

Evaluation of GAVI Immunization Services Support Funding Case Study: Mali

This report presents findings from one of six country case studies conducted as part of a Global Alliance for Vaccines and Immunization (GAVI) commissioned evaluation of the Immunization Services Support (ISS) funding mechanism. The ISS funding mechanism provides performance-based funding aimed at improving routine immunization. The goal of the evaluation was to assess the impact of ISS funding in furthering GAVI objectives and to identify ways to improve the ISS scheme. This report is a working paper that informs the final report. In addition to information from the six country case studies, the evaluation incorporated data from a desk review of 52 countries. It is recommended that this report be read in conjunction with *Evaluation of GAVI Immunization Services Support Funding*, which provides a full description of the background and methodology for the evaluation.

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1. Description of District Visit

1.1. Names of team members and dates of visit

Two independent consultants visited Bamako and two districts of Bougouni and Ouélessebougi. Dr. Alice Soumaré from Abt, traveled from 15 – 27 April and Ms. Mary Catlin from AED traveled from 17- 28 April 2004. Bougouni and Ouélessebougi are a few hours apart in two different regions, on good road, and face similar difficulties. Bougouni received GAVI ISS funds and had NGO members present but none who participated in immunization. Ouélessebougi did not receive GAVI funds but was similar in all other regards.

1.2. Methodology

WHO and MOH staff scheduled interviews with those involved in the application, decision-making, management, transfer, use and accounting of the GAVI funds. A list of persons visited is in Annex 1. Interviews in Bamako were made with an escort of WHO logistic officer, Yalcouye Idrissa, and MOH immunization program staff, Zangoura Coulibaly; the field visit to 2 districts was aided by WHO staff Yalcouye Idrissa and MOH staff Koniba Diarra. WHO and Abt provided cars and drivers. The consultants express gratitude for their assistance, their patience, and their passion for EPI.

Visits were made to the MOH, to donors, WHO, UNICEF, USAID, SCF, AID-Mali, and Abt staff on the USAID project ATN. A two-day field visit was made to visit district level staff in the region of Sikasso, to the *cercle* (district) of Bougouni which had received GAVI funds, and in the region of Koulikoro, to the district of Ouélessebougi, which had not received GAVI funds.

During the district visits, the team stopped at the administrative and immunization delivery levels to see cold storage areas, observe injection technique, syringe disposal, and to review documentation of immunizations and activity plans.

1.3. Methodological issues

- WHO staff helpfully warned the team that the visit overlapped with an important EPI meeting in Dakar. Unfortunately, it was not possible to reschedule the visit. Thus, there was very limited discussion time with eight key staff of WHO and the national EPI program including the EPI manager.
- While head of departments and chief of sections were very willing to share information, accessing information depending largely on individuals rather than on an organized filing or storage of information. Lack of a filing system, or shelves, combined with high staff turnover limited the ability of staff to either find or interpret past information. Many papers were stored by individuals as their personal copy without a department wide filing

Mali Case Study

system that could be accessed by others in their absence. We were unable to access key information such as the total immunization budget for immunization for the past 5 years.

- Persons who were in mid-level positions were sometimes reluctant to provide information. One explanation given to us was that persons are very nervous about GAVI funds because unlike other grants, GAVI did not authorize specific purchases, and thus some worried that they might have inadvertently made unauthorized purchases. In fact, GAVI allows great flexibility in how ISS funds can be used. While the consultants tried to explain about the intended flexibility of the grant and reassure persons that the intent of the meeting was to evaluate GAVI, the necessary inquiries into specific uses and transfer of funds as requested in the questionnaires did not reassure staff about the intentions of the visit.
- Another mitigating factor is the high turnover of staff and members of the Interagency Coordinating Committee. Persons currently dealing with the grant including senior staff from USAID, UNICEF, MOH EPI program, and other ICC committee members were new; few had been involved in the application or orientation about GAVI. In addition, on occasion, the departing staff took with them files associated with the previous position, leaving the incumbent without materials to aid the institutional memory. This had implications for this review as well as the implementation of the GAVI funds.
- The consultants made repeated efforts to track information but still was unable to obtain certain types of information, e.g., Joint Reporting Forms or documentation (which may not exist) of disbursements of GAVI ISS funds. Thus in this rather dogged pursuit of data they apologized for the great imposition of our requests of staff to look through computer files, desk files, and others to provide information such as the minutes from the CCI meeting, reports of disbursements, or the annual district micro-plans that are the basis of disbursement.
- It is culturally inappropriate to ask specific detailed questions or to respond, “I don’t know”. It was difficult to elicit specific, detailed information that reflected actual (rather than normative) descriptions of actions, decisions made, etc. The study team had to ask questions multiple times in many different ways to acquire information that was thought to be reliable.
- The inconsistencies in the available information are a major limitation of this study. This finding is consistent with the results of the first two Data Quality Audits, which yielded a Verification Factor of less than 80% with wide confidence limits, and left recommendations that the MOH is attempting to institute.
- The MOH suggested that we visit sites in the region that had first received funds. However, because the visit required two days of travel time we asked for two alternate sites closer to Bamako, and were given permission to visit Ouélésébougou and Bougouni.

Mali Case Study

- Despite notification by the central level, the district medical officer for Ouélésébougou was not present on the day of the District visit nor on the subsequent day. No written financial information, past immunization records, reports from supervisors, microplans, district plans, or correspondence about GAVI was available in his absence. Financial information was not shared nor known by his assistants. We were able to access cold chain records, current immunization reports in use by members present, and interviewed health staff and community CSCOM (Centre de Santé Communautaire) persons present.

2. Context

2.1. Country context

Mali is a butterfly shaped country with one wing in the Sahara, one wing in the wooded forest zone. The body in the Sahel is transected by rivers of the Senegal and the Niger. Population, estimated to be 10,278,250¹ in 2000, is divided into eight administrative Regions and the District of Bamako. The 8 regions and Bamako are divided into 52 additional *cercles* or districts, which typically have about 100,000-150,000 people each. Nationally, Mali is divided into more than 700 communes and more than 13,000 villages. The administrative divisions do not correspond exactly with the divisions for the sanitary districts. Northern parts of Mali have occasional security incidents that limit access by vaccination workers.

The population in Mali is young, increasing at a rate of more than 2.2% a year. Currently 4% of the population is estimated to be less than 1 year of age and 46% are less than 15¹; 70% are illiterate. There are four principle language groups. In terms of religion, 93% of the population is Moslem, 4% Christian and 3% animist. The most recent Demographic and Health Survey (DHS) was conducted in 2000.² It indicated that:

- Women bear, on average, 6.8 children
- Aproximately 80% of women have no education
- Infant mortality is 113.4 deaths per 1000 live births³
- Under-five mortality is 229.1 deaths per 1000 live births
- Maternal mortality 582 deaths per 100,000 live births

Malaria is the leading cause of death and morbidity in Mali. The Roll Back Malaria initiative of WHO/MOH estimates that 99% are at risk⁴. Mali remains heavily affected by periodic epidemics of measles (119 cases reported during this visit, more than 400 cases in 2004 as of mid-April) , meningococcal meningitis, and by continuous epidemics of hepatitis B and malaria. For example,

1 Section Immunisation. Plan Stratégique Pluri-annuel du PEV (2002-2005). September 2002. Division Prevention et Lutte contre La Maladie. Direction National de la Santé Secretariat General, Ministère de la Santé.

2 No copies of the 2003 DHS were accessible in MOH offices.

3 Estimates seen on MOH documents reported infant mortality to be 113/1000 as of 2002. Roll Back Malaria quoted UNICEF reporting infant mortality to be 141/1000 in 2001 from UNICEF, but sources of this revised estimates is unknown.

4 Roll Back Malaria Website Accessed May 1 2004. General Indicators. www.rbm.who.int/amr2003/amr2003/pdf/mali.pdf.

Mali Case Study

the MOH reported¹⁰ that in 2001 in a sample of 303 pregnant women, 223 men older than 15, and 265 infants, 70% showed evidence of past or current infection with hepatitis B by core-antibody or surface antigen against Hepatitis B, documenting the magnitude of hepatitis B as a public health problem.

The recent economic outlook for Mali has been improving with growth rates in 1995-6 of 7% and 5% respectively. However, Mali remains an extremely poor country with a current gross national income per capita of US\$240, and a gross national product \$US797⁵. National income is influenced directly by the price of cotton, itself affected by droughts and thus subject to fluctuations.

2.2. Health system context

2.2.1. Health System Structure

In 1997, moved by the prevailing trends to decentralize services, the Ministry of Health reorganized services into a pyramid with four levels. At the base are the 665-700 village level health centers (*Centres de Santé Communautaire* or CSCOM) which are financed by the proceeds of curative services and drug sales and are managed by village committees. At the next level, district level reference health centers are staffed by state financed health workers in 52 districts and 6 communes. These combine into regional health services which include hospitals. At the highest level are the national health services, which include hospitals, research institutes, and schools and institutes of public health.

The majority of the rural population receive services from the community health centers. These have increased in recent years from 370 in 1998 to 570 in 2002, to more than 700 in 2004. Of these health centers, the unofficial estimate is that 30% -51% have the facility, staff and capacity to provide a minimum packet of preventive and curative services.

In contrast to the community level of care, whose recurring costs are theoretically financed through local sales of drugs and consultation fees from patients, NGO's and community partners, the national, regional and district levels are financed principally by the state, bilateral and NGO partners.

2.2.2. Decentralization

The current stated priorities in the decentralized health plan, *Programme de Développement Sanitaire et Sociale (PRODESS)*⁶, are to

- Decrease the mortality associated with female genital circumcision
- Lower maternal mortality by 30%

5 WHO. Vaccine and Biologicals Global 2003 Summary Country Profile. Immunization Profile – Mali. Who.int. Accessed 3/12/2004.

6 Ministère de la Santé des Personnes Agées et de La Solidarité. Programme de Développement Sanitaire et Social. (PRODESS). 1998-2002. République de Mali.

Mali Case Study

- Decrease deaths from vaccine preventable disease by 30%
- Decrease deaths associated with malnutrition in children under 5
- Decrease deaths associated with malaria, respiratory illness, and diarrhea in children under 5.

The National Immunization Program is a priority program within the PRODESS. While the service delivery is decentralized, national policies, strategies and procedures for preventive health programs come from the central level. Local initiatives participated in implementation, for example, when a health center decided to fund and hire an additional staff member. While health centers are nominally autonomous and able to take local decisions, the ability to raise local resources is a limiting factor for independent action. Local community leadership may be astute but may be staffed by persons who have not had access to formal education and may not read French or read budgets.

The state gave an initial stock of essential drugs with which they could generate proceeds from drug sales to cover salaries and recurring costs. In the curative sector, funding is linked to performance. There is a financial incentive to provide curative services because patients pay 300 CFA for entry, pay additionally for medications and fees for select procedures. Some CSCOMs are able to afford physicians who can attract additional patients and charge fees for procedures.

