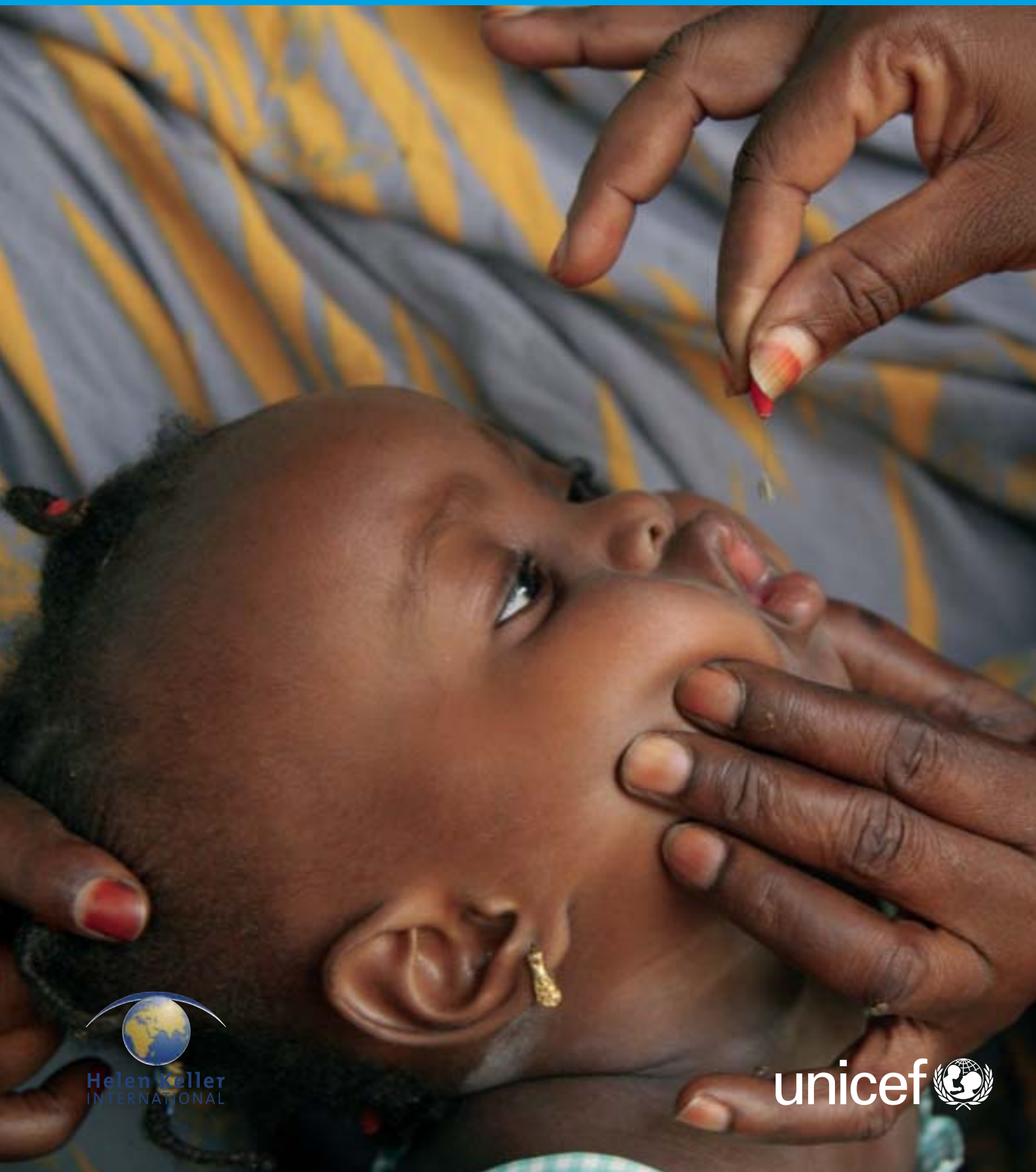
DROPS OF LIFE

Vitamin A Supplementation for Child Survival

Progress and Lessons Learned in West and Central Africa



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Acknowledgements: Since 2001, vitamin A supplementation (VAS) programs have made much progress in West and Central Africa. This success has been made possible through the contributions of a number of partners. The Canadian International Development Agency (CIDA) has provided essential support to all aspects of VAS programs in the region, including vitamin A supplements through the Micronutrient Initiative. The United States Agency for International Development (USAID) and the Micronutrient Initiative have provided funding and support to VAS programs in several countries. Most importantly the dedication of tens of thousands of health workers and community resource persons and the leadership of Ministry of Health officials have been the mainstay of sustained high VAS coverage.

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List of abbreviations

BCC	Behavior Change Communication
CDTI	Community-Directed Treatment with Ivermectin
CHW	Community Health Worker
CIDA	Canadian International Development Agency
DHS	Demographic and Health Survey
EPI	Expanded Program of Immunization
HIPC	Heavily Indebted Poor Countries
HKI	Helen Keller International
IEC	Information, Education, and Communication
IMCI	Integrated Management of Childhood Illnesses
IVACG	International Vitamin A Consultative Group
MCH	Maternal and Child Health
MDG	Millennium Development Goal
MI	Micronutrient Initiative
MOH	Ministry of Health
NGO	Non Governmental Organization
NIDs	National Immunization Days
NMD	National Micronutrient Days
PHC	Primary Health Care
PRSP	Poverty Reduction Strategy Paper
RBM	Roll Back Malaria
SIAs	Supplemental Immunization Activities
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAC	Vitamin A Capsules
VAD	Vitamin A Deficiency
VAS	Vitamin A Supplementation
WHO	World Health Organization

EXECUTIVE SUMMARY

West and Central Africa is home to 10 percent of the world's population of children under five years old; however, over 25 percent of the world's child deaths (2.9 million child deaths annually) occur in this region. Undernutrition is the attributable cause of 56 percent of these child deaths, as 27 percent of children under five years old are underweight and 40 percent are at risk of vitamin A deficiency.

Recent analyses show that in areas where vitamin A deficiency is prevalent, child mortality is reduced by an average 23 percent following vitamin A interventions. In West and Central Africa, bi-annual high-dose vitamin A supplementation (VAS) of children 6-59 months old is seen as the most feasible, affordable and effective strategy to control vitamin A deficiency in the short and medium term.

Since the late 1990s, VAS was integrated into National Immunization Days (NIDs) for the eradication of poliomyelitis. This integration was a breakthrough as it allowed many countries to ensure a four-to-six month vitamin A reserve to more than 80 percent of children 6-59 months old once annually. However, maximizing the child survival impact of VAS required complementary VAS delivery mechanisms to ensure that all children 6-59 months old benefit from preventive VAS twice annually. This became even more imperative as NIDs started to be phased out.

Over the last years, alternative VAS strategies such as National Measles and VAS Campaigns (DR-Congo, Congo), Emergency Outreach Nutrition Response (Mauritania and Niger), National Micronutrient Days (Burkina Faso and Niger), National VAS and Deworming Days (Congo, DR-Congo, Senegal, Togo), National Nutrition Weeks (Mali), and National Child Survival/Health Days (Chad, Central Africa Republic, Ghana, Guinea, Guinea Bissau, Liberia, Mauritania, Senegal, Sierra Leone, and Togo), have demonstrated that countries in West and Central Africa can deliver vitamin A supplements to children twice yearly.

The institutionalization of Child Survival/Health Days - in particular - has provided an effective way to ensure the periodic, active and sustainable distribution of vitamin A supplements through existing permanent institutions. In combination with the integration of VAS into the Expanded Program of Immunization and the therapeutic dosing of children suffering from undernutrition or common childhood infectious diseases (pneumonia, diarrhea, malaria, and measles), these strategies have effectively delivered vitamin A supplements to children.

This report takes stock of VAS in the context of child survival programming in West and Central Africa, with a particular focus on large-scale, preventive VAS programs for children 6-59 months old. It examines progress, challenges, and lessons learned in VAS programming for child survival (2001- 2006) and identifies opportunities for improved policy formulation and program implementation to maximize the contribution of VAS to child survival.

The report concludes that among the many challenges that countries in West and Central Africa will need to face in the coming years, the control of vitamin A deficiency is one that can be overcome. Large-scale preventive VAS has the promise to be among the most cost-effective and high-impact interventions towards the attainment of the Millennium Development Goal for the reduction of child mortality. The need is urgent, and the solutions are known, effective, and affordable.

1 VITAMIN A, NUTRITION AND CHILD SURVIVAL IN WEST AND CENTRAL AFRICA

For several decades now, vitamin A deficiency (VAD) has been recognized as the leading cause of preventable pediatric blindness in developing countries[1]. However, a better understanding of the public health importance of VAD began in the early 1980s, when community-based studies showed that children with mild xerophthalmia were more likely to develop diarrhea and respiratory infections and die than children without any VAD-related eye signs[2-3].

Between 1986 and 1993, eight population-based intervention trials enrolling more than 165,000 children worldwide assessed the contribution of VAD to child mortality[4]. In 1993, four independent meta-analyses of these trials showed that in areas where VAD is prevalent, child mortality is reduced by an average 23 percent following vitamin A interventions[5]. This significant reduction in childhood mortality is largely attributable to the reduction in mortality from measles[6-7], severe diarrhea and dysentery[8], and possibly falciparum malaria[9]. Recent studies have also shown that vitamin A supplementation (VAS) reduces the incidence, severity, and case-fatality of diarrhea and increases survival rates in HIV-infected children[10-11].

