidemic, which can be expected to occur approximately in 1994, if not sooner.

In neighboring Niger, the team was surprised to discover that, contrary to popular belief, the vast remote regions of the country in the north and east have great access to and utilization of health facilities. Consequently these regions suffered a lower attack rate from measles during the 1990-91 epidemic. In Niger, the team recommended that now is the time to ensure more equitable provision of services by attending to the needs of the relatively underserved, most densely populated southern region. The team was not present long enough in Mali to document a similar pattern of service utilization, but highly recommends that currently available data be reviewed to see if a pattern similar to Niger exists in Mali.

#### V. Conclusions

1. An inter-agency multi-year EPI plan is needed to guide coordinated development of EPI.
2. Interest in an "Urban EPI focus" to more effectively control infectious diseases, such as measles, is perceived as a need by the MOH, UNICEF and USAID/Bamako.
3. The overall primary health care system needs improvement and will benefit from continued investment in EPI.

4. By mobilizing additional funds to improve measles control, EPI can lead the way to improved PHC.
5. Long-term targeted technical assistance is needed, as well as local funds for program support and problem-solving operational research.
6. The presence of expert technical assistance can help to mobilize donor funds.
7. EPI technical assistance from REACH and other interested centrally-funded projects, supplemented with financial inputs from local donors such as USAID/Bamako and UNICEF, could be a powerful stimulus for improved disease control in Mali and would be well-appreciated by the MOH.
8. UNICEF is particularly interested in supporting the MOH to raise immunization coverage among infants to 80% by mid-1992 in the eight regional capitals. Their interest parallels that of the REACH team. UNICEF encourages USAID/Bamako to attract additional funds for this purpose and stands ready to continue its assistance with local program support costs for, among other items, vaccine and fuel.
9. The potential for NGO involvement in the EPI is considerable. A consortium of health NGOs already exists and efforts should be made to ensure that NGOs are included in EPI planning and implementation in Mali.
10. USAID/Bamako is interested in expanding its involvement into this health initiative and believes that AID/W should provide USAID/Mali with additional central funds for more effective measles control. If funds were to be provided, an in-depth programming mission would be required.

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APPENDIX 1

Persons Contacted

Ministere de la Sante

Dr. Mountaga Coulibaly, Directeur Centre National d'Immunization (CNI)

USAID/Bamako

Mr. Neil Woodruff, Director Office of Population and Health  
Mr. Robin Poulton, PVO Coordinator

UNICEF/Mali

Mr. Alan Everest, Country Representative  
Dr. El Abassi, Chef Section de la Sante

WHO/Mali

Dr. Victor Petriguiane

Africare

Mr. Dan Gerber, Resident Representative

Save the Children / USA

Mr. Issa Sidibe, Coordinator des Projets

Peace Corps

Ms Karen A. Woodbury, Director

Care

Ms Kathy Tilford, Director

PRITECH

Dr. Suzanne Prysor-Jones, Regional Representative, Dakar

HEALTHCOM

Dr. Nancy Keith, Washington

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APPENDIX 2

Annual Regional Immunization Coverage  
Region: Africa  
Latest data available in 1991