2.2.3. Presence of competing incentives and disincentives

Despite the existence of GAVI funds, at the community health center level there are financial disincentives to vaccinate, especially by outreach. The vaccinators also provide curative services, so when they leave the clinic (as is done in mobile teams, when providing the outreach to areas more than 15 km from a facility during immunization campaigns, and sessions for vitamin A), the community health center loses money that could be made by curative services. The facility is also required to expend resources for transport, fuel for refrigerators, for repairs, and per diems unless external funding from NGOs is present. Another disincentive is that community members may become dissatisfied with local services if patients find no health worker present where facilities lack sufficient staff for both outreach and clinic-based services.

At the individual level, workers intermittently have financial incentives to provide immunizations, particularly in areas away from the center. The CSCOM is responsible for providing per diems, and money for transport; these are reported to be available only intermittently. However, the per diem paid for training is the same sum, and involves considerably less work. Campaigns provide per diems that are intended to cover operational costs, but which in fact help staff obtain a living wage.

In theory, the GAVI reward share could allow immunization services to compete with curative services, but fund disbursement is not visibly linked to performance at the operational level. Also the number of children immunized in a typical daily outreach session may only immunize one or two children with DTP3 and thus the funds generated by GAVI reward shares would perhaps cover costs (fuel, car costs, per diem, driver) but with little to spare. Well-planned outreach can optimize and rationalize the use of resources to some extent.

Table 1 Types of financial performance incentives and disincentives for immunization by level

Level of Health Services	Type of Incentive	Comment
Central Level	GAVI Funds pay for additional children vaccinated with DTP3 to central level	Linked to national performance. Increased funds distributed by MOH to lower-performing regions; not based on performance.
Regional Level	Microplans can be submitted for GAVI funds	Regions with lowest coverage selected to invite their districts to receive GAVI funds. Improved performance not rewarded.
District Level	Microplans can be submitted for GAVI funds	The funding of invited districts funding is based on microplans sent to region; not linked to performance improvements.
CSCOM, Community level	Presence of GAVI funds increases chance that microplans will be funded	Incentive to create microplans since they are more likely to be funded. However MOH directs funding to lower performing districts. Continued funding not based on improved coverage. -Moterscooters, vehicles decrease the work load significantly, increasing worker job satisfaction
	Curative Services	Generates funds that the CSCOM can use to pay for salaries and program funds. Entrance fee ticket and some fee for service care provided.
Individual level	Per diems for mobile and outreach for campaigns for vitamin A, measles, etc	Per diems, which compete against other services, are used by staff to supplement salaries.
	Per diems for training	See above

In addition to funding, another limiting factor for health services and immunization is the limited number of qualified health workers. At the community level, outreach activities pull health workers from the center and may leave facilities without staff to care for persons who seek services.

2.3. Health Financing

Mali has developed a ten-year strategic health plan that is based on primary health care. The Plan (PDDS) developed in 1998 covers two five-year periods (phase I: 1998-2002, and phase II: 2003-2007) and details the objectives and strategies of the PDDS. Annual Operational Plans (PO) are developed at the district level with community participation. After validation by the regional committees on orientation, coordination and evaluation, they are compiled into regional annual operational plans and sent to a technical committee for validation, consolidation and to be incorporated into the final annual national operational plan. The budget of this annual operational plan follows the national procedures.⁷ Financing for these operational plans is obtained through the state, communities and external partners.

The budgetary allocation for the health sector from the government state budget has increased from 5.03% in 1999 to 6.78% in 2004. Essentially, the budget went from 476,113,000 FCFA (\$888,271⁸) in 1999 to 767,110,000 FCFA (\$1,341,175) in 2004, or an increase of 61%. The fiscal year runs from January 1 to December 31.

Immunization is a priority of the MOH, and receives 26% of the 15,963,996 FCFA (\$29,784) earmarked for program funding of the central level budget.⁹ Mali has a budgetary line item for vaccines and related supplies in accordance with the Vaccine Independence Initiative. For greater accountability, this budget line item was divided into two in 2000: vaccines and technical supplies. In 2002, another line item was created for the purchase of gas. The districts receive their government funding through three different types of accounts: Account A is managed by the Direction Administratif et Financement (DAF), Account B is located at the regional level and Account C at the sanitary district level. In addition, there are many other accounts that receive partner contributions, for example from USAID and which allow for a direct support at the operational level.

⁷ Gouvernement de Mali (à GAVI). Rapport annuel de situation. Période Considérée: 2002. Date de soumission: 29 September 2003.

⁸ Standard conversion of \$1=536FCFA used in the text unless otherwise directed

⁹ MOH. Directive N 0983/MS/SG/DNS Object Demande de contribution au financement de la campagne de vaccination anti-tétanique 2003. 27/6/03.

2.4. Immunization Program

The immunization schedule in Mali is as follows:

Table 2 Vaccines used in immunization program in Mali 2004¹⁰

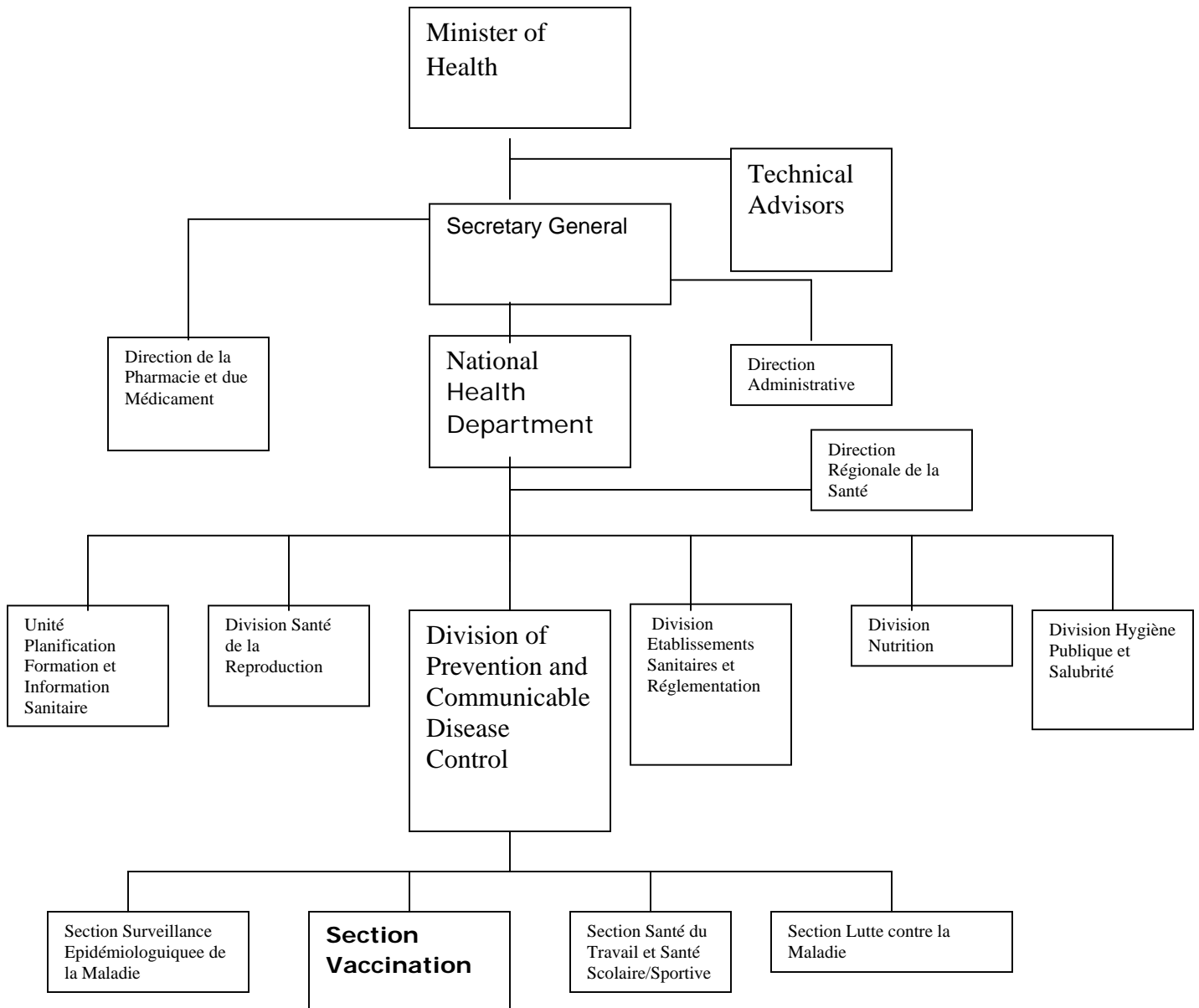
Antigens	Routine Immunization	Campaigns
BCG	Birth	
OPV	0, 6,10,14 weeks	Last case reported in 1999. National campaigns have ceased.
DTP	6,10,14 weeks	
Hepatitis B	6,10,14 weeks	
Measles	9 months	1998, 2001 9-59 months in urban centers, 2003-2005 campaign 3-36 months nationwide.
Yellow Fever	9 months	
Tetanus Toxoid	Women 14-49 years 0, 1 month, 6 months for the primary series. Booster dose 1 year after the third dose, Booster dose 1 year after the fourth dose.	July 2002 6 districts

2.5. Position of EPI in the Ministry of Health

The position of the immunization program (EPI) was lowered during the reorganization of the health services. The EPI in Mali began in 1986 as a vertical program in the *Centre National of Immunisation* whose chief reported directly to the Minister of Health. Since 1990 however, the immunization activities were lowered three levels as shown in the organization chart on the following page. In the years following this reorganization and decentralization, coverage decreased for all antigens according to both survey and data from on the routine reporting system.

¹⁰ Section Immunisation. Plan Strategique Pluri-annuel du PEV (2002-2005). September 2002. Division Prevention et Lutte contre La Maladie. Direction National de la Santé Secretariat General, Ministère de la Santé.

Figure 1



2.6. The ICC

According to national guidelines, the ICC should meet every last Thursday of the quarter or in case of need to validate documents submitted by the technical committee. It has been observed that the ICC meetings are not regular and it is a little dysfunctional. For example, in 2003, there was no ICC meeting between March 20 and November 10, 2003; this had negative repercussions on the process for allocating ISS funds.

Mali Case Study

The role of the ICC is to:

- Support the coordination of the various partners working in immunizations
- Mobilize resources which are necessary for the functioning of the program
- Monitor the implementation of the program

Since 2003, the ICC has been presided by the Minister of Health, with the secretariat being maintained by the Directeur National de la Sante. This committee is additionally comprised of partner representatives which support immunization, of which USAID, WHO and UNICEF are the most active.

The technical committee of the ICC is presided by the Directeur National de la Santé, with the secretariat held by the chief of the Section Immunisation. Other members of the technical ICC include the chief of the Division of Prevention and Control of Diseases, the chief of the financial division, the in-charge of the health information system, EPI technical advisors from technical and donor organizations, the NGO umbrella group, Groupe Pivot/Santé Population, and Rotary International.

This technical committee of the ICC should meet the last Friday of each month or by convocation of the President in case of need. It produces technical documents for submission to the ICC. According to the interviewees, this committee meets regularly.