In areas where VAD is prevalent, child mortality is reduced by an average 23 percent following vitamin A interventions

1.1. Child mortality in West and Central Africa

West and Central Africa[1] is home to 62 million children less than five years old and has some of the highest under-five mortality rates in the world. In 2002, in committing to the Millennium Development Goals (MDGs), nations in West and Central Africa pledged to ensure a two-thirds reduction in child mortality by 2015 from the base year 1990 (MDG4). In 1990, the regional child mortality rate was 209 child deaths per 1,000 live births. In 2004, the regional under-five mortality rate fell to 191 child deaths per 1,000 live births.

The reduction in underfive mortality between 1990 and 2004 (from 209 to 191) represents a 8.6 percent reduction over a 14 year period. Only Cape Verde - with an average annual reduction rate (AARR) of 2.9 percent - is on track to achieve MDG4. Six countries - Benin, Gambia, Guinea, Guinea Bissau, Niger and Nigeria – with an AARR between 1 percent and 2.5 percent made progress (albeit inadequate) towards the achievement of MDG4. In four countries - Cameroon, Central African Republic, Côte d'Ivoire and Equatorial Guinea, child mortality rates increased (negative AARR). In the remaining 13 countries, child mortality rates stagnated (AARR between 0 and 1 percent)[12].

The latest available data show that 14 of the 24 countries in West and Central Africa have underfive mortality rates higher than 150 child deaths per 1,000 live births[13]. These same sources show that in West and Central Africa 2.9 million children under five years old die every year. This means that 27 percent of the world's child deaths occur in this region which is home to only 10 percent of the world's population of children under five years old.

The causes of child mortality in West and Central Africa do not differ substantially from

Note

For the purposes of this report, the West and Central Africa Region (WCAR) includes twenty four countries: Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone and Togo.

one country to another. The estimated distribution of causes of death in children under five years old are: neonatal causes (26 percent), malaria (21 percent), pneumonia (21 percent), diarrhea (17 percent), measles (6 percent), AIDS (4 percent), and other causes (6 percent)[14]. Undernutrition is the attributable cause of 56.5 percent of child deaths[15].

An estimated 27 percent of the world's child deaths occur in West and Central Africa, which is home to only 10 percent of the world's population of children under five years old.

1.2. Child undernutrition in West and Central Africa

Undernutrition is the outcome of insufficient food intake and/or repeated infectious diseases. Poor feeding practices - particularly sub-optimal breastfeeding and complementary feeding practices for infants and young children - are the major cause of child undernutrition along with common illnesses often exacerbated by helminths.

Child undernutrition prevents individual children from surviving and from achieving their full growth and development potential. Children who are undernourished have lowered resistance to infections and are at a higher risk of death from common childhood illnesses. Undernourished children who survive are caught in a vicious cycle of recurring infections and growth faltering, often with irreversible damage to their physical growth, cognitive development and school performance.

Through their 2002 commitment to MDGs, nations in West and Central Africa pledged to reduce child underweight by one-half by the year 2015, from the base year of 1990 (MDG1). In 1990, the regional prevalence of child underweight in West and Central Africa was 32 percent. By 2004, it had fallen to 28.4 percent. This translates into a 11.25 percent reduction over a 14 year period. This progress is insufficient for the region to reach the MDG1 target.

According to the latest available data in West and Central Africa, an estimated 17.2 million children under five years old are underweight. The prevalence of underweight children ranges from 12 percent in Gabon to 40 percent in Niger. In 6 countries the prevalence of underweight is over 30 percent; in 11 countries the prevalence of underweight ranges between 20 percent and 30 percent. In only 7 countries is the prevalence of underweight below 20 percent. Young children are particularly affected by underweight. In the second year of life (12-23 months), 39 percent of children in West and Central Africa are underweight (ranging from 19 percent in Gabon to 61 percent in Niger). A large proportion of these children suffer from multiple micronutrient deficiencies – including VAD.

In West and Central Africa, an estimated 17.2 million children under five years old (27 percent of children in this age group) are underweight. The prevalence of underweight children ranges from 12 percent in Gabon to 40 percent in Niger.

1.3. Vitamin A Deficiency in West and Central Africa

A recent analysis was conducted to estimate the prevalence of children at risk for VAD in West and Central Africa and the potential child survival benefits of effective and sustained policies and programs for the control of VAD in this region[16]. The analysis used data from all nationally representative VAD surveys conducted in sub-Saharan Africa over the last years as well as data on the measured effects of VAD on child mortality.

The analysis showed that in the absence of effective and sustained policies and programs for the control of VAD, an estimated 40.2 percent of children under five years old in West and Central Africa (two children in five) are at risk of VAD (i.e. 25 million children in total). There is ample evidence that in West and Central Africa, VAD affects children who live both in rural and urban areas[17]. These vitamin A deficient children are at a higher risk of morbidity and mortality than children who are vitamin A sufficient.

The analysis also showed that effective and sustained policy and program action for the control of VAD in West and Central Africa can bring about an average 23.5 percent reduction in under-five mortality with respect to 1995 mortality levels (i.e., before the onset of large-scale VAS programs) and avert over 316,000 child deaths annually. The analysis concluded that:

- Effective and sustained VAS programming has the potential to be one of the most cost-effective and high-impact child survival interventions in West and Central Africa and can make a staggering contribution towards the attainment of MDG4 in this region.
- It is crucial that bi-annual preventive VAS be made available to all children in West and Central Africa while ensuring that VAS drives an integrated, effective, and sustained assault on VAD that includes improved infant and young child feeding practices and improved vitamin A dietary intakes throughout the life-cycle.

In West and Central Africa, 40.2 percent of children under five years old (two children in five) are at risk of VAD. This means that 25 million children are in need of timely and effective interventions to prevent vitamin A deficiency.

2 OBJECTIVES AND METHODS

In West and Central Africa, bi-annual high-dose VAS of children 6-59 months old is seen as the most feasible, affordable and effective strategy to control VAD in the short and medium term.

This report takes stock of VAS in the context of child survival programming in West and Central Africa, with a particular focus on large-scale, preventive VAS programs for children 6-59 months old.

The objectives of this review are:

- To examine progress, challenges and lessons learned in VAS for child survival programming in West and Central Africa between 2001 and 2006;
- To identify opportunities for improved policy formulation and program implementation in VAS for Child Survival programming in West and Central African countries so as to maximize the contribution of VAS to the attainment of MDG4 in this region.

Three major sources of data and information have been used:

- Annual reports, donor reports and special reports by UNICEF and HKI country programs (2001-2006);
- Published research and program literature on VAS and/or child survival in West and Central African countries (2001-2006);
- Interviews and exchanges with UNICEF and HKI program managers and their national and regional partners in VAS for child survival programming.

Estimated under-five mortality rate, prevalence of child underweight, and children at risk of vitamin A deficiency in West and Central Africa, 2006.

	Under-five mortality rate[1]	Prevalence of child underweight[1]	Percentage of children at risk of vitamin A deficiency[2]
Benin	152	23	23
Burkina Faso	192	38	46
Cameroon	149	18	36
Cape Verde	36	n/a	38
Central African Republic	193	24	68
Chad	200	37	45
Congo	108	15	32
DR-Congo	205	31	58
Côte d'Ivoire	194	17	38
Equatorial Guinea	204	19	38
Gabon	91	12	41
Gambia	122	17	64
Ghana	112	22	60
Guinea	155	26	40
Guinea-Bissau	203	25	31
Liberia	235	26	38
Mali	219	33	47
Mauritania	125	32	17
Niger	259	40	41
Nigeria	197	29	25
Sao Tome and Principe	118	13	38
Senegal	137	17	61
Sierra Leone	283	27	47
Togo	140	25	35
West and Central Africa Region	**191**	**28**	**40**

1 United Nations Children's Fund. State of the world's children report. United Nations Children's Fund, 2006.

2 Aguayo VM, Baker SK. Vitamin A deficiency and child survival in sub-Saharan Africa: A reappraisal of challenges and opportunities. Food and Nutrition Bulletin, 2005; 26 (4): 348-355,

3 VITAMIN A SUPPLEMENTATION IN WEST AND CENTRAL AFRICA. COVERAGE AND PROTECTION

Coverage of preventive VAS in children 6-59 months old is recognized as an indicator of progress towards improved child survival, health and nutrition. As such, this indicator is published annually in UNICEF's State of the World's Children report. Preventive VAS coverage in children 6-59 months old has also been adopted as a core intermediate indicator of progress towards MDG1 (eradication of extreme poverty and hunger) and as an optional indicator of progress towards MDG4 (reduction of child mortality).

In countries where the underfive mortality rate is above 50 child deaths per 1,000 live births, WHO/UNICEF recommendations are:

- At the individual level: All children 6-59 months old need to receive two high VAS doses per year about six months apart;
- At the population level: Universal bi-annual VAS for children 6-59 months old with coverage above 80 percent to ensure a significant impact on child survival.

In 2001, all 24 countries in West and Central Africa except Cape Verde had an under-five mortality rate above 50 child deaths per 1,000 live births. As such, these countries were advised to scale up preventive national programs that would ensure universal VAS to children 6-59 months old bi-annually.