Estimated Immunization Coverage based on  
routine reports or nationwide surveys

Ranked on Measles for coverage levels 0 - 99%

Rank	Location	SURVIVING INFANTS (Millions)	BCG Cov	DPT3 Cov	POLIO 3 Cov	Measles Cov	TT 2 Cov	Year of data
1.	SEY Seychelles	0.0018 UW	98%	82%	82%	89%	98%	1990
2.	TAN Tanzania	1.2343 UW	94%	81%	..	88%	50%	1987
3.	SWZ Swaziland-	0.0327 UW	96%	89%	89%	85%	63%	1989
4.	ALG Algeria	0.8189 UW	99% S	89% S	89%	83% S	27% S	1991
5.	MAS Mauritius	0.0191 UW	94%	90%	90%	83%	94%	1989
6.	MAL Malawi	0.4178 UW	92%	78%	78%	81%	40%	1987
7.	CAV Cape Verde	0.0144 UW	97%	88%	87%	79%	90%	1990
8.	NAM Namibia	0.0684 UW	90%	38%	39%	77%	..	1989
9.	BUU Burundi	0.2285 UW	97%	86%	86%	75%	56%	1990
10.	SIL Sierra Leone	0.1701 UW	98%	83%	83%	75%	77%	1990
11.	RWA Rwanda	0.3232 UW	89%	79%	78%	74%	..	1987
12.	ZIM Zimbabwe	0.3721 UW	85%	77%	77%	73%	46%	1987
13.	COM Comoros	0.0236 UW	91%	71%	73%	71%	23%	1987
14.	LES Lesotho	0.0650 UW	79%	77%	78%	70%	..	1989
15.	STP Sao Tome & Prin	0.0038 CWU	88%	77%	72%	69%	50%	1988
16.	GAB Gabon	0.0432 UW	90%	59%	59%	66%	55%	1987
17.	KEN Kenya	1.0518 UW	80%	72%	72%	65%	..	1986
18.	SEN Senegal	0.3001 UW	88%	67%	67%	64%	32%	1989
19.	SOA South Africa	1.0420	85%	67%	69%	63%	..	1990
20.	BOT Botswana	0.0565 UW	61%	63%	57%	60%	25%	1987
21.	GHA Ghana	0.6042 UW	81%	57%	56%	60%	33%	1990
22.	GUB Guinea-Bissau	0.0352 UW	98%	56%	54%	60%	22%	1987
23.	ZAM Zambia	0.3956 UW	78%	60%	59%	59%	..	1989
24.	UGA Uganda	0.8769 UW	91%	61%	61%	58%	34%	1990
25.	CAF Cen. Afr. Rep.	0.1239 UW	43%	42%	42%	55%	39%	1988
26.	NIE Nigeria	4.6351 UW	96%	57%	57%	54%	58%	1990
27.	MOZ Mozambique	0.6013 UW	49%	38%	38%	44%	19%	1988
28.	ZAI Zaire	1.4867 UW	59%	38%	38%	44%	..	1989
29.	TOG Togo	0.1433 UW	73%	45%	44%	42%	33%	1989
30.	BFA Burkina Faso	0.3675 UW	..	30%	30%	40%	14%	1987
31.	LIB Liberia	0.1047 UW	41%	19%	..	40%	10%	1987
32.	ANG Angola	0.4075 UW	47%	23%	23%	38%	26%	1990
33.	IVC Cote d'Ivoire	0.5426 UW	39%	42%	35%	34%	49%	1989
34.	MAI Mali	0.3916 UW	66%	34%	34%	34%	54%	1990
35.	MAU Mauritania	0.0820 UW	77%	30%	31%	32%	..	1987
36.	MAD Madagascar	0.4814 UW	77%	46%	42%	31%	32%	1989
37.	BEN Benin	0.2075 UW	47%	26%	26%	27%	39%	1987
38.	NIG Niger	0.3465 UW	46%	12%	12%	21%	35%	1990
39.	CHA Chad	0.2166 UW	34%	15%	15%	17%	15%	1987
40.	ETH Ethiopia	2.0789 UW	30%	17%	17%	16%	20%	1989
41.	CAE Cameroon	0.5099 UW	26%	20%	19%	14%	15%	1988
42.	GUI Guinea	0.2513 UW	17%	7%	7%	7%	10%	1989
43.	CNG Congo	0.0974 UW	..	71%	..	..	..	1986
44.	EQG Equat. Guinea	0.0135 UW	28%	3%	4%	..	16%	1985
45.	GAM Gambia	0.0342 UW	96%	77%	82%	..	..	1987
46.	REU Reunion	0.0132 UW	..	..	..	..	..	..
47.	SAH St Helena	0.0001 UW	..	..	..	..	..	..
AFR Africa Region		21.3356	72%	52%	46%	51%	31%	