2.7. Immunization Coverage

According to multiple measures and studies, between 1997 and 2000, immunization coverage declined by 10% or more for each antigen (according to WHO/UNICEF estimates adjusted for the data quality). Decentralization took place in 1996-1997, and was considered by many informants to be the principal cause of the decline. Under decentralization, local health centers became responsible for the funding of immunization activities under the oversight of village health committees (ASACO). Shortages of fuel for refrigerators, outreach, lack of per diem to pay staff to pick up vaccines, and the need for health staff to work in curative care to generate funds for the health center were cited as possible reasons why immunization rates declined after 1997.

According to MOH administrative data provided to the study team by the WHO/Mali office, the trend started to reverse for some antigens, starting in 2000 as indicated below.

Table 3 Comparison of Vaccination Coverage from MOH Administrative Data, Joint Reporting Form Official Country Estimates (JRF/OCE), and WHO/UNICEF Best Estimates, Mali, 1999-2003.

Year	BCG			DTP-1			DTP-3			Measles		
	MOH	JRF/OCE	Best Estimates	MOH	JRF/OCE	Best Estimates	MOH	JRF/OCE	Best Estimates	MOH	JRF/OCE	Best Estimates
1999	70%	99	74	71%	NA	NA	51%	83	44	52%	99	43
2000	73%	96	69	76%	97	NA	52%	93	40	53%	99	39
2001	81%	98	68	83%	92	NA	61%	92	51	61%	99	51
2002	94%	84	73	97%	88	NA	74%	84	57	64%	98	57
2003	85%			100%			79%			72%		

From the above, it is clear that different understandings of trends emerge from different sources of data. The origin of the different estimates generated by the Joint Reporting Forum and the WHO/UNICEF best estimates was unclear to people interviewed, who could not explain the differences in directions of trend indicated by different data sources.

Coverage for two doses of TT vaccine for women of childbearing age is estimated by WHO-UNICEF to be 32%. Official country estimates reported coverage in 1999 and to be 62%; 18% in 2001 and 44% in 2002. The number of neonatal tetanus cases reported declined from 365 in 1990 to 168 in 2000 and 37 in 2002

2.8. Status of Immunization Initiatives

2.8.1. Polio Eradication

Mali currently has no circulating wild polio virus. The surveillance system is reporting acute flaccid paralysis (AFP) above the background rate of 1 case of non-polio AFP per 100,000 population under 15, indicating the capacity to detect polio cases if they were occurring. This success in polio campaigns and surveillance has allowed the program to discontinue national immunization days (NIDs). Vitamin A distribution, once tied to NIDS, is given in periodic mobile outreach activities.

Mali Case Study

2.8.2. Neonatal Tetanus

Some 72% of districts have more than 1 tetanus death per 1,000 live births, and are thus considered to be at high risk for neonatal tetanus in Mali. The three-year plan for neonatal tetanus has four strategies:

- Reinforce TT vaccination given in routine services
- Vaccinate all women of child-bearing age (15-49)
- Improve surveillance of neonatal tetanus, including the use of polio surveillance staff to identify additional areas needing attention and to reduce the under-notified cases.
- Promote safe births by encouraging use of sterile razor blades, handwashing etc.

Remaining funds (218,291,150 FCFA¹¹) for NIDs are being redirected to the campaign against neonatal tetanus. Some 20 high risk districts will be targeted for efforts with funding sought from UNICEF (412,798,600 FCFA or \$770,147), Save the Children-US (70,000,000 FCFA or \$130,597) and other partners (218,291,150 FCFA or \$407,260).¹² Reportedly, some GAVI funds from the May 19, 2003 wire were used in this effort.

Recent local rumors confusing tetanus with contraception were reported by staff visited in Bougouni and are of concern to staff organizing the campaign.

2.9. Recent Immunization Program Initiatives

In recent years, immunization-related initiatives have included polio eradication, campaigns against neonatal tetanus, and planning for large scale participation in measles campaigns. As the disease-related initiatives have changed, the program's approaches have changed to include:

- Creation of lines in the state budget for the purchase of vaccine, fuel, and supplies. (This required action at the parliamentary level.)
- Micro-planning for mobile teams and adoption of outreach to reach populations 15 km or more from fixed services with a minimum packet of health services including vitamin A, folic acid, etc.
- Operational research, including use of UNIJECT® filled with hepatitis B and given in the home.
- Use of the approach of the Integrated Management of Childhood Illness for the systematic treatment of diarrhea, fever and pneumonia, including an assessment of the need for immunization.

¹¹ Exchange rate as of 4/2004 is approximately 530CFA/1US\$.

¹² MOH. Directive N 0983/MS/SG/DNS Object Demande de contribution au financement de la campagne de vaccination anti-tetanique 2003. 27/6/03. Page attached.

Mali Case Study

- Use of performance contracts - signed agreements from community associations to commit to giving specific contributions towards immunization activities that aim to increase coverage of DPT3 to 80% and tetanus toxoid (TT) vaccination to 50%. (Contracts are reportedly made also for prenatal care, and malaria and HIV control strategies, but no contracts with these objectives were observed.¹³)
- Integration of EPI into the decentralized health plan (PRODESS) and debt relief schemes.
- Renovation of the cold chain with support from the governments of Japan and Luxembourg.
- Shifting responsibility for the management, maintenance and repair of the cold chain at the local level to the community organizations rather than the ministry of health.
- Receipt of aid for vaccine procurement by Appui au Renforcement de l'Initiative Vaccinale en Afrique Sahelienne (ARIVAS), by an accord between the government and UNICEF. This is in conjunction with the Vaccine Independence Initiative.
- Adoption of the opened vial policy to try to reduce the wastage of vaccines in multi-dose vials
- Improvement of the safety of injections by switching to single-use only, auto-disable syringes and disposal of syringes without recapping into safety boxes.

3. GAVI-Associated Developments

3.1. Application process:

Information about GAVI and the availability of funds to support immunizations was transmitted through the ICC. Donor partners provided information concerning the criteria for countries to access these funds and the Mali government developed an application to support the immunization program. Based on impressions from all contacted, one or more members of the MOH, the Secretary General and Technical Advisor initiated the decision to apply for funds. The Minister of Health then appointed a committee to write the application. The committee had representation from MOH, UNICEF, WHO, USAID, regional medical officers and NGOs. The most active members were the MOH, UNICEF and WHO.

In order to prepare the GAVI application for ISS funds, a technical committee comprised of the EPI Technical Advisor, the Director of EPI, the district medical officers from districts from

¹³ BASICS II. Le Contract de Performance. Experience Malienne pour accoître la participation communautaire aux activités de santé. Powerpoint presentation given at regional EPI meeting in Dakar April 2004.

Mali Case Study

partner programs, in particular, WHO, UNICEF, and BASICS. The role of the ICC in the application process was to review and approve the application developed by the technical committee and to submit it to GAVI.

The GAVI funds were intended to improve coverage in low performing areas by improving vaccine storage, implementing outreach and mobile strategies in order to increase immunization coverage, and to provide computers to improve data management. The Minister and top MOH leadership had already identified the need to computerize the health information system and to provide transport to reach outlying populations. In addition, it was felt that the flexibility of the GAVI funds would allow them to finance these activities and to fill the gap left by other funding for local immunization planning.

Mali submitted its first request to GAVI in June 2000 for immunization services support (ISS) funds and for the introduction of new vaccines. Since the DTP3 coverage rate was less than 50% (estimated to be 32% according to the most recent coverage survey), only the ISS account was approved, with conditions. The final application was approved in July 2000. Mali received a preliminary approval for the ISS account for \$1,716,000 which was wired in 3 tranches: \$429,000 received on December 29, 2000, \$429,000 received January 22, 2002 and \$858,000 received on May 19, 2003.

In May 2001, Mali submitted its second application for introduction of new vaccines (yellow fever) and injection supplies. Mali was approved for yellow fever vaccine in November 2001 and 382,200 doses were received on April 5, 2002. After Mali fulfilled the condition of preparing an injection safety plan, Mali was approved for the injection safety account in November 2002. In April 2002, Mali submitted an application to introduce hepatitis B vaccine, and this vaccine arrived in Mali in 2003.

3.2. Target setting

Immunization coverage targets had to be developed specifically for the GAVI proposal, as the national goals were expressed in terms of a reduction in mortality for vaccine- preventable diseases and not a national increase in coverage. Specific information is not available on how these targets were decided.

In the year of the application, 1999, DTP3 coverage was 46% based on the MOH reports of number of doses administered, 52% based on the government official estimate and 44% based on the WHO/UNICEF estimates. The June 2000 ISS application proposed to increase the number of DTP3 doses given from 186,795 in 1999 to 272, 584 in 2001. This was considered to be an increase of coverage to 65%, and would mean they would need to increase the number of doses given by 145% from one year to the next.

Mali Case Study

At the same time, other immunization coverage targets were in use. At the periphery, the stated goal in the performance contract ¹⁴ between the MOH and the community level CSCOM members in 2000 and 2001 was to achieve 80% coverage for DTP3 and 50% for TT2.

The MOH issued one communication about the goal of the GAVI funds. It stated that in districts with DTP3 coverage below 50%, the goal was to improve coverage from 47% to 55%, while in districts with coverage above 50%, DTP3 coverage should be increased from 55 to 69% ¹⁵ In principle, the MOH intended that the GAVI funding be used for the districts with the lower coverage. In summary, multiple goals were proposed that are not entirely consistent with each other.

4. National level

4.1. ISS planning and allocation process.

The ICC is involved in the strategic direction and utilization of ISS funds. The ICC authorizes the utilization of funds and the ICC president submits a request for the use of ISS funds to the Ministry of Health Accountant. In keeping with the spirit of the objectives of the ISS funds, the ICC decided to give priority to allocating the funds to the operational level (districts) because districts are directly responsible for implementing immunization activities. Based on the financial needs expressed in the immunization microplans of the districts, the majority of the funds in 2001 and 2002 was allocated towards capital expenditures (cold chain, motorbikes, vehicles and computers). This was due to lack of functioning equipment available at the district level for implementing outreach and mobile strategies to immunize a greater number of children. It was known that certain districts, of which some were in Mopti and some in Kayes, had difficulties in implementing the outreach strategy because they had not had a vehicle in 2 years. The outreach strategy is responsible for vaccinating 60% of the targeted regions.

Out of a total of \$429,000 wired by GAVI in 2001, capital expenditures (vehicles and cold chain) absorbed 57.4% of resources, with recurrent expenditures absorbing 42.6%. In 2002, out of total of \$552,044 (2nd tranche plus \$100,000 for new vaccines and leftover from 2001), 67.1% was allocated toward computerization of immunization data at the district level. In 2003, cold chain equipment and yellow fever campaigns absorbed the bulk of resources (to verify because the progress report is not yet available) (25-26). In 2002 and 2003, financing of a plan to computerize districts was a priority expressed by the ICC as a means toward improving the management of health information.

Activities supported by ISS funds fit within the framework of activities already planned in both the multiyear plan and the operational plan of a given locality. Unplanned activities which do not

¹⁴ The contract de performance at the community level does not link financing to performance. It is an agreement to provide resources to work toward a goal.

¹⁵ Author unknown. Received from DAF. Rapport Concernant l'Utilisation des Fonds GAVI Mis a la Disposition du Ministre de la Santé. Date unknown, assumed to be after the GAVI Application was approved in 2000.