This section looks into four quantitative indicators of large-scale preventive VAS in the context of national events for child survival programs in West and Central Africa:

- Vitamin A capsules delivered
- Vitamin A supplementation events
- Vitamin A supplementation coverage
- Vitamin A supplementation protection

It analyzes progress and trends between 2001 and 2006 by country and for the region as a whole.

3.1. Vitamin A capsules delivered

In West and Central Africa, the estimated number of vitamin A capsules (VAC) delivered to children 6-59 months old in the context of national events for child survival increased from 62 million in 2001 to 92 million in 2006 (graph 1). This represents a 48 percent increase over the six-year period comprised between 2001 and 2006, with an annual average increase rate of 8 percent (table 1).

Over the three-year period comprised between 2001 and 2003, the average annual number of capsules delivered to children 6-59 months old was below 55 million while in the three-year period between 2004 and 2006 the average annual number of capsules delivered to children 6-59 months old was above 85 million.

In the six-year period comprised between 2001 and 2006, over 425 million VAC were delivered to children 6-59 months old in the context of national events for child survival in West and Central African countries.

Countries set an objective to deliver two high-dose VAC per child per year to ensure an adequate four-to-six month vitamin A reserve bi-annually to all children 6-59 months old. Between 2001 and 2006, the average number of VAC delivered per child per year increased from 1.2 in 2001 (60 percent of target) to 1.6 in 2006 (80 percent of target). This represents a 33 percent increase between 2001 and 2006 with an average annual increase rate of 5.6 percent (graph 2, table 2).

Between 2001 and 2006, an estimated 425 million vitamin A capsules were delivered to children 6-59 months old in West and Central Africa in the context of national events for child survival.

Over the three-year period 2001-2003 the average number of capsules per child per year ranged between 1.0 and 1.2 (50 percent to 60 percent of the target) while over the three-year period comprised between 2004 and 2006 the average number of capsules delivered per child 6-59 months old per year ranged between 1.5 and 1.6 (70 percent to 80 percent of the target).

If 1.6 VAC per child per year is taken as an indicator of good quality VAS programming (i.e. average 80 percent VAS coverage bi-annually), the number of countries where the average number of VAC per child per year was equal to or above 1.6 was 7 (30 percent) in 2001; this figure increased to 12 (52 percent) in 2006. This represents a 71 percent increase between 2001 and 2006 with an average annual increase rate of 11.8 percent.

3.2. Vitamin A supplementation events

In West and Central Africa, the number of countries that were able to ensure nation-wide VAS events for children 6-59 months old increased significantly between 2001 and 2006 (graphs 3 and 4). In 2001, the number of countries that were able to ensure at least one national VAS event (i.e. national VAS coverage > 50 percent for children 6-59 months old) was 16 (69 percent); this figure increased to 21 (91 percent) in 2006 (graph 3). This represents a 31 percent increase between 2001 and 2006. Similarly, the number of countries that were able to ensure two national VAS events (VAS coverage > 50 percent) for children 6-59 months old increased significantly between 2001 and 2006. In 2001, the number of countries that were able to ensure two national VAS events was 9 (39 percent); this figure increased to 16 (69 percent) in 2006 (graph 4). This represents a 78 percent increase between 2001 and 2006.

In 2001, the number of countries that were able to ensure at least one national vitamin A supplementation event for children 6-59 months old was 16 (69 percent of countries). In 2006, this figure increased to 21 (91 percent of countries). In 2001, the number of countries that were able to ensure two national vitamin A supplementation events was 9 (39 percent of countries). In 2006, this figure increased to 16 (69 percent of countries).

3.3. Vitamin A supplementation coverage

Countries set an objective to reach at least 80 percent coverage per national VAS event so as to achieve a measurable impact on child survival at the population level. In 2001, the number of countries that ensured at least one national VAS event with coverage equal to or above 80 percent was 14 (60 percent); this figure increased to 18 (78 percent) in 2006 (graph 5). This represents a 29 percent increase between 2001 and 2006, with an average annual increase rate of 4.8 percent. As stated before, for VAS to translate into a measurable impact on child survival at the population level, it is recommended that countries ensure that at least 80 percent of children 6-59 months old receive two high-dose VAC every year about six months apart. In West and Central Africa, the number of countries reaching this objective has increased significantly over the last years. In 2001, only 5 countries (21 percent) were able to ensure two national events with VAS coverage equal to or above 80 percent while in 2005-2006 this figure ranged between 11 and 13 (50 percent) (Graph 6).

Over the three-year period comprised between 2001 and 2003, the regional VAS coverage per semester was systematically lower than 70 percent - with the lowest coverage rate (42 percent) observed in the second semester of 2003 – while over the three year period comprised between 2004 and 2006, the regional VAS coverage per semester was systematically above 70 percent - with the highest coverage rate (83 percent) observed in the second semester of 2006. In 2001, the average annual VAS coverage in at the regional level was 61 percent while in 2006 it increased to 80 percent; this represents a 31 percent increase with an average annual increase rate of 5.2 percent (graph 7, table 3).

In 2001, the number of countries that were able to ensure at least one national vitamin A supplementation event with coverage equal to or above 80 percent was 14. In 2006, this figure increased to 18 (78 percent of countries). In 2001, only 5 countries were able to ensure two national vitamin A supplementation events with coverage equal to or above 80 percent while in 2005-2006 this figure ranged between 11 and 13 (50 percent of countries).

3.4. Vitamin A supplementation protection

In West and Central African countries where under-five mortality rates are above 50 child deaths per 1,000 live births, a child 6-59 months old is considered to be protected by VAS in a given year when the child has received two high-dose VAC about six months apart. The percentage of children protected by VAS in a country is often difficult to determine as registry of VAS in the context of national VAS events is usually based on tally-sheets. At the end of the year it is possible to know the percentage of children who were

supplemented in semesters 1 and 2 but not the percentage of children who were supplemented in both semesters. Two different approaches can be used to estimate the percentage of children protected by VAS in a given country and year.

The first approach (A) assumes that the percentage of children protected by VAS in a given year equals the percentage of children supplemented in the semester with the lowest VAS coverage that year. It assumes that all children who were supplemented in the semester with the lowest VAS coverage were also supplemented in the semester with the highest VAS coverage. This approach provides estimates of the maximum percentage of children protected by VAS in a given year. Using this approach, the proportion of children who were protected by VAS in the West and Central Africa region in 2001 was 47 percent; this figure increased to 72 percent in 2006; this represents a 53 percent increase between 2001 and 2006 with an average annual increase rate of 8.8 percent (graph 8).

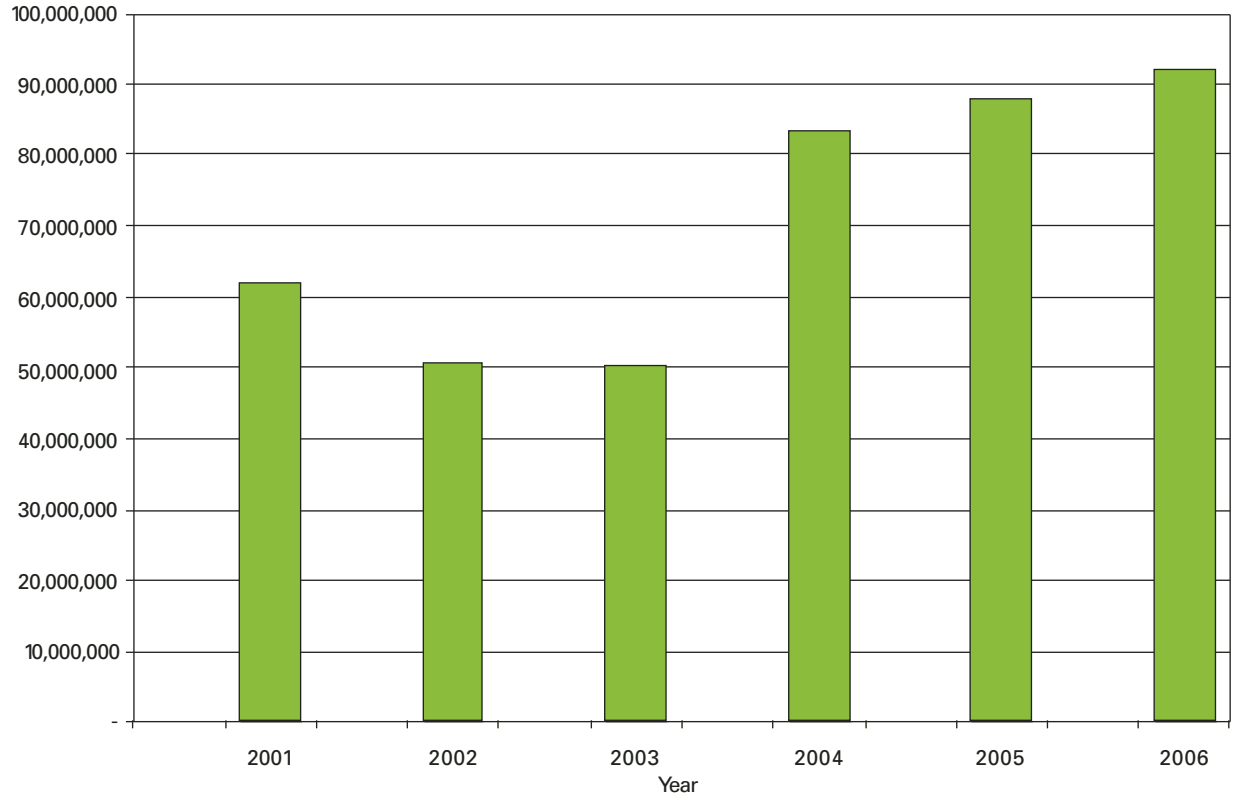
The second approach (B) assumes that the percentage of children protected by VAS equals 100 minus the sum of the percentage of non-supplemented children in the first or second semesters. It acknowledges that children who were supplemented in the semester with the lowest coverage could have not been supplemented in the semester with the highest coverage. This approach provides estimates of the minimum percentage of children protected by VAS in a given year. Using this approach, the proportion of children who were protected by VAS in West and Central Africa in 2001 was 36 percent; this figure increased to 61 percent in 2006; this represents a 69 percent increase between 2001 and 2006 with and average annual increase rate of 11.5 percent (graph 8).