Report: COV002

APPENDIX 3

Ranked Annual Drop out Rates

Region: Africa  
Latest data available in 1991

Ranked on BCG - Measles Dropout rate

Rank	Location	Survivors	No Access Diff Out		BCG < 1 Doses Cov	Measles < 1 Doses Cov	BCG - Meas Dropout Diff Out	Year of data
1.	MAD Madagascar	481362	110713	23%	370649	77%	221427	1989
2.	GUI Guinea	251290	208571	83%	42719	17%	25129	1989
3.	MAU Mauritania	81963	18851	23%	63112	77%	36884	1987
4.	NIG Niger	346533	187128	54%	159405	46%	86633	1990
5.	CHA Chad	216642	142983	66%	73659	34%	36829	1987
6.	MAI Mali	391638	133157	34%	258481	66%	36830	1987
7.	ETH Ethiopia	2078893	1455225	70%	623668	30%	125324	1990
8.	CAE Cameroon	509933	377350	74%	132583	26%	291045	1989
9.	NIE Nigeria	4635053	185402	4%	4449651	96%	61192	1988
10.	BEN Benin	207457	109952	53%	97505	47%	1946723	1990
11.	TOG Togo	143284	38687	27%	104597	73%	41491	1987
12.	GUB Guinea-Bissau	35187	704	2%	34483	98%	44417	1989
13.	UGA Uganda	876866	78918	9%	797948	91%	13371	1987
14.	GAB Gabon	43210	4321	10%	38889	90%	289366	1990
15.	SEN Senegal	300118	36015	12%	264103	88%	10370	1987
16.	GHA Ghana	604159	114791	19%	489368	81%	72028	1989
17.	SOA South Africa	1041991	156299	15%	885692	85%	126873	1990
18.	ZAI Zaire	1486684	609540	41%	877144	59%	229238	1990
19.	ZAM Zambia	395624	87038	22%	308586	78%	223003	1989
20.	BUU Burundi	228489	6854	3%	221635	97%	75168	1989
21.	SIL Sierra Leone	170111	3402	2%	166709	98%	50269	1990
22.	COM Comoros	23587	2123	9%	21464	91%	39125	1990
23.	STP Sao Tome & Prin	3790	454	12%	3336	88%	4717	1987
24.	ANG Angola	407506	215978	53%	191528	47%	720	1988
25.	CAV Cape Verde	14441	433	3%	14008	97%	36675	1990
26.	KEN Kenya	1051759	210352	20%	841407	80%	2599	1990
27.	RWA Rwanda	323178	35550	11%	287628	89%	157764	1986
28.	ALG Algeria	818868	8189	1%	810679	99%	48477	1987
29.	NAM Namibia	68398	6839	10%	61559	90%	131019	1991
30.	ZIM Zimbabwe	372126	55818	15%	316308	85%	8893	1989
31.	IVC Cote d'Ivoire	542609	330992	61%	211617	39%	44656	1987
32.	MAL Malawi	417813	33425	8%	384388	92%	27130	1989
33.	MAS Mauritius	19053	1143	6%	17910	94%	45960	1987
34.	LES Lesotho	65030	13656	21%	51374	79%	2096	1989
35.	SWZ Swaziland	32664	1306	4%	31358	96%	5853	1989
36.	MOZ Mozambique	601344	306685	51%	294659	49%	3594	1989
37.	SEY Seychelles	1777	36	2%	1741	98%	30068	1988
38.	TAN Tanzania	1234259	74055	6%	1160204	94%	159	1990
39.	BOT Botswana	56495	22033	39%	34462	61%	74056	1987
40.	LIB Liberia	104652	61745	59%	42907	41%	565	1987
41.	BFA Burkina Faso	367507	...	...	...	...	1046	1987
42.	CNG Congo	97373	...	...	...	...	...	1987
43.	EQG Equat. Guinea	13542	9751	72%	3791	28%	...	1986
44.	GAM Gambia	34205	1369	4%	32836	96%	...	1985
45.	REU Reunion	13164	...	...	...	...	...	1987
46.	SAH St Helena	104	...	...	...	...	...	...
47.	CAF Cen. Afr. Rep.	123894	70619	57%	53275	43%	-14866	1988
AFR	Africa Region	21335625	6006600	28%	15329025	72%	4546711	30%