Mali Case Study

fit into these two plans cannot be funded. ISS funds complement the contributions from the state to achieve the objectives designated by the PRODESS.

To access the first two tranches of ISS funds, Mali took four to six months between the request of funds (or the submission of the progress report) and the receipt of funds. The wire of the third tranche of ISS funds took much longer: received in May 2003, it took nine months (counted from the submission of the progress report), which had consequences in delaying the implementation of activities planned for this year (15, 25, 26).

During a ceremony organized in 2001 in the region of Mopti, with the presence of partners, the Minister of Health officially launched GAVI supported activities. The regional and district medical officers obtained information through technical meetings organized by the MOH. No specific day or workshop was organized to present the different types of support for immunization that GAVI provides to developing countries. The terminology usually used when talking about ISS funds in Mali is “GAVI funds”.

The only criterion for the allocation of ISS funds is the presentation of a microplan judged to be realistic by the technical committee and the ICC. This microplan must be accompanied by a performance contract which engages all relevant actors in terms of the financing of the preliminary budget and the implementation of activities planned in the given district. The allocation of funds is based neither on the immunization coverage nor on the level of performance; whether the coverage is high or low, whether the district is a good or bad performer, neither matters in the allocation of ISS funds. The Division of Administration and Finances of the MOH manages the purchase of equipment by consolidating them and following the procurement guidelines.

4.2. Communication about GAVI

At the national level, some people had received information directly from GAVI or the website, and via meetings with partners that had been called to discuss the funding. The EPI manager also attended a meeting in Geneva in 2003 with the GAVI partners.

The national level of the MOH communicated via regional meetings about the existence of the GAVI funds. The region of Mopti was the first region that was approached and invited to have districts submit microplans. The districts in Mopti, Kayes, and Gao were told that funds were available and they could submit microplans to improve their immunization coverage, and that a fund would be available to cover the plan. These regions had the lowest coverage at the time that funding was received, although the districts who received funding were not necessarily the lowest performers because the final selection was based on the district’s ability to draft and submit a micro-plan.

Specific language was not used to describe the investment shares or reward shares by persons at any level. Persons referred to the *argent de GAVI* (GAVI money) and distinguished between the types of funds by referring to the funds of year one, year two, year three. They not distinguish between the funds in the different accounts.

Mali Case Study

4.2.1. Problems of translation

It is possible that language and culture issues entered into the understanding of the GAVI shares. First, much of the information about GAVI arrived in English and required local people to read it and try to translate it orally for others. Some of the key concepts had words with multiple meanings that might have been misunderstood in casual translation.

For example, the GAVI information spoke of *investment shares* and *reward shares*. Mali is a French speaking country with many people who speak some English who also speak French as a second or third language. To GAVI, “investment” has the connotation of a purchase which might create additional wealth in the future through interest or an increased financial yield. *To invest* is translated as *investir*. However, on the budget reports, *investissements* is a line item for capital expenditures, typically cars and durable items. This has the connotation, of hard goods -items that are solid and will be present in the future. Thus, it is not surprising that investment shares were used to buy to be *investissements* (capital expenditures) – refrigerators, computers, cars and motorcycles.

Secondly, the notion of a “share” in the GAVI sense implies partial ownership with a personal right to receive a dividend or yield. This business model was not understood by most interviewees. It was not understood by persons who had been briefed on the GAVI concept except at the highest level. A person looking up “share” in the English/French dictionary would first come across *partir*, the meaning to divide among others. This is more consistent with the MOH use of reward shares, and was the most common definition given when persons were asked to explain the word “share”. The money gained from additional immunization, “the reward shares” was divided at the national level, and we were told, shared with the lower performing districts. This is also consistent with the existing philosophy of EPI, the MOH, and UNICEF to try to achieve equity.

Secondly, the turnover of persons with the MOH, UNICEF, USAID and EPI is high. Only one of the persons we spoke with had worked on the GAVI application since the beginning. Each one had to learn about it from the current written information, without the benefit of being able to consult minutes of the past meetings in which it had been discussed. A common understanding of the process, and an institutional memory of why certain decision had been made was lacking. Minutes existed but not in a place or form easily accessible to many of the partners.

At lower levels, the existence of the GAVI ISS funds was mentioned as one item on a meeting agenda, but written information was not distributed and the process of how to calculate shares was not discussed. The one written communiqué¹⁶ about the GAVI funds, was given as follows:

“A microplan involving all involved in local immunization is required,
The first tranche of money for the first year would be 25%
The second tranche for the beginning of 2002 would be 25%

16 Author unknown. Received from DAF. Rapport Concernant l'Utilisation des Fonds GAVI Mis a la Disposition du Ministère de la Santé.

Mali Case Study

And the last tranche 50% at the end of the second year of the program would be 50% depending upon the presentation of a report and the results obtained.”

The explicit link between increased number of children vaccinated with DTP3 and shares was not discussed. Also at the national level, the shares were considered to be linked to national increases in performance, and no plans were made to increase or continue funds to district or regional areas that increased their performance. Both district medical officers interviewed said that they considered it a fair use of funds to give reward funds to poorer performing districts if they increased coverage, and the national level received an increase in funds. But the national level decided to use the funds where they were needed regardless of whether the district had improved the coverage. Because transport, per diems, fuel, are needed for transport to reach the populations, it is understood that without these funds, one can not increase coverage.

4.3. Understanding of GAVI

According to interviews, the process linking funding to the number of DTP3 doses given is not generally understood. While persons at the national level and some at the district medical officer level understood the general concept that ISS funding is linked to an increase in immunization performance, few understood that the country would receive additional funds if the number of children vaccinated with DTP3 increased in a defined year. At the national level, people understood that reward shares were linked to DTP3 coverage, but not that it was linked to the number of doses given. One very senior health lead had the impression that attention should be focused on improving the population estimates to obtain more GAVI funds.

4.4. Management of ISS Funds

Initially, GAVI was instructed to wire funds into the “Project account” of the MOH. This account has existed for many years and was not specifically created for GAVI. Other donor funds are also wired into this “Project account.” Signatories for the “Project Account” are the Minister of Health, the Director of Administration and Finance of the MOH and the Public Accountant of the Treasury. According to the information which we have been able to obtain, the “Project Account” is audited internally and externally each year (25).

However, in 2004, the National Directorate of Health (NDH) opened a sub-account specifically to receive funds wired by GAVI. This account is subject to the same auditing procedures as the “Project Account”. The signatories on the GAVI account are the National Director of Health, the Chief of the Division of Prevention and Control of Diseases, the EPI Manager and the Immunization Program Accountant. This was done for reasons of visibility and accountability for the Direction Nationale de la Sante and the immunization program which previously had not been notified about the wire transfers by the Directorate of Administration and Finance (DAF), even though it was up to the Regional Directorate of Health to notify districts about the availability of funds after the transfers were made by the DAF. According to the National Directorate of Health, this has delayed the disbursement of funds and the implementation of activities by cercles/districts.

Mali Case Study

In order to access ISS funds, districts must prepare a microplan for submission to the ICC along with a performance contract. The original receipts are sent by districts through the NDH to the DAF for verification and reconciliation. No further funds can be released if the microplans are either partially or fully funded through ISS funds and the receipts are incomplete or judged to be unsatisfactory by the DAF. As a result this has delayed the implementation of new activities from the microplan which were supposed to be supported by this financing.

4.4.1. Delays in disbursements

Requests for ISS funds are prepared by the technical committee which submits them to the ICC for examination and validation. The delay between the request for ISS funds to GAVI and the receipt of the 1st tranche of ISS funds in Mali was 6 months, 8 months for the 2nd tranche and 12 months for the third tranche.

In-country, the delay between the receipt of the first tranche of ISS funds from GAVI and the first disbursement varies. In fact, approximately 1.5 months for the first tranche and 3 months for the second and third tranche went by (15). Without the exact date of the submission request for financing, it is not possible to comment on this delay.

In 2003, the unavailability of funds from the third tranche at the central level for 5 months, delayed activities. This long delay was due to lateness in GAVI wiring funds to Mali. Therefore, the implementation of microplan activities supported by ISS funds was delayed.

According to the interviewees, the delays in the disbursement of ISS funds were due either to the irregularity of ICC meetings, negligence in the maintenance of files, delays in the development of microplans, and therefore a lack of synchronization between the moment during which funds are available and the presentation of requests for the financing of microplans.

4.5. Utilization of ISS funds.

ISS fund expenditures increased between 2001 and 2002 by 83% due to the computerization of the cercles whereas we observe a strong decrease in 2003 due to recurrent expenditures consuming most of the resources.

The funds for the microplan are released separately to the regions. The regional administration notifies the district that the funds are available, and then they request funds for specific purchases and activities identified in the plans.

5. District level

The allocation of ISS funds to districts is not based on any clearly defined criteria, nor any reward system nor any mechanism for equitable distribution. Decisions for the allocation of ISS funds at the district level were made in a deliberate manner with full participation of the stakeholders of the district.

5.1. Planning and allocation process

In general, to prepare microplans, districts first prepare a diagnostic of the current situation in terms of the immunization program, including immunization coverage, and justifications of performance and non-performance. The microplan then includes:

- Definition of district, by village, by health facility catchment area and by realistic immunization coverage (DTP3) levels
- Definition of strategies and activities to implement
- Definition of mechanisms and indicators for monitoring and evaluation.

A preliminary budget is determined (capital and recurrent expenditures) and funded by various actors in the field. The financing gap between partners and the budget is the subject of the request submitted to the ICC.

Microplans and performance contracts developed by districts during the last quarter of the year are collected at the regional level, which then forwards them to the EPI at national level. The EPI then sends them to the National Directorate for Health which, then submits them to the technical committee of the ICC. The technical committee can either reject, amend or propose changes on the microplans before presenting them to the ICC for validation.

When the financing requests are approved by the ICC, the Minister of Health, who is the President of the ICC, orders the disbursement. Regions interested in receiving the funds first receive funds in “Account B” from the Regional Directorate by wire transfer and then into “Account C”. After notification of the availability of funds from the National Directorate of Health, the districts have access to the ISS funds. These funds are located in the district accounts.

The process for the planning and allocation of ISS funds was not in conflict with the planning system of the PRODESS at the district level since the planned activities in the microplans (last quarter of the year) are pulled from the annual operational plan and are specifically directed to support outreach and mobile units. It is the body that serves as the locus of decision-making that differs between standard MOH planning and planning for GAVI: for financing the operational plan, the decision making power is held by the committee of the PRODESS whereas for the microplans it is the ICC.

In 2001, all ISS funds were disbursed, and 204,380,472 FCFA (\$294,497¹⁷) was allocated to health districts. No activity at the central level was funded in 2001, whereas in 2002, the central level absorbed 3.4% of the 353,131,659 FCFA (\$18,677¹⁸) of total ISS expenditures to cover the costs related to the maintenance of equipment, general fees and the acquisition of computers.¹⁹

In 2001, Bougouni district introduced a request of 9,929,405 FCFA (\$18,525) to cover the financing gap between the budget need and the partner contributions and cost-sharing

¹⁷ \$1=687 FCFA 2001

¹⁸ \$1=650 FCFA 2002

¹⁹ Gouvernement de Mali (à GAVI). Rapport annuel de situation. Période Considérée: 2002. Date de soumission: 29 September 2003.