Hence, the true proportion of children protected by VAS in a given year is comprised between the upper estimate A (maximum) and the lower estimate B (minimum). In 2006, the proportion of children 6-59 months old protected by VAS was in the range of 61 percent to 72 percent. As seen on graph 8, the difference between the maximum and minimum estimates of children protected by VAS decreased significantly over time, particularly over the three year period comprised between 2004 and 2006, highlighting a significant improvement in the quality of bi-annual VAS coverage.

In West and Central Africa, the proportion of children who were protected by vitamin A supplementation increased from 47 percent in 2001 to 72 percent in 2006. This represents a 53 percent increase between 2001 and 2006 with an average annual increase rate of 8.8 percent.

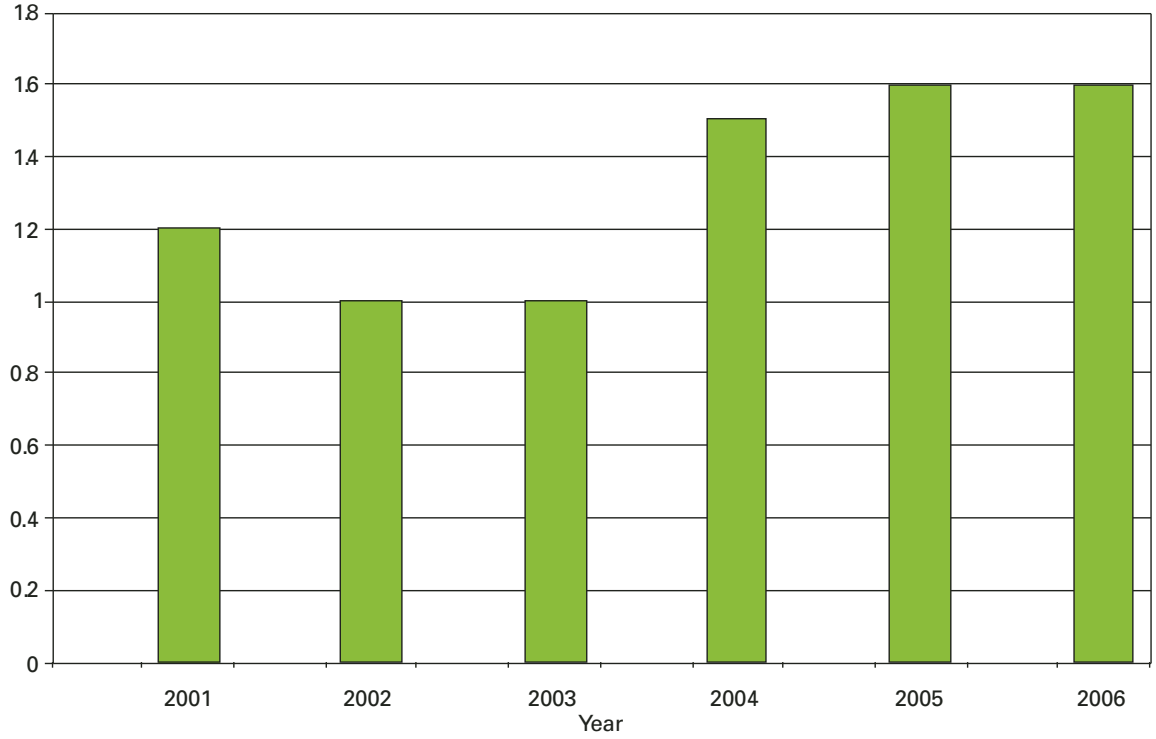
Graph 1 and Table 1:

Number of vitamin A capsules delivered to children 6-59 months old annually.
National events for child survival in West and Central Africa, 2001-2006



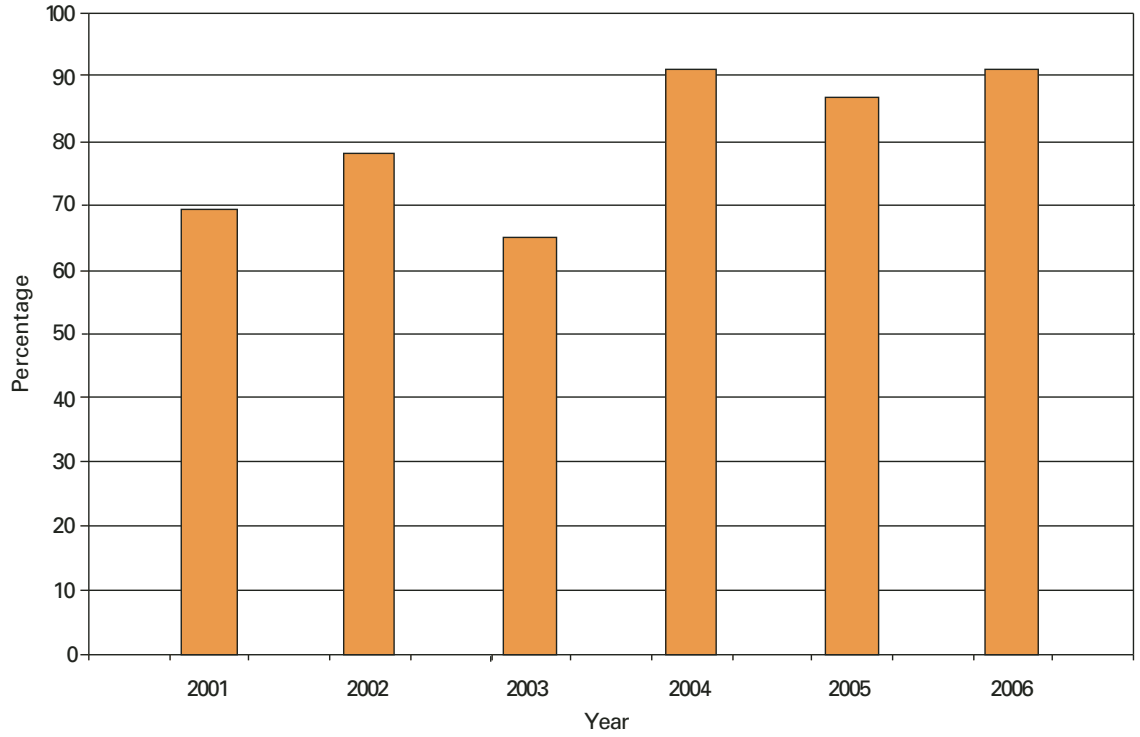
	2001	2002	2003	2004	2005	2006
Benin	-	-	2,126,872	2,450,949	2,432,370	2,454,287
Burkina Faso	3,633,422	3,652,604	3,939,383	4,405,582	4,614,266	4,634,536
Cameroon	-	1,544,644	1,591,859	1,835,398	4,356,896	4,216,485
Chad	2,574,322	2,589,246	2,444,126	2,646,871	3,184,505	2,697,610
Central African Republic	500,623	516,687	472,696	919,635	993,796	346,671
Congo	553,408	521,013	566,123	474,458	645,776	1,220,919
Côte d'Ivoire	-	-	1,356,719	1,473,161	4,688,512	4,699,834
DR-Congo	8,854,551	8,306,298	12,892,081	16,659,862	17,682,926	18,237,129
Equatorial Guinea	-	-	-	-	-	-
Gabon	157,299	148,476	54,950	129,618	-	162,086
Gambia	-	187,475	169,318	240,370	265,294	-
Ghana	5,458,604	5,337,250	5,579,185	4,149,418	5,465,806	4,202,732
Guinea	1,988,882	2,527,477	2,563,443	2,842,862	2,987,358	2,858,840
Guinea Bissau	185,011	203,012	-	103,381	162,964	383,125
Liberia	1,306,550	555,855	800,849	559,909	1,205,471	436,217
Mali	2,342,301	2,064,818	3,076,135	3,392,741	3,329,530	4,433,536
Mauritania	-	787,333	-	849,465	705,761	873,582
Niger	3,796,628	3,484,018	3,866,736	4,266,370	4,938,227	5,161,252
Nigeria	26,246,102	13,484,167	6,214,963	30,646,526	23,174,712	29,285,268
São Tomé	-	-	-	26,736	12,525	17,739
Senegal	2,458,714	2,509,914	-	1,784,066	3,168,089	3,310,793
Sierra Leone	1,191,836	1,432,256	1,350,797	1,702,521	1,852,148	1,520,503
Togo	710,658	872,066	1,208,574	1,736,954	1,756,631	916,678
West and Central Africa	61,758,911	50,724,609	50,274,809	83,296,853	87,643,563	92,071,722