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APPENDIX 4

Ranked Annual Drop out Rates

Region: Africa

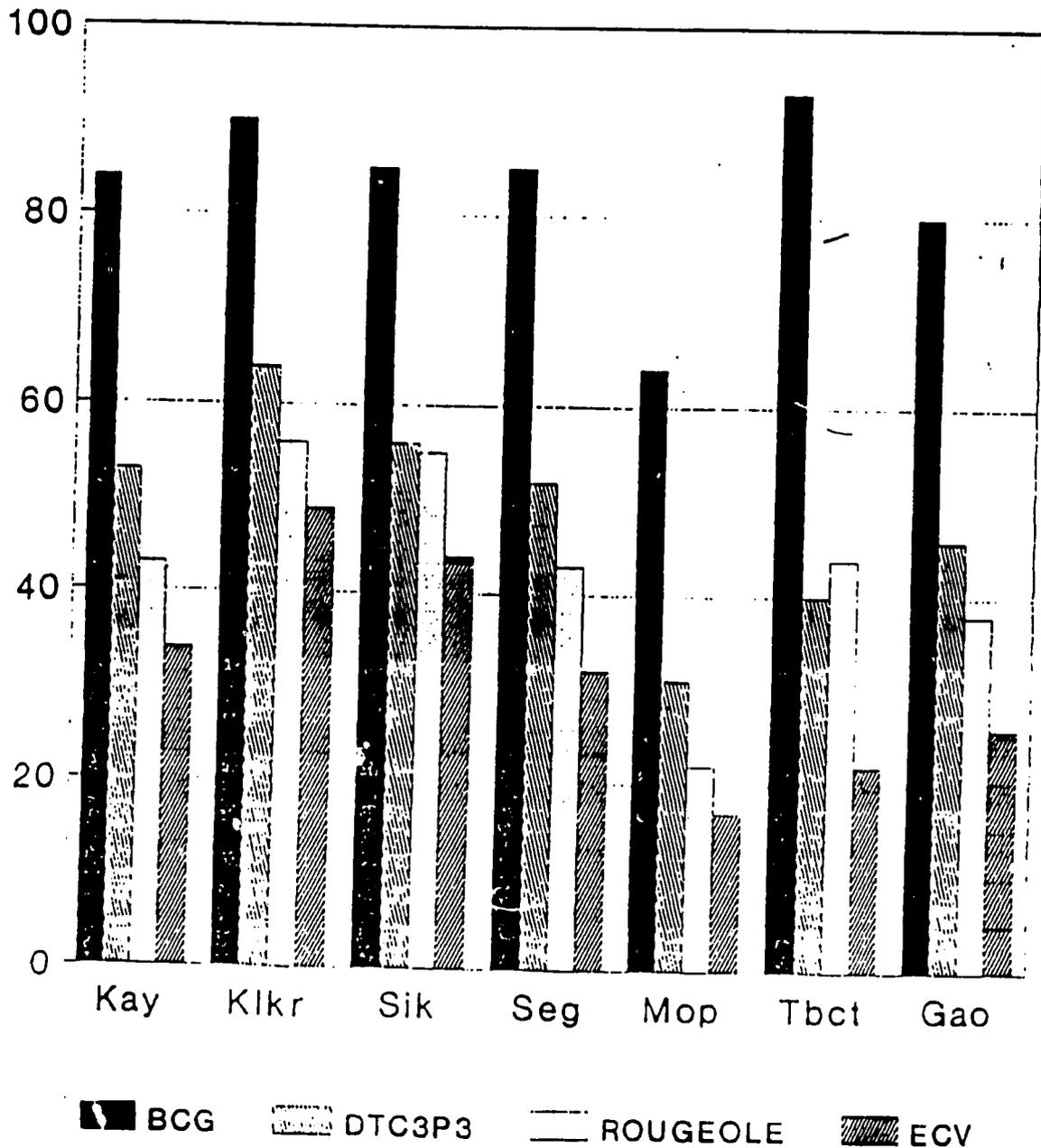
Latest data available in 1991

Ranked on No Access rate

Rank	Location	Survivors	No Access Diff Out	BCG < 1 Doses Cov	Measles < 1 Doses Cov	BCG - Meas Dropout Diff Out	Year of data				
1.	GUI Guinea	251290	208571	83%	42719	17%	17590	7%	25129	59%	1989
2.	CAE Cameroon	509933	377350	74%	132583	26%	71391	14%	61192	46%	1988
3.	EQG Equat. Guinea	13542	9751	72%	3791	28%	...	...	...	...	1985
4.	ETH Ethiopia	2078893	1455225	70%	623668	30%	332623	16%	291045	47%	1989
5.	CHA Chad	216642	142983	66%	73659	34%	36829	17%	36830	50%	1987
6.	IVC Cote d'Ivoire	542609	330992	61%	211617	39%	184487	34%	27130	13%	1989
7.	LIB Liberia	104652	61745	59%	42907	41%	41861	40%	1046	2%	1987
8.	CAF Cen. Afr. Rep.	123894	70619	57%	53275	43%	68141	55%	-14866	-28%	1988
9.	NIG Niger	346533	187128	54%	159405	46%	72772	21%	86633	54%	1990
10.	ANG Angola	407506	215978	53%	191528	47%	154853	38%	36675	19%	1990
11.	BEN Benin	207457	109952	53%	97505	47%	56014	27%	41491	43%	1987
12.	MOZ Mozambique	601344	306685	51%	294659	49%	264591	44%	30068	10%	1988
13.	ZAI Zaire	1486684	609540	41%	877144	59%	654141	44%	223003	25%	1989
14.	BOT Botswana	56495	22033	39%	34462	61%	33897	60%	565	2%	1987
15.	MAI Mali	391638	133157	34%	258481	66%	133157	34%	125324	48%	1990
16.	TOG Togo	143284	38687	27%	104597	73%	60180	42%	44417	42%	1989
17.	MAD Madagascar	481362	110713	23%	370649	77%	149222	31%	221427	60%	1989
18.	MAU Mauritania	81963	18851	23%	63112	77%	26228	32%	36884	58%	1987
19.	ZAM Zambia	395624	87038	22%	308586	78%	233418	59%	75168	24%	1989
20.	LES Lesotho	65030	13656	21%	51374	79%	45521	70%	5853	11%	1989
21.	KEN Kenya	1051759	210352	20%	841407	80%	683643	65%	157764	19%	1986