Mali Case Study

contributions. In the end, Bougouni only received 3,667,000 FCFA (\$6,841) in cash, of which the categories for funding were never clarified. This posed many difficulties including having to prioritise activities and implementing partially funded activities. These funds were allocated mostly to the mobile strategy and supervision.

In 2002, this district developed a new microplan and signed a performance contract. However, its request for financial support to implement the microplan was declined and it received neither funds nor notification about the rejection of the request. This has demotivated the actors of the districts.

5.2. Management of ISS funds

The ISS funds are kept in a non-specific account at the district level. During the technical meetings, the regions and districts were informed of the existence of GAVI funds to support immunization. Nevertheless, we observed a lack of communication concerning the availability of ISS funds. In the district of Ouéléssébougou, we did not speak with the district medical officer and his assistant was not privy to any financial or funding information. Ouéléssébougou did not receive GAVI funds, and it is not known if they submitted request for funds. The lower personnel interviewed were not aware of GAVI funds. In the district of Bougouni which obtained support in 2001, lower personnel interviewed were also not aware of GAVI funds.

5.3. Utilization of ISS funds

ISS funds have been used in three principle ways.

1. The Ministry wished to improve the health information system and used the funds to purchase computers for the district level.
2. Transport was purchased – cars, motor scooters, motorcycles, motorboats. The lifespan of a vehicle in Mali is three years, so support for vehicles is continually needed.
3. Funds were used to pay for immunization outreach activities planned for approximately 20 districts. The rationale was to fund microplans submitted by districts that have been selected by the MOH.

Mali Case Study

More details of expenses are shown in the table below.

Table 4 Allocation of GAVI Funds in 20 District Level Microplans, 2003²⁰

Item Funded	Percentage of funds
Cold Chain Equipment	3.65%
Equipment for outreach	69.35%
Recurring costs for outreach	15.5%
Social mobilization, supervision, miscellaneous costs	11.7%
Total	100%

Table 5 Allocation of ISS funds, 2001 & 2002

	2001		2002	
	\$	%	\$	%
Vaccines	0	0%	0	0%
Injection supplies	3,102	1%	0	0%
Personnel	13,528	3%	0	0%
Transportation	13,947	3%	0	0%
Maintenance and overhead	6,017	1%	17,400	3%
Training	5,715	1%	6,939	1%
IEC/Social mobilization	1,810	0%	78,547	14%
Outreach	0	0%	0	0%
Supervision	0	0%	0	0%
Monitoring and evaluation	0	0%	3,120	1%
Epi. Surveillance	7,090	2%	0	0%
Vehicles	189,167	44%	0	0%
Cold Chain Equipment	57,120	13%	1,662	0%
Computers	0	0%	370,688	68%
Other	0	0%	64,923	12%
Unspent Funds	131503	31%	69,305	13%
Total	429,000		543,279	

Source: GAVI Progress Reports 2001 & 2002

20 MOH. Carte 26/ Juin 2003. Comité Technique (CCI) Decision N0824/MS-SG.

Mali Case Study

In general, activities planned with GAVI funds were carried out. However, stock outs at the national level interrupted planned activities. According to WHO²¹, in 2002 at the national level, there was no BCG vaccine for 157 days and no measles vaccine for 37 days. In 2003, there was no BCG vaccine that could be used to restock the regions and periphery for 167 days; no DTP for 5 days, no measles vaccine for 13 days and no Hep B vaccine for 65 days. The shortage of BCG was attributed to a global stockout, whereas the other shortages were attributed to delays in sending the requests for vaccine. Stock surpluses were also noted that were attributed to not taking stock of available vaccine when placing a new request.

There have also been initial shortages of AD syringes. Some districts delayed immunization initially while other districts resumed use with sterilizable syringes that they had on-site. Informants said that except for HIV services which use single-use syringes, the curative services typically use sterilizable syringes. This was not observed.

5.3.1. Innovations in use or planning sparked by GAVI funds

The arrival of the GAVI funds in Mali coincided with WHO and UNICEF's expansion of micro-planning to district level planning. USAID and WHO funded a train the trainers course for the district level micro-planning. Regions tried to continue the training for the districts below, but reportedly encountered difficulty. Additional technical assistance was sometimes provided to districts before and/or after submission of a microplan for immunization outreach activities. The availability of funds for these activities motivated committees to actually write them. The discussions were finalized with a performance contract, in which local community partners and the local health committee signed a commitment to participate in the plan and work together towards goals. These were typically to increase DTP coverage to 80% and increase TT2 coverage to 50%.

In initial efforts to get money to the field as fast as possible, given existing bureaucracy, disbursement of funds to the field sometimes occurred prior to review and approval of the microplans. Even so, funds sometimes arrive months into the quarter of planned activities. Those involved in the process suggest that plans should be reviewed earlier in the year at the central level. Currently they are reviewed in November and December.

The use of ISS funds, in the presence of other plans of other partners and their important activities, was perceived to be very important because it funded the gaps, the purchase of vehicles and some cold chain equipment. A large number of Malians live further than 15 km from a community run health post, and are reached for immunization by outreach activities.

The MOH decided to purchase computers with GAVI funds, for a pre-defined need. While this was consistent with the MOH's analysis of their key needs, the decision was made without the consultation or concurrence of partner agencies.

21 WHO quoting stock reported from the Extrait Registre du Mali 2002 held in the office of the Centre National de Immunisation.

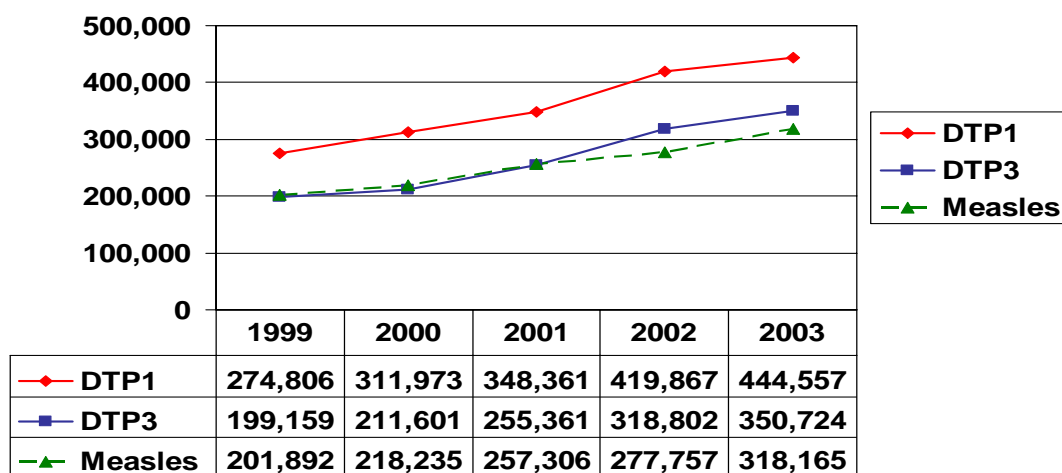
6. Changes in outcomes associated with use of ISS funds

As alluded to earlier, and as detailed in section 6.1, the significant problems with data quality, the inconsistency of data across sources, and the lack of information about disbursements of ISS funds to districts in Mali limit the ability to make meaningful analyses of the potential impact of ISS funds on immunization performance.

According to administrative data generated by the MOH and provided to the study team from the WHO/Mali office, the numbers of doses of BCG, DTP1, DTP3, and measles administered have steadily increased nationwide between the GAVI baseline year of 1999 and 2003. Funds were received in the end of 2000 and disbursed to the field in 2001 and 2002. Data for DTP1, DTP3, and measles are shown below.

Figure 2

**Number of Doses of Vaccine Administered,
By Antigen, Mali, 1999-2003**
(Source: Administrative data provided by WHO/Mali)



This graph suggests that these three childhood antigens correspond closely to the same trend of steady improvement, but that there is substantial drop out between DTP1 and the later doses of DTP3 and measles, as shown below:

Table 6

Drop-out rates for selected antigens, Mali, 1999-2003

	1999	2000	2001	2002	2003
DTP1-3	28%	32%	27%	24%	21%
DTP1-measles	27%	30%	26%	34%	28%

These rates far exceed WHO targets for drop-out rates of 10% or lower. While DTP1-measles drop out can be expected to be higher than DTP1-3 because of the generally longer lag period between DTP1 and measles than DTP1 and DTP3, the increasing divergence between the two rates in 2002 and 2003 bears further monitoring.

In a situation such as Mali's, where some districts received ISS funds and some did not, it would seem appropriate to compare changes in performance between recipient and non-recipient districts. However, for such a comparison to be meaningful, some information is needed about the districts: how do ISS recipient districts compare with non-ISS districts relative to population size, geography and infrastructure, other donor inputs, baseline year performance, and local health priorities? In Mali, the degree of uncertainty is amplified by the fact that critical information about ISS inputs was unavailable, specifically, the amount and timing of ISS funding that districts received. The only information about disbursements indicated which districts (27 in total) received any ISS funding at any time since 2001. Thus, while it is easy to generate such comparative analyses, in the absence of such critical information, they are too difficult to interpret, raising more questions than they answer, and are potentially misleading. To underscore this issue, one such analysis is presented below, comparing changes in DTP doses administered and coverage between the group of 27 districts who received any ISS funding at any time and the group of non-recipient districts.

Table 7 Difference in DTP3 doses administered between ISS recipient and non-recipient districts

	# DTP3 Doses Administered				% DTP3 Coverage	
	ISS Recipient districts		Non - ISS Recipient districts		ISS Recipient districts	Non-ISS Recipient Districts
	Total # doses	Increased # doses over previous year	Total # doses	Increased # doses over previous year		
1999	93,442		121,847		46	54
2000	96,161	2719	85,423	-36,424	46	54
2001	125,704	29,543	128,087	42,664	59	61
2002	140,448	14,744	119,671	-8416	75	78
2003	189,657	49,209	131,754	12,083	77	87
Sum of increased # of doses		96,215		9907		

This table suggests that 9.7 times as many additional doses were administered in the group of districts receiving any ISS funds at any time, relative to the group of districts that received no GAVI funds. Such a dramatic difference raises many questions that are unanswered: for example, why was such a steep drop in doses administered between 1999 and 2000 seen *only* in non-GAVI districts? Did the population size of the two groups of districts remain constant over time? What factors led to the great variability in trend that is seen only in the non-GAVI districts? It would be tempting but probably misleading to conclude from this analysis that GAVI funding is associated with an almost tenfold increase in additional DTP3 doses administered (relative to non-recipient districts). This questionable nature of this conclusion is compounded by the fact that much of the ISS funding was used at national level in ways that were intended to benefit all districts in the country, e.g., through the provision of computer equipment for all districts.

The issue of attribution to ISS funds of nationwide improvements in doses administered is also difficult. The increase in immunization rates after 2000 occurred after ISS funds were received in Mali. However many other significant immunization strengthening activities were also continued by partners such as UNICEF, E.U., WHO, USAID, JAPAN, the Netherlands and the University of Maryland and others. It is difficult to attribute individual impact since many of the low performing districts that received GAVI funds also received funding from other donors at the same time, and the programming was deliberately synergistic: WHO trained in microplanning, and BASICS helped formalize commitments in the microplans by modeling use of performance contracts. Japan purchased cold chain equipment and the community level plans were to provide

Mali Case Study

for maintenance. EPI officials said that their goal was to be equitable – and when plans were presented, GAVI funding was sometimes used to fill gaps.