Graph 2 and Table 2:
Average number of vitamin A capsules delivered per child 6-59 months old annually.
National events for child survival in West and Central Africa, 2001-2006

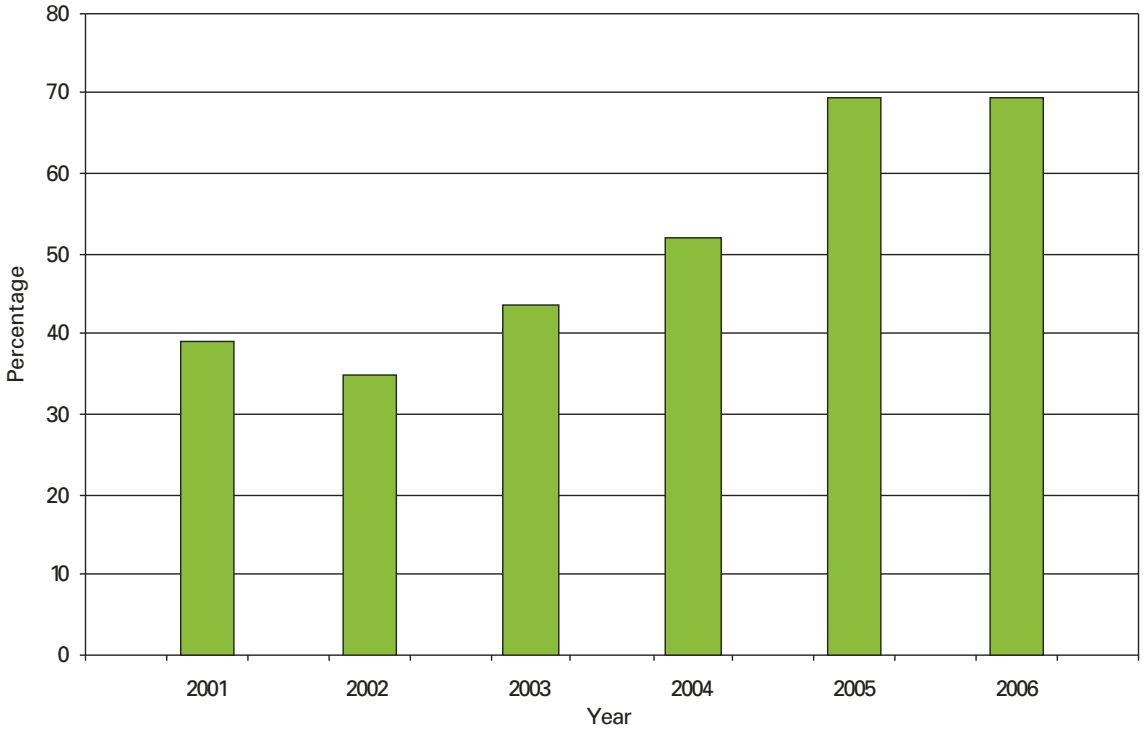


	2001	2002	2003	2004	2005	2006
Benin	0.0	0.0	1.9	1.9	1.9	1.8
Burkina Faso	1.7	1.6	1.7	2.0	2.0	2.0
Cameroon	0.0	0.7	0.7	0.8	2.0	1.9
Chad	1.8	1.8	1.6	1.6	1.9	1.5
Central African Republic	0.9	0.9	0.8	1.6	1.7	0.6
Congo	1.0	0.9	0.9	0.7	0.9	1.7
Cote d'Ivoire	0.0	0.0	0.6	0.6	1.9	1.8
DR-Congo	1.0	0.9	1.4	1.7	1.7	1.8
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	0.9	0.9	0.3	0.7	0.0	0.9
Gambia	0.0	1.0	0.8	1.2	1.4	0.0
Ghana	2.0	2.0	2.0	1.5	1.9	1.4
Guinea	1.5	1.9	1.9	2.0	2.0	1.9
Guinea Bissau	0.9	0.8	0.0	0.4	0.6	1.3
Liberia	2.0	1.0	1.4	1.0	2.0	0.7
Mali	1.1	0.9	1.3	1.5	1.4	1.8
Mauritania	0.0	1.8	0.0	1.8	1.5	1.8
Niger	1.8	1.6	1.6	1.7	1.9	1.9
Nigeria	1.4	0.7	0.3	1.5	1.1	1.4
Sao Tome	0.0	0.0	0.0	1.3	0.6	0.8
Senegal	1.7	1.7	0.0	1.1	1.9	1.9
Sierra Leone	1.6	1.8	1.7	2.0	2.0	1.7
Togo	1.0	1.2	1.6	1.9	1.9	1.0
West and Central Africa	**1.2**	**1.0**	**1.0**	**1.5**	**1.6**	**1.6**

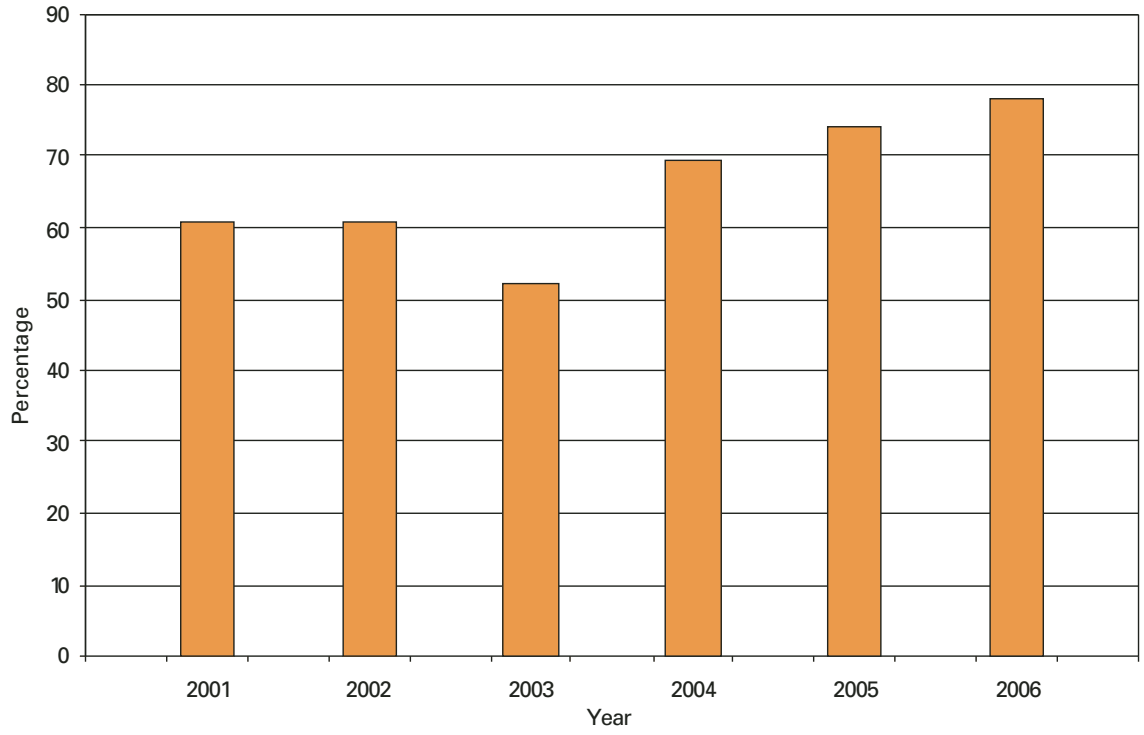
Graph 3:
Percentage of countries with at least one annual national vitamin A supplementation event (national vitamin A supplementation coverage > 50 percent). West and Central Africa, 2001-2006



Graph 4:
Percentage of countries with two annual national vitamin A supplementation events (national vitamin A supplementation coverage › 50 percent). West and Central Africa, 2001-2006



Graph 5:
Percentage of countries that ensured at least one annual national vitamin A supplementation event with coverage ≥ 80 percent. West and Central Africa, 2001-2006



Graph 6:
Percentage of countries that ensured two annual national vitamin A supplementation events with coverage ≥ 80 percent. West and Central Africa, 2001-2006