22.	GHA Ghana	604159	114791	19%	489366	81%	362495	60%	126873	26%	1990
23.	SOA South Africa	1041991	156299	15%	885692	85%	656454	63%	229238	26%	1990
24.	ZIM Zimbabwe	372126	55818	15%	316308	85%	271652	73%	44656	14%	1987
25.	SEN Senegal	300118	36015	12%	264103	88%	192075	64%	72028	27%	1989
26.	STP Sao Tome & Prin	3790	454	12%	3336	88%	2616	69%	720	22%	1988
27.	RWA Rwanda	323178	35550	11%	287628	89%	239151	74%	48477	17%	1987
28.	GAB Gabon	43210	4321	10%	38889	90%	28519	66%	10370	27%	1987
29.	NAM Namibia	68398	6839	10%	61559	90%	52666	77%	8893	14%	1989
30.	COM Comoros	23587	2123	9%	21464	91%	16747	71%	4717	22%	1987
31.	UGA Uganda	876866	78918	9%	797948	91%	508582	58%	289366	36%	1990
32.	MAL Malawi	417813	33425	8%	384388	92%	338428	81%	45960	12%	1987
33.	MAS Mauritius	19053	1143	6%	17910	94%	15814	83%	2096	12%	1989
34.	TAN Tanzania	1234259	74055	6%	1160204	94%	1086148	88%	74056	6%	1987
35.	GAM Gambia	34205	1369	4%	32836	96%	...	...	...	...	1987
36.	NIE Nigeria	4635053	185402	4%	4449651	96%	2502928	54%	1946723	44%	1990
37.	SWZ Swaziland	32664	1306	4%	31358	96%	27764	85%	3594	11%	1989
38.	BUU Burundi	228489	6854	3%	221635	97%	171366	75%	50269	23%	1990
39.	CAV Cape Verde	14441	433	3%	14008	97%	11409	79%	2599	19%	1990
40.	GUB Guinea-Bissau	35187	704	2%	34483	98%	21112	60%	13371	39%	1987
41.	SEY Seychelles	1777	36	2%	1741	98%	1582	89%	159	9%	1990
42.	SIL Sierra Leone	170111	3402	2%	166709	98%	127584	75%	39125	23%	1990
43.	ALG Algeria	818868	8189	1%	810679	99%	679660	83%	131019	16%	1991
44.	BFA Burkina Faso	367507	...	...	...	...	147003	40%	...	...	1987
45.	CNG Congo	97373	...	...	...	...	...	...	...	...	1986
46.	REU Reunion	13164	...	...	...	...	...	...	...	...	1986
47.	SAH St Helena	104	...	...	...	...	...	...	...	...	...
AFR Africa Region		21335625	6006600	28%	15329025	72%	10782314	51%	4546711	30%	