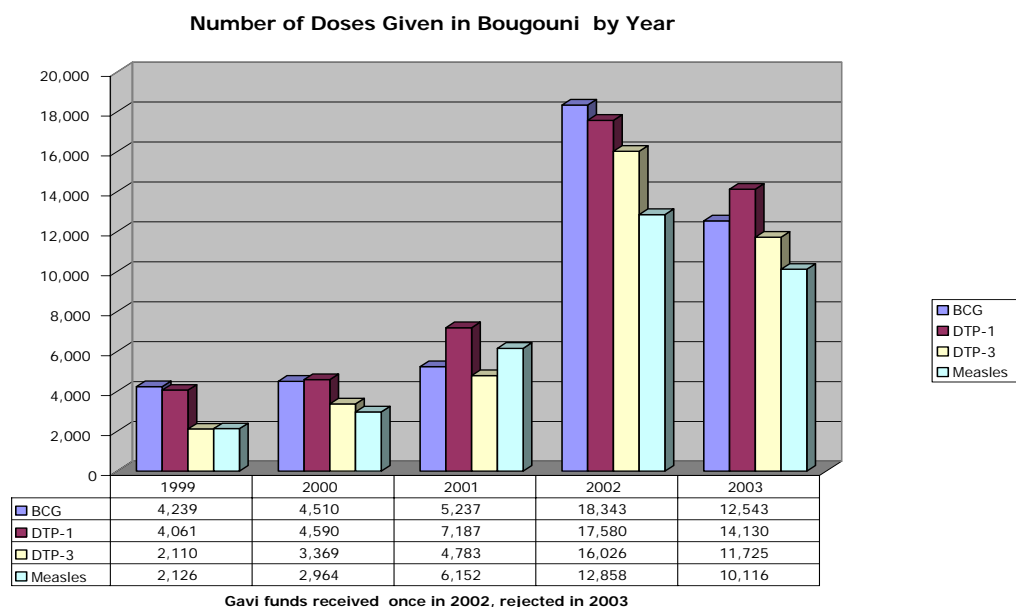
At district level, the ISS funds were added to the pool of funding sources used to support immunization. The MOH's philosophy was to aid areas according to their low coverage and their capacity to absorb and manage funds. Districts received varying amounts of funds, and efforts were made to meet the needs for all districts that submitted good plans through typically only 20-30 of 58 districts were funded each year.

In sum the attribution of impact at district level is difficult because:

- The districts that received GAVI funds differ from those which did not. The MOH selected regions with lower coverage, and invited districts to submit microplans because superiors thought them capable of implementing and managing additional funds; these districts received training to develop microplans and assistance from the regions and center to improve them. Those which did not submit adequate or “realistic” plans were declined funds.
- Information showing the duration, the period and the amount received by districts was not available; it was only known if the district had received funding anytime between 2000 and 2004 and that the districts in Mopti and Gao were among the first financed.
- Multiple partners were cooperating on multiple activities that probably had synergistic effects aiding in planning, cold chain rehabilitation, planning, social mobilization, and vaccine management. Some districts had multiple sources of funds and others none.

In the district of Bougouni, funds were received once in 2002 for a microplan. The “official” information for their statistics from the central level is reported below. Even though they increased their immunization performance, the next year their funding request went unanswered. The *medecin-chef* said that it then because difficult to get partners to engage in joint planning since no one felt that funding from outside sources would be received.

Figure 3

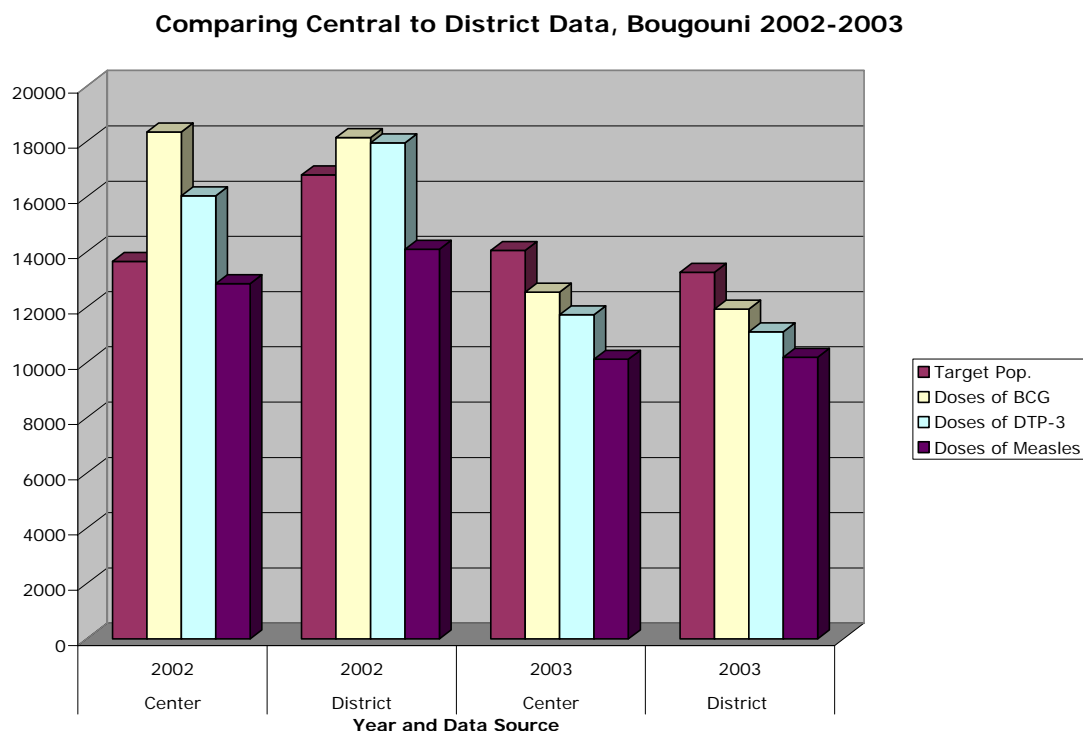


6.1. Quality of data

As identified by the Data Quality Audit, data quality remains an issue. A variety of inconsistencies were found at the local level, below the level at which computerization occurs, so computerization alone will not improve the reliability and the validity of the data. Information on both the number of doses given and coverage, which sometimes exceeds 100%, show inconsistencies. Examples were found of monthly reports whose totals of immunizations given differed from their composite reports; different reports quoting the same source gave different doses and different coverage. Information on measles trends moved in the opposite directions from data gathered at the health delivery level. Numbers quoted on the GAVI annual reports do not clearly distinguish between targets and accomplishments and are another source of confusion. Information from EPI and WHO and the Districts did not match always the information reported on the reports to GAVI. Staff also did not distinguish between WHO/UNICEF between adjusted estimates of coverage from past activities and projections. Target populations and numbers of doses administered as reported at district levels sometimes differ from those reported by the national level. An example is shown below²².

²² MOH and WHO, Examples of Microplans, including past number of immunizations reported by Districts, Sikasso, Bougouni, 2001.

Figure 4



On a positive note, a supervisory team had visited the two districts seen by the consultants to discuss how to improve their immunization records. And it is noted that in this example the variability has been reduced in 2003 compared to 2002. WHO staff said that reporting in 2003 for both surveillance and immunization delivery from the field to the central level was reported to be complete and timely. Reports for 2003 were available at the central level when requested in April of 2004.

At the global level, WHO and UNICEF compile available information for all countries about immunization coverage from the five and sometimes seven differing sources. In Mali, some data from measles coverage after 2000 show a decline while other sources showed an increase. For example from the years 2000 to 2002, WHO/UNICEF estimates that the measles coverage fell from 49% to 33% while the coverage estimated from administrative sources based on the number of doses administered rose from 52% to 64%.²³ Neither MOH nor WHO staff knew the reason for the difference, but speculated that perhaps additional measles doses had been given outside the age range but during clinic sessions. They speculated that UNICEF and WHO staff reported only the children immunized age 11 months, while the MOH reported all doses given regardless of age during routine immunization and outreach. This would explain the difference in the rates, account for the increased numbers of doses given, but not give the reason for the decline immunization of children 0-11 months of age.

23 WHO/UNICEF. Review of National Immunization Coverage 1980-2002. Mali. October 2003. WHO.

Mali Case Study

At a local level, inconsistencies existed between the stock used as reported on the stock sheet, and the doses administered on the monthly tally. For example, in Bougouni-EST, the March 2004 stock tally sheet reported 60 doses of BCG administered. The number of BCG doses administered by the individual daily sessions of March 2004 was 78 doses were in 16 sessions (number of doses of BCG per session 2,5,3,6,4,12,5,10,7,2,2,7,2,0,5,6). BCG vaccine has no preservative and cannot be stored for more than 6 hours after opening, because vials could become overgrown with microbial contamination. Thus for 16 sessions, one would need 16 vials, unless more than one session was provided in a day. Only 5 vials were reported to have been used.

The reported wastage rate in opened vials was 40 doses discarded /100 doses or 40%. If 78 doses were given in 16 separate sessions using 20 dose vials, the wastage rate should have been 242 doses discarded/ 320 doses or 76%. In the financial sustainability plans for future estimates of wastage are approximately 10%. Thus the wastage will be going up if staff discard BCG vials correctly, while the MOH plans on wastage going down.

At the administrative level, in the cold chain, 640 doses of polio that had been exposed to excessive heat was noted in the well kept, beautifully organized stock register. However, 40 or 50 doses of measles that had expired were found in with discarded items that had not been registered in the stock book. The implications are that local tracking of wastage rates will not be accurate since they do not report discarded vials on the local stock management reports. They start from the number of vials used and thus will miss wastage occurring in transit or storage at the level above.

In addition, information from other sources, for example the Hib Introduction Plan²⁴ quotes different numbers of doses of BCG for the past five years which themselves differ from the five more official sources.

The GAVI process has resulted in more attention being paid to data records and wastage rates. Many persons at all levels were very appreciative of the data quality audit, and supervisors were trying to improve the recording of information. In Ouélessegougou, the stock manager had reorganized his stock book, and the medical technician knew that at the last visit his supervisor wanted him to reorganize his records. It had been clearly communicated that instructions were coming from the top that immunization stock management and vaccine records needed to be improved; and staff approved of this. One *medecin chef* was anxious to have a repeated data quality audit to see if his staff had improved, and was interested to hear that a self-audit had been developed. Investment has been made to computerize several levels of the health information system. This will help compilation but will not reduce the levels occurring at the periphery. A very small portion of the ISS funds has been apportioned to supervision, compared to computerization.