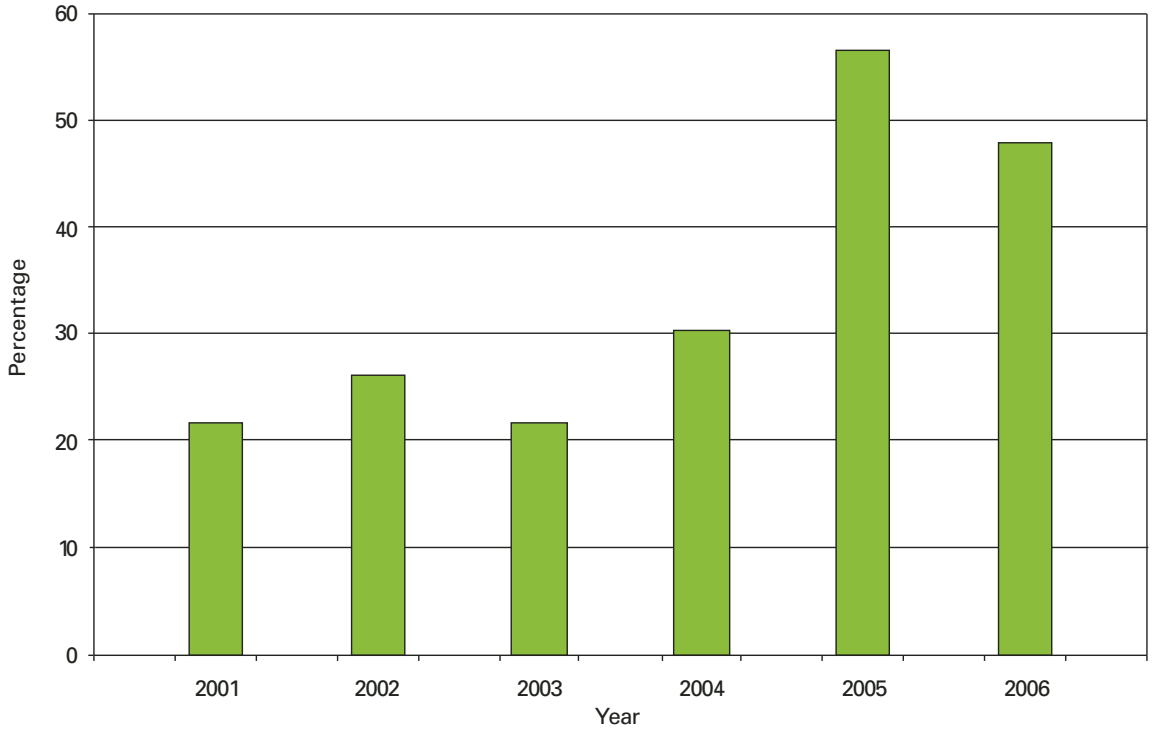
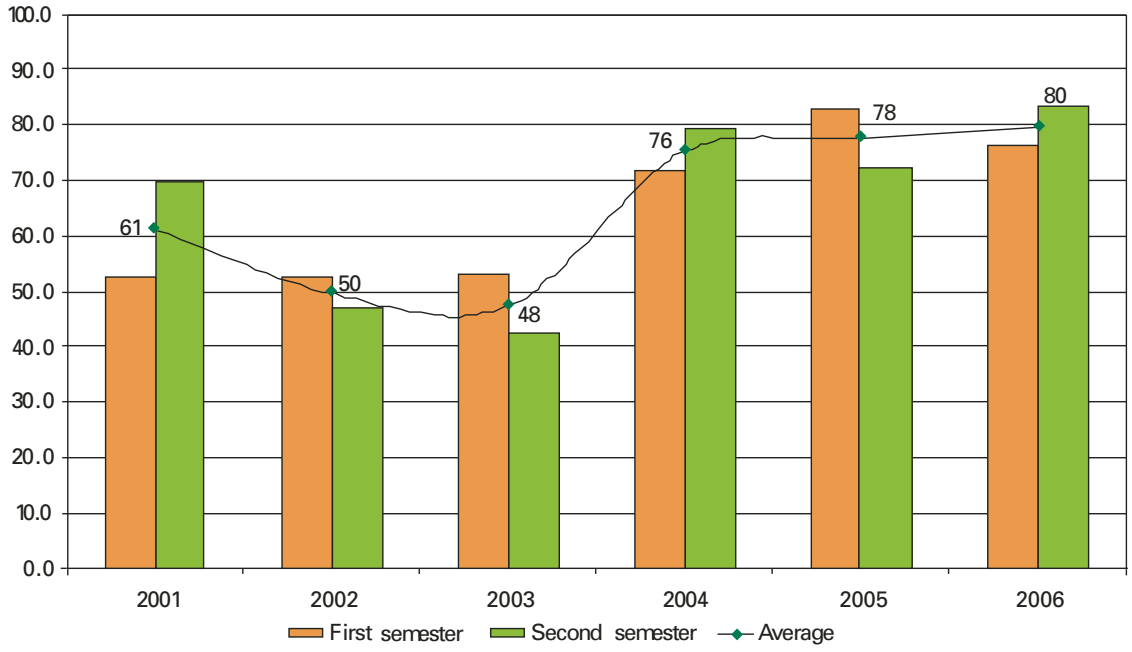


Table 3: Vitamin A supplementation coverage per semester per country.
National events for child survival in West and Central Africa, 2001-2006

	2001		2002		2003		2004		2005		2006	
	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester	1st semester	2nd semester
Benin	0.0	0.0	0.0	0.0	98.2	94.5	86.3	100.0	91.9	94.1	93.9	87.8
Burkina Faso	71.9	100.0	63.7	97.8	68.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cameroon	0.0	0.0	38.6	32.1	72.4	0.0	67.5	16.1	96.2	100.0	92.4	93.2
Chad	93.5	90.5	89.0	90.1	80.1	81.0	78.9	82.8	93.0	95.0	93.0	61.5
Central African Republic	0.0	90.3	2.6	90.3	0.0	83.7	73.5	86.3	88.3	83.4	59.0	0.0
Congo	0.0	97.8	0.0	84.5	0.0	88.5	6.2	65.3	4.9	89.3	78.4	95.3
Côte d'Ivoire	0.0	0.0	0.0	0.0	46.8	13.0	59.5	0.0	89.1	97.4	92.4	89.5
DR-Congo	0.0	97.7	0.0	92.2	68.9	69.2	78.7	91.1	87.4	86.8	83.8	91.4
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	0.0	89.4	0.0	86.6	0.0	31.8	0.0	73.7	0.0	0.0	0.0	89.9
Gambia	0.0	0.0	0.0	94.9	0.0	83.8	33.3	82.6	40.7	95.1	0.0	0.0
Ghana	100.0	100.0	98.6	100.0	100.0	100.0	50.0	98.6	98.4	95.8	60.0	84.3
Guinea	58.5	92.7	94.5	96.8	92.7	97.9	99.1	100.0	100.0	100.0	100.0	92.9
Guinea Bissau	0.0	82.6	0.0	78.5	0.0	0.0	0.0	37.7	0.0	57.5	71.1	61.2
Liberia	100.0	100.0	100.0	0.0	40.0	100.0	0.0	98.7	79.1	100.0	0.0	73.8
Mali	74.1	41.0	23.5	67.2	71.7	61.3	66.5	80.8	76.2	65.1	87.8	95.0
Mauritania	0.0	0.0	91.4	87.7	0.0	0.0	87.3	95.4	57.3	90.6	90.2	88.2
Niger	88.6	87.6	76.6	79.7	68.4	95.9	83.0	86.4	96.6	94.3	100.0	88.9
Nigeria	76.7	67.8	72.9	0.0	33.1	0.0	75.6	78.6	75.8	39.4	60.8	80.8
São Tomé	0.0	0.0	0.0	0.0	0.0	0.0	48.2	80.2	27.6	32.6	0.0	83.3
Senegal	85.4	83.7	82.7	90.8	0.0	0.0	0.0	100.0	86.2	100.0	97.9	95.4
Sierra Leone	65.2	90.5	85.0	97.0	82.2	83.0	93.0	100.0	100.0	100.0	82.4	89.8
Togo	93.9	6.7	100.0	17.5	72.0	84.0	94.3	98.0	91.9	99.1	97.5	0.0
West and Central Africa	**52,7**	**69,9**	**52,5**	**46,8**	**53,1**	**42,1**	**71,5**	**79,4**	**83,0**	**72,3**	**76,2**	**83,4**

Graph 7:
Vitamin A supplementation coverage per semester and year.
National events for child survival in West and Central Africa, 2001-2006



Graph 8:
Proportion of children 6-59 months old protected by vitamin A supplementation
(maximum and minimum estimates). West and Central Africa, 2001-2006