10

# Capitales reg. enquête de Mars 1991



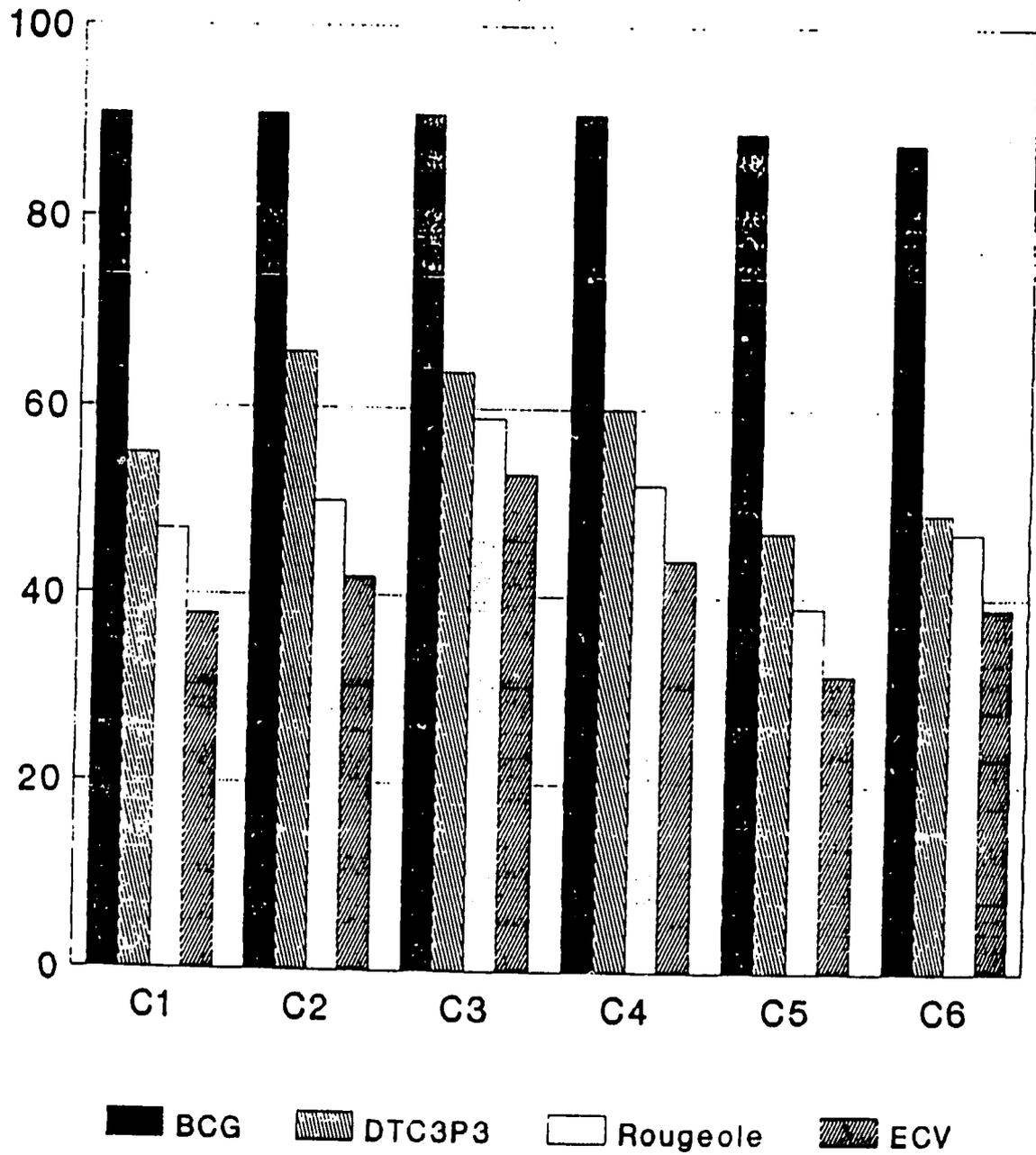
couverture avant l'âge de 1 an

SOURCE: MOH/Mali

11

# Bamako

## enquête de Mars 1991



couverture vaccinale avant l'âge de 1 an