Despite the unreliable data, there is no evidence that numbers of immunizations are being altered to increase financial award. Persons we spoke to did not understand that the amount of money paid to the state depended on both data quality and the increased number of DTP3 doses. The

24 MOH. Plan Introduction du Vaccin Contre L'Infection à HIB. Jan 2004. Page 8.

Mali Case Study

money is not being returned to the specific districts which increased their DTP3 numbers, so they have no “personal” incentive to inflate the numbers. Also the number of immunizations for BCG, which was checked as an example, reported by Bougouni District were lower than those shown on the tally sheets. At the next level, two-thirds of numbers reported were greater than those reported for Bougouni District at the central level. In 2003 two thirds of the numbers of doses reported by the Center were greater than those reported by the District, though the difference between the numbers reported was smaller. One possible test to see if reporting is biased at the Central level would be to see if the number of increased reports exceeded those likely to occur due to random error. This test was not possible because the raw data of district level reports provided to the central level were not available in sufficient number. However there was no evidence to suggest that biases were being introduced to move the numbers upward, and health staff had great interest at multiple levels to continue the auditing and to improve reporting.

The reported number of immunizations given increased after the GAVI funding began, and has continued for two more years, even though districts may not have received GAVI funding for more than one year. Impacts that could last more than a year are possible where transport was purchased, where funding motivated the microplanning process and where districts learned via microplanning how to order AD syringes and safety boxes. Microplanning was valued and considered to aid organization and to obtain commitments from local partners. The presence of funding reportedly drew partners into the process. It is not possible on this short visit, given the available information, to say that the GAVI funding was the causal factor. But it is likely that the funding was a contributing factor in the content of a multi-partner effort. The combination of the total available funding and partner efforts did result in increases in the immunization doses given. The GAVI funding was used to increase the total amount of funds available in a flexible manner that allowed the government to fill critical gaps such as transportation, and improve planning. ISS funds were used in one instance to buy AD syringes during a stockout. Where these funds were not available, districts reportedly either reverted to unsafe reusable syringes, or stopped immunizing. The planning efforts were useful to help institutionalize how to order AD syringes and safety boxes for planned activities. Pressure to improve documentation, coverage and wastage were seen as valuable. Persons at multiple levels said that even the existence of available funds that served as an incentive for microplanning, which caused partners to work synergistically to reverse the declines in immunization that had occurred for several years.

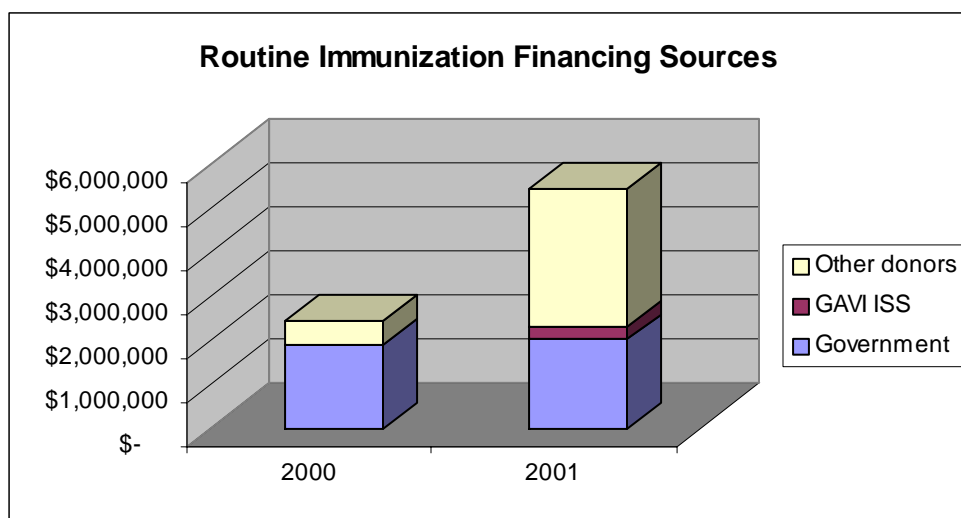
One potentially negative effect on planning was reported when a district which had been funded one year had their microplan rejected the following year without explanation. The *medecin-chef* reported subsequent difficulty getting community partners to commit to further microplans, since the process was burdensome had taken approximately two months of community meetings. However, part of the problem appears communication and record keeping. The consultants tracked the microplan back to the national level to determine what happened. It was not clear that the micro plan had ever been reviewed as unlike the other plans in the ICC reject file, no cover letter or communication had been written that documented that the plan had been reviewed, the decision or any communication to the district.

7. Immunization financing past, present, future

In 2000 (the year preceding receipt of GAVI support), the routine immunization program cost \$2,447,581 of which 77% represents the contribution from the government of Mali and 23% representing the contribution of partners.

In 2001, the first year of GAVI funding, the routine immunization program cost \$5,426,763²⁵. The increase in costs from 2000 to 2001 is primarily due to the introduction of AD syringes and Hepatitis B paid for by the Japanese Government in 2001. Mali was not approved to receive Hepatitis B vaccine from GAVI until 2002 because it had not yet reached 50% DTP3 coverage. The government contribution increased from \$1,886,900 in 2000 to \$2,002,074 in 2001 representing an increase of 6%. However, as a result of an increase in donor contribution to routine immunizations, the government contribution to routine immunizations falls from 77% to 37% of total routine immunization costs.

Figure 5



GAVI ISS funding represents only 5% of the total routine immunizations costs or 7% of recurrent costs only. Although this shows that GAVI ISS funds represent a small amount of routine immunization funding sources, it should be noted that Mali had only been able to spend \$297,497 out of the \$429,000 that they actually received from GAVI in 2001.

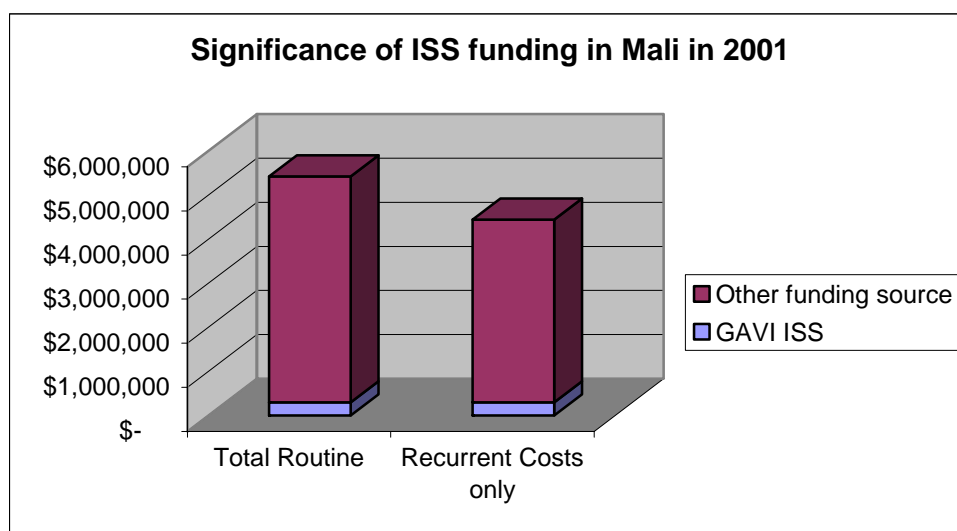
²⁵ Financial Sustainability Plan adjusted with GAVI ISS spending from GAVI Progress Report 2002

Mali Case Study

Table 8 Significance of GAVI funding

	<i>Total Routine</i>	<i>Recurrent Costs only</i>
GAVI ISS expenditures	\$ 297,497	\$ 297,497
Other funding source	\$ 5,129,266	\$ 4,144,782
Total	\$ 5,426,763	\$ 4,442,279

Figure 6



In the absence of data relative to the EPI executed budget in 2002 and 2003, we were not able to accomplish the same analysis on the financing of the EPI for these two periods.

Mali has allocated a relatively large portion of ISS funds for capital equipment such as cold chain equipment, computers and vehicle equipment as shown in figure 7. In terms of allocating ISS funds, Mali gradually spent more funds at the central level in 2002 and 2003, whereas it had spent 100% of ISS funds at the district level in 2001.

Figure 7

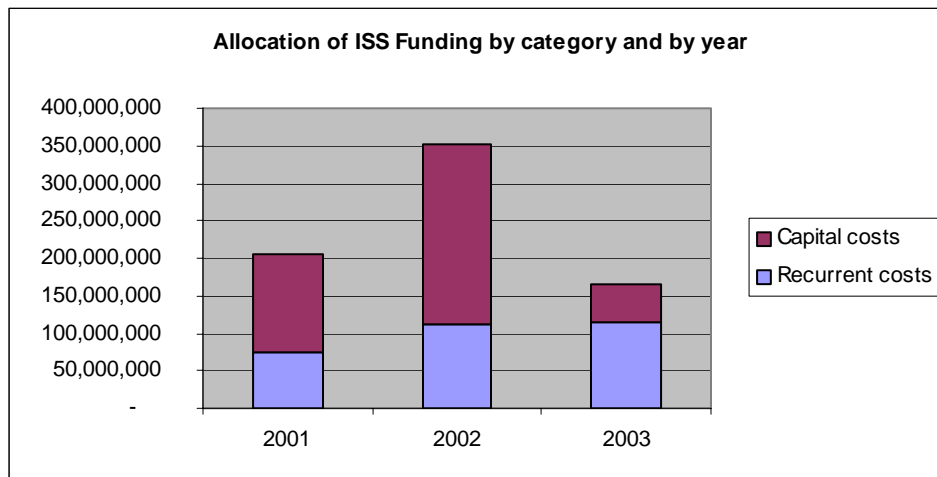
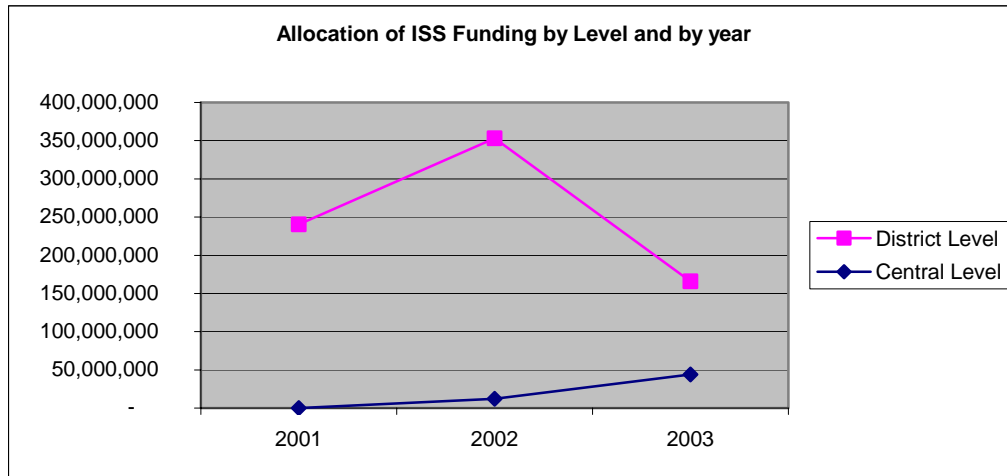


Table 9 Allocation of GAVI ISS Funds in CFA by Level of MOH

Level	2001	%	2002	%	2003	%
Central Level	-	0%	12 140 000	3%	43 803 000	26%
District Level	240 380 472	100%	340 991 659	97%	121 999 239	74%
TOTAL	240 380 472	100%	353 131 659	100%	165 802 239	100%

Source: MOH

Figure 8



Source :Ministère de la Santé du Mali

To prepare for the collection of data for activities actually supported by GAVI, Mali developed a Financial Sustainability Plan which determines the actions to implement to mobilized more internal and external resources. This plan also details activities to increase the efficiency of the utilization of resources as well as their reliability. The strategies to mobilize additional resources developed in this Plan for the sustainability of activities supported by GAVI, and in particular ISS funds include:

- Mobilization of additional internal resources:
 - Engagement by the Mali government to increase its contribution to new vaccines
 - Gradual increase of budgetary allocation for immunization activities
 - Agreement to allocate 1% of HIPC funds for immunization activities
 - Implementation of decentralization texts: 7% of local government funds to go to the health sector of which 20% could be allocated to immunization activities.
 - Development of alternative financing mechanisms
 - Greater involvement of the private sector through contracting with the MOH
 - Improving the community contribution through an increase in revenue tied to the PRSP

One of the biggest contributions for communities, local government and NGOs in immunization activities is observed through the microplanning and the signature of the performance contract.