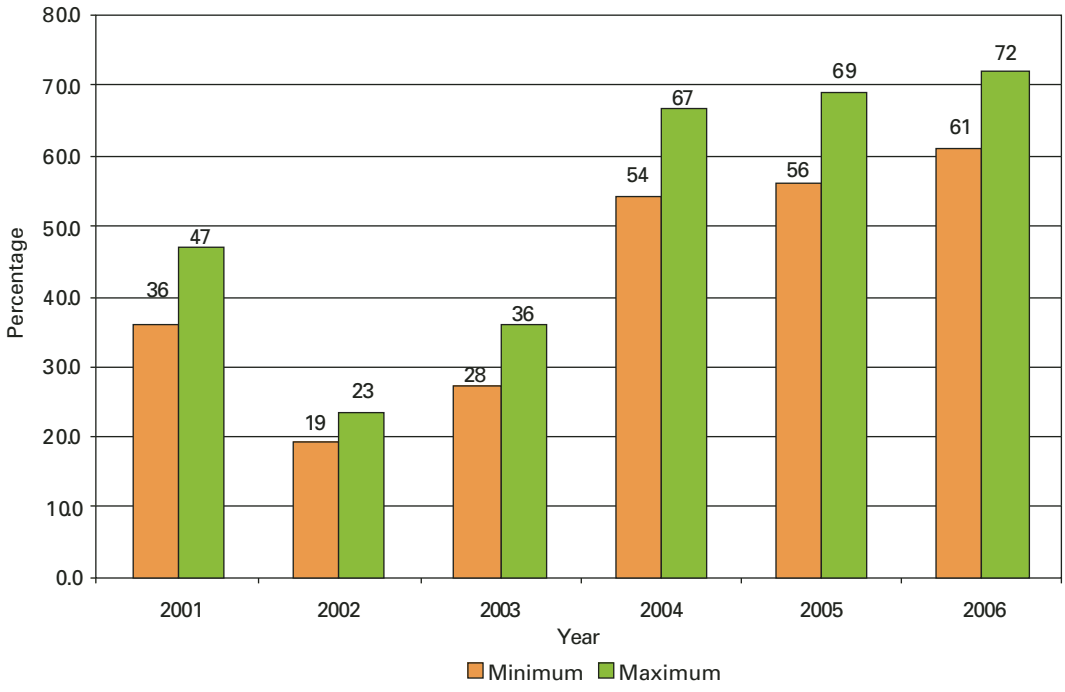
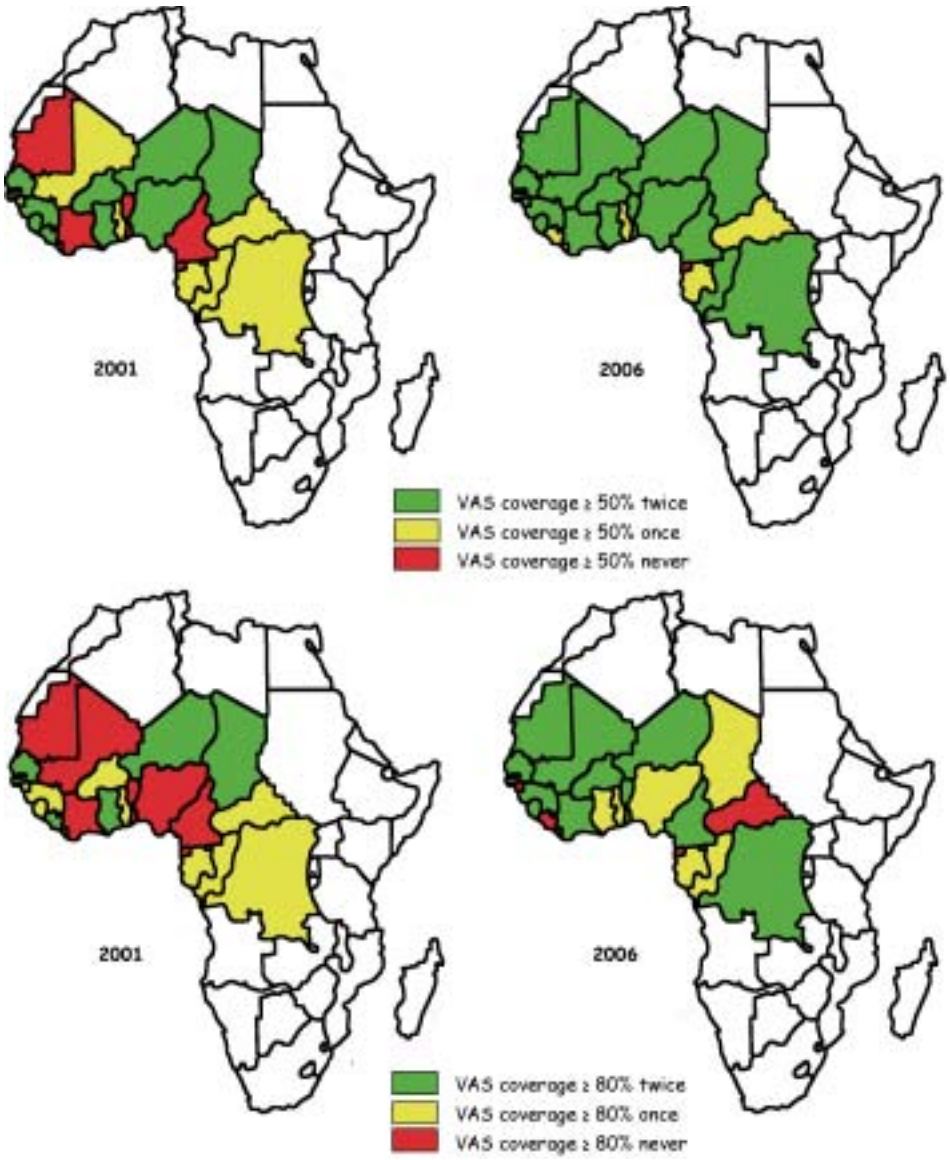


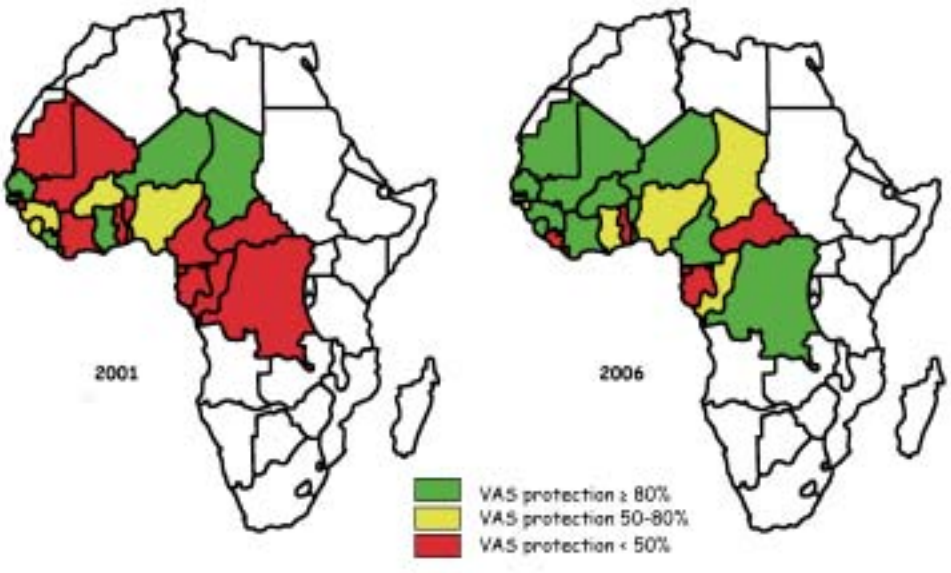
Table 4: Minimum and maximum proportion of children 6-59 months old protected by vitamin A supplementation. National events for child survival in West and Central Africa, 2001-2006

	2001		2002		2003		2004		2005		2006	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Benin	0.0	0.0	0.0	0.0	92.7	94.5	86.3	86.3	86.0	91.9	81.7	87.8
Burkina Faso	71.9	71.9	61.5	63.7	68.7	68.7	100.0	100.0	100.0	100.0	100.0	100.0
Cameroon	0.0	0.0	0.0	32.1	0.0	0.0	0.0	16.1	96.2	96.2	85.6	92.4
Chad	84.0	90.5	79.1	89.0	61.1	80.1	61.7	78.9	88.0	93.0	54.5	61.5
Central African Republic	0.0	0.0	0.0	2.6	0.0	0.0	59.8	73.5	71.7	83.4	0.0	0.0
Congo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	0.0	4.9	73.7	78.4
Côte d'Ivoire	0.0	0.0	0.0	0.0	0.0	13.0	0.0	0.0	86.5	89.1	81.9	89.5
DR-Congo	0.0	0.0	0.0	0.0	38.1	68.9	69.8	78.7	74.2	86.8	75.2	83.8
Equatorial Guinea	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia	0.0	0.0	0.0	0.0	0.0	0.0	15.9	33.3	35.8	40.7	0.0	0.0
Ghana	100.0	100.0	98.6	98.6	100.0	100.0	48.6	50.0	94.2	95.8	44.3	60.0
Guinea	51.2	58.5	91.3	94.5	90.6	92.7	99.1	99.1	100.0	100.0	92.9	92.9
Guinea Bissau	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.3	61.2
Liberia	100.0	100.0	0.0	0.0	40.0	40.0	0.0	0.0	79.1	79.1	0.0	0.0
Mali	15.1	41.0	0.0	23.5	33.0	61.3	47.3	66.5	41.3	65.1	82.8	87.8
Mauritania	0.0	0.0	79.1	87.7	0.0	0.0	82.7	87.3	47.9	57.3	78.4	88.2
Niger	76.2	87.6	56.3	76.6	64.3	68.4	69.4	83.0	90.9	94.3	88.9	88.9
Nigeria	44.5	67.8	0.0	0.0	0.0	0.0	54.2	75.6	15.2	39.4	41.6	60.8
São Tomé	0.0	0.0	0.0	0.0	0.0	0.0	28.4	48.2	0.0	27.6	0.0	0.0
Senegal	69.1	83.7	73.5	82.7	0.0	0.0	0.0	0.0	86.2	86.2	93.3	95.4
Sierra Leone	55.7	65.2	82.0	85.0	65.2	82.2	93.0	93.0	100.0	100.0	72.2	82.4
Togo	0.6	6.7	17.5	17.5	56.0	72.0	92.3	94.3	91.0	91.9	0.0	0.0
West and Central Africa	**35.9**	**47.0**	**19.2**	**23.4**	**27.5**	**36.1**	**54.4**	**66.8**	**56.2**	**69.2**	**61.1**	**72.0**

Vitamin A supplementation coverage per country
National events for child survival in West and Central Africa, 2001-2006



Proportion of children 6-59 months old protected by vitamin A supplementation
National events for child survival in West and Central Africa, 2001-2006



4 VITAMIN A SUPPLEMENTATION IN WEST AND CENTRAL AFRICA. POLICIES AND PROGRAMS

This section looks into key success areas for large-scale preventive VAS in West and Central Africa. It analyzes progress and challenges and identifies opportunities and next steps to accelerate and/or consolidate progress in large-scale preventive VAS for child survival in West and Central African countries.

4.1. Policy awareness

West and Central African countries have some of the highest under-five mortality rates worldwide. While home to only 10 percent of the world's under-five children, they represent 27 percent of the world's under-five deaths. In view of this situation, national governments in the region are increasingly recognizing child survival as a national development priority. Such policy prioritization is largely a result of Governments' commitment to reach MDG4.

Advocacy and support by international agencies at the global, regional and national level have played a key role in advancing policy commitment to child survival in West and Central Africa. For example, in Niger, the Ministry of Public Health, HKI and UNICEF spearheaded a coalition-building process linking VAS to national child survival goals. An evidence-based advocacy strategy was developed around the child survival benefits of adequate and sustained VAD control with one unambiguous message: "VAD control can avert over 25,000 child deaths per year". Since December 1998, this sustained coalition between the Government of Niger and its development partners has ensured high and sustained VAS coverage (above 80 percent) twice yearly[18].

Policy action and program implementation for child survival are being progressively scaled up to ensure that essential health and nutrition interventions for child survival and development are delivered at national scale (i.e. universal coverage) on a regular basis. VAS is increasingly included in 'essential packages' of evidence-based, low cost, and high impact child survival interventions that can be periodically delivered to the vast majority of children under five years old.

In most instances, the inclusion of VAS in such essential packages for child survival and development is due to the recognition of the link between child undernutrition - including VAD - and child mortality. In such cases, vitamin A supplements are included in the list of essential drugs and VAS coverage has been adopted as a progress indicator in National Health Development Programs (Burkina Faso) and National Poverty Reduction Strategies (Mali)[19].

In many instances, the inclusion of VAS in essential child survival packages is due to the feasibility and low cost of its integration into "mainstream interventions" such as NIDs for polio eradication or measles control rather than to the recognition of the child survival potential of regular and large scale VAS programming. In such cases, VAS is still perceived as an intervention that needs to be "piggy-backed" on to other health interventions.

In some instances, policy makers and program planners are not yet aware of the extent of VAD in children and the gravity of its consequences for child survival. In such situations,

National governments in West and Central Africa are increasingly recognizing child survival as a national development priority. In NIGER, the Ministry of Health, HKI and UNICEF spearheaded a coalition-building process linking vitamin A supplementation to national child survival goals. Since December 1998, this coalition has ensured high and sustained vitamin A supplementation coverage (above 80 percent) twice yearly.

the implementation of effective VAS programs has been erratic, fragmented or inexistent (Equatorial Guinea and Gabon).

Way forward

- As NIDs phase out in most countries in West and Central Africa, there is a need to consolidate an advocacy strategy that builds on epidemiological and programmatic evidence and raises policy makers' awareness about the child survival benefits of adequate and sustained policy action and program implementation for large scale VAS as a central component of national child survival strategies.

4.2 Policies and guidelines

Most countries in West and Central Africa have developed policy guidance and program guidelines for VAS. However, in still too many instances, national policy guidance and program guidelines on VAS are not available as easily identifiable reference documents and/or are not adequately disseminated to stakeholders at the different implementation levels.

In most countries, national policies and program guidelines are in line with WHO recommendations for the use of vitamin A supplements in nutrition and health programs. This is particularly the case for the use of vitamin A supplements in preventive health and nutrition programs for children. However, there are instances where national VAS policies and guidelines are not consistent with WHO recommendations due to the co-existence of conflicting global messages on the recommended VAS doses and schedules for children and women. More specifically, this relates to the coexistence of WHO recommendations (normative reference) on VAS and the recommendations on VAS to WHO by the International Vitamin A Consultative Group (IVACG, advisory reference). As a result, in some countries national policies and guidelines follow "internationally agreed upon recommendations" that have not been endorsed by WHO. Recent assessments in Nigeria have identified the co-existence of non-uniform VAS policies and protocols across states as one of the reasons for inter-state differences in VAS coverage[20].

Ideally national policies and guidelines on VAS should address the continuum of care for children and women and include prevention and treatment through facility-based, outreach and community-based programs both in regular and emergency situations. In West and Central African countries where VAS policy guidance and program guidelines are available as easily identifiable documents, such reference documents consistently emphasize the use of vitamin A supplements for children, as part of preventive large-scale interventions in non-emergency programs. VAS in regular child health contacts, in the treatment of undernutrition and common childhood illnesses, in the early postpartum period, and in response to emergency situations is often underplayed. However in an increasing number of countries guidelines define VAS routine as a mix of facility, outreach and community-based VAS strategies (Senegal)[21] and recognize the systematic integration of VAS in the management of acute undernutrition as a milestone in ensuring high and sustained VAS coverage (Niger)[22].

Way forward

- Ensure that in every instance, policy guidance and program guidelines are consistent with WHO recommendations and cover the use of VAC in preventive, treatment and emergency programs for children and women through facility-based, outreach and community-based schemes.
- Ensure that countries adopt the goal of universal VAS coverage for infants 6-11 months and children 12-59 months twice yearly with coverage for both categories equal or above 80 percent to be considered "on track".
- Ensure that such state-of-the-art policy and program guidance on VAS is made available to all stakeholders as easily identifiable policy and program reference documents accompanied by adequate orientation and training of program planners and health workers.

Most countries in West and Central Africa have developed policy guidance and program guidelines for vitamin A supplementation. In an increasing number of countries such as SENEGAL, national guidelines define routine for vitamin A supplementation as a mix of facility, outreach and community-based interventions.

4.3 Campaigns and routine

In West and Central Africa, NIDs for polio eradication have provided a well-funded platform for preventive VAS programs and have undoubtedly raised the visibility of regular, large-scale VAS for children. However, NIDs have also "stigmatized" large-scale VAS as a "vertical" (i.e. campaign) intervention. This perception of large scale VAS as a "vertical" intervention has been strengthened further by the subsequent conceptualization and implementation of non-NIDs stand-alone campaigns for VAS such as 'Vitamin A Days' or 'National Micronutrient Days'.

It is now accepted that as NIDs phase out, there is an urgent need to consolidate a post-NIDs strategy for regular VAS for children. However, most policy makers, program planners, and service providers stress the need to integrate VAS into 'routine' nutrition and health services for children.

In most countries, routine EPI contacts are used as a delivery opportunity to ensure VAS of infants at measles contact. However, the reliance on measles contact at nine months leaves many children without VAS protection during months 6, 7 and 8 - highly vulnerable months in terms of morbidity and mortality. In 2005, VAS partners and EPI partners in Niger addressed this problem by establishing a 6 month contact in the immunization schedule. The main steps were: dissemination and application of national guidelines regarding VAS at six months; integration of VAC supply to that of vaccines; intensive communication strategy on VAS at six months; and systematic recording of VAS at six months on the immunization's registers and cards. In 2004, the National VAS coverage from EPI reports was 16 percent. In 2005, after a six-month implementation of the new protocol, VAS coverage at 6 months was 63 percent.

The Niger case illustrates a change in policy to create a 6 month appointment in the EPI schedule and to prioritize getting children their first VAS dose as soon as they turn 6 months. Complementing the highly successfully twice-yearly VAS strategy with an ongoing strategy to reach infants as soon as they turn 6 months has been very successful in Niger. Next steps include analyzing what other interventions should be offered at the 6 month contact (for example counseling and support on the introduction of age-appropriate complementary foods while continuing breastfeeding), and deciding if VAS coverage at 6 months has reached levels that justify excluding children 6-11 months from the twice-yearly VAS rounds[23].

However, even in situations where the VAS potential of EPI contacts is maximized, EPI cannot be used as a delivery mechanism for VAS for children 12-59 months. In Cameroon, for example, strategies were implemented in 13 health districts to maximize EPI coverage of VAS for children 12-59 months; in this ideal setting, only 50 percent coverage could be obtained[24]. A national VAD survey in Cameroon showed that in the six months preceding the survey less than 2 percent of children had received VAS through routine child health services[25]. This leaves children 12-59 months old with little opportunity to benefit from VAS, as in most countries in West and Central Africa access to and use of routine health services for children 12-59 months old is low as most children 12-59 months old are not covered by any 'routine' preventive health service.

In response to this need, countries in West and Central Africa have successfully implemented Child Health Weeks (CHWs) as one-stop opportunities for providing essential child survival interventions - including VAS - complemented by improved outreach and facility-based routine services. In Ghana, CHWs provide a package of services that include VAS, immunization, deworming, re-treatment of insecticide-treated bednets, adequate supply of child health cards, and birth registration[26]. In Mali, the transfer process from NIDs-supported VAS to CHWs has been smooth and has not compromised high VAS coverage[27]. Similarly, experience in Senegal shows that VAS coverage increases with the integration of VAS in a package of essential child survival interventions that include deworming, immunization, and ITNs[28].

A particularly interesting development is the delivery of VAS and deworming to underfives in the context of CHWs in an increasing number of countries in West and Central Africa. In Senegal, the integration of deworming with VAS is well accepted by health providers, caregivers and children and has become standard practice nationwide in the context of Child Survival Days[29]. In Congo, the joint delivery of VAS and deworming is seen as realistic and viable; deworming is reported to boost the attendance of immunization and VAS programs[30]. Even in an environment as