- Mobilization of external resources:
 - Mobilization of traditional donors in EPI
 - Development of a decentralized cooperation

- Exploitation of facilities offered by budgetary support

8. Experience to date with reward shares

Mali received reward shares, but the award does not correspond to the difference in the number of DTP3 doses achieved subtracted from the baseline year and multiplied by the reward. The reward shares were distributed according to national priorities and without the use of explicit criteria. Members of the ICC committee are requesting a change in the process.

9. Comparison of GAVI with GFATM application process and implementation, and their effects on the health system

9.1. Application process

Due to the high turnover of UNICEF staff, MOH Central level staff, WHO staff, and thus in ICC members, different people worked on the different drafts of the GAVI application and the application for the Global Fund. The GAVI process was considered to be complicated because of several language issues. It required learning a new vocabulary (e.g. “investment shares” and “reward shares”), and changing the meaning of an existing term to refer to a new indicator: “coverage” to epidemiologists refers to the coverage in the population of percentage of a target group that has received an immunization extrapolated from sample. “Coverage” in EPI clinic reports refers to service delivery information about the number of people in the target group who were vaccinated divided by an estimated target population. “Coverage” in the GAVI application refers to the number of persons who received the third dose of DTP3. All three indicators have their uses, but confusion results when the common terms are used to describe different parameters. Another language difficulty mentioned for both applications was finding information in a format and for time periods different than those used in existing reports. However the GAVI application was considered to be easy in comparison with that of the Global Fund. Those involved told us that several versions of the Global Fund application had been rejected, first for not adhering to specifics required on the application, and second, for being too ambitious. Finally, an external consultant was brought in to write the Global Fund application. For the GAVI application, the minister appointed a committee to prepare it.

Both applications had very specific instructions that required a great deal of time to read and prepare, and that valuable time was wasted when small details of the translations misled authors and contributed to the need to rewrite them. In the case of GAVI, it was necessary to use new indicators that did not appear on the existing common reporting formats or in the existing time frameworks. Often the information for an individual line (number of children who received DP3 for the 5 years of the application) was not available in hard copies had to be gathered from different people looking for data available on the computers.

Mali Case Study

Because many of the higher positions are filled by staff with high turnover rates, there is no institutional memory on how to prepare the application (several applications were submitted to GAVI). This multiplied the number of times that people had to learn how to prepare the application.

9.2. Translation of terms

The GAVI application introduced a variety of terms for which exact translations were not found. While GAVI application distinguishes between investment shares, reward shares, and money from different accounts; no one at any level in Mali spontaneously made these distinctions. People commonly described “l’argent de GAVI”. Perhaps this is somewhat deliberate, as the districts who earn the “reward shares” do not receive them. The national level receives the “reward” (*recompense, prime, motivation*) funds. Using the term reward share may lead districts who improved their performance to expect that the reward will come to them, when Mali has retained the funds to use them where there are needed most. Many persons thought this needs-based approach was fair.

9.3. ICC terms of reference

Head of partner agencies were not aware that the ICC had written terms of reference, and some thought that it met infrequently (having received a meeting invitation only twice); while others said that it met regularly, but sometimes without decision makers present. Lower staff thought that it was a good forum for receiving information. Others thought the large forum made it difficult to set strategies or make decisions. Heads of donor agencies are in discussion with the ministry to have terms of reference and procedures for an effective meeting.

10. Discussion and Conclusions

10.1. Summary of main findings

10.1.1. Increase in coverage

Despite efforts, it was not possible to obtain WHO/UNICEF Joint Reporting Forms during this visit. Based on the administrative available data from WHO/Mali, the number of doses of vaccine given (and thus one assumes the number of children) has increased for all antigens between 1999 and 2003. This increase reversed the declining immunizations coverage experienced from the onset of decentralization 1997 until 2000. It appears that the additional number of children immunized with DTP3 was far higher in the group of districts who received any ISS funding at any time, but this analysis is questionable.

10.1.2. Rewards system

The GAVI reward shares are related to performance at the national level but not at the service delivery level. The lower levels do not receive funding based on the number of children

Mali Case Study

immunized. The availability of funds was commented to act as a general incentive at the local level in the sense that when microplans are submitted, they are more likely to receive funding. In addition, motorcycles, per diems, and cars make work easier, and thus reduce disincentives to outreach. It should be noted that at the community CSCOM level, community centers must raise their own funds to operate. There are incentives to provide curative services to raise funds and disincentives to have staff participate in immunization outreach. Because the lower levels do not receive reward shares, the fact that funding is linked to the number of DTP3 doses has not been communicated to the lower levels.

10.1.3. Staff turnover

There is high turnover of all persons involved in the GAVI process. New staff have to absorb multiple funding and grant procedures for multiple diverse partners of which GAVI is but one – albeit much appreciated – source. The details are often not understood or transmitted to the levels below. Internet access is very slow due to a narrow bandwidth, so resources available electronically on the web may be underutilized. CSCOM staff commented that to participate in on-line courses one must go on line between midnight and 6 a.m.

10.1.4. Data quality

Mali had a Verification Factor score of 0.747 (under the 0.80 cut-off) on the DQA but still was awarded reward shares. Attempts are underway to improve records, but inconsistencies are still common. Basing financial awards on data known to be unreliable may be problematic for GAVI.

10.1.5. Allocation process and criteria

The MOH decides about how the funds will be allocated. The ICC is used to review microplans. Partners feel that Mali could gain additional funds (e.g. improve coverage) if the role and responsibilities of the ICC were clearly defined and included more authority; if minutes are widely distributed for additions and corrections to be approved by the committee members at the next meeting, if criteria for the use of funds were defined and communicated, and if partners were given the opportunity to review reports and applications with sufficient time in advance of the need for a signature. The flexibility of the GAVI funding is considered extremely useful, and greatly appreciated.

10.1.6. Communication about GAVI

Communication about the GAVI funds linkage to DTP3 numbers is an issue at many levels. Reasons include the need to translate information and to improve existing systems of compiling, transmitting, storing, retrieving and disseminating information. Use of language is also an issue. Translation of GAVI terms may have lead to some misunderstandings. Some of the terms that have similar terms in Mali with different meanings are *contract de performance*, investment and *investissement*, shares, motivation, and *couverture vaccinale*.

10.2. Analysis

GAVI funds were used partially to fund several hundred computers to improve the health information system. This is a legitimate, and understandable investment, but of itself is probably not capable of improving immunization planning due to the level of errors entering the system. This raises the issue of whether GAVI wishes to link expenditures directly to those needs impede immunization. Also, the lack of a system to build capacity -- to review, understand, use or communicate information -- will lessen the beneficial impact of this purchase. If funds are expended on computers, systems to organize, assure technical support, and training to manipulate computer information will also be useful. If GAVI were to continue to allow grantees flexible use of funding, either partner review or a program officer review of expenditures might have suggested bundling computer purchases with training, technical support, and an implementing plan that could make their use more effective.

Because the GAVI funds were used to purchase transport equipment and the related recurring costs of outreach, coverage seems to have improved. However the life span of vehicles in Mali was considered to be three years so the impact may not long. The benefits of microplanning may continue, although staff turnover is very high and incoming staff will need to be changed.

Historically, coverage in immunization has not been sustained when funds are reduced because recurring costs are an essential and large portion of the program costs. With a few exceptions, global coverage rises and falls with external interest, pressure and funds. Exceptions of course are disease eradication programs.

10.3. Positive experiences and innovations

MOH staff mentioned that they thought the data audit process was very useful. They appreciated micro-planning as a way to disburse funds. The flexibility of funding that allowed the MOH to purchase items they considered to be priorities but for which other sources could not be used was repeatedly appreciated.

The impression is that the funds provided important assistance. At the peripheral levels that provide immunization, relatively small recurring costs for fuel for refrigerators, per diems for workers to pick up vaccine, and funds for fuel for transport can entirely stop immunization even in the presence of much larger expenditures for the vaccines, cold chain and salaries. There are threshold effects in immunization – large expenditures are needed for infrastructure with which routine immunization can be provided, after which coverage levels fluctuate with available funding. More funding allows the next more distant group surrounding the health center to be reached, although the costs continue to rise with increasing distances.

10.4. Challenges

Supervisors will need to provide supportive supervision to improve the recording of data at the lower levels. Staff need assistance to learn how the different reports are inter-related, and thus how they can double check reports. At all levels, simple archival and retrieval of data is necessary if information is to be used. Developing a culture of data and meeting transparency and a system to organize and share data will be important. Currently data is neither reliable or systematically available.

If a reward system is to be used down to the periphery, the MOH would need to conduct a communications plan with multiple messages and strategies to make sure the linkage between the numbers of immunizations given and funding is understood. Additional data quality monitoring would be necessary. This would be a new activity and pre-supposes that it is, in fact, desirable to have every level of the system participate and be knowledgeable about a performance-based system focused on DTP3.

Communications about GAVI should take into account that persons at the central level may have no prior information or experience with GAVI and materials even midway through the grant should take care to repeat all pertinent information including the reward philosophy.

The life of refrigerators and cars is shorter due to a lack of supervised preventive maintenance and repair. The need to refrigerate HIV test reagents as well means that the HIV program is a potential co-funder of the cold chain or that the MOH will have to try to coordinate dual cold chains. Putting local committees in charge of these very valuable links in the cold chain puts a very expensive investment at risk. GAVI may wish to continue emphasizing the importance of vaccine management to avoid destroying vaccine. The current wastage monitoring system at the service delivery levels can detect wastage in open vials but not in closed vials and thus will not detect true total wastage rates. An annual inventory to verify stock at the periphery at the end of the year at the periphery, and then calculate wastage rates would be more accurate. At the periphery, staff could be encouraged to focus on activities that reduce wastage, e.g. increasing session sizes in outreach, improving temperature control and timely use of vaccine, rather than to increase efforts to calculate frequent wastage rates. One person reported he already spends a day a month on record keeping for EPI alone.

If the MOH central level has clear explicit criteria to disburse funds to the districts, then it will be better able to justify its choices for recipient districts, both to their constituent regions and to donors. A portion of the funds can always be held in reserve for unanticipated expenses.

Annex 1

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Annex 2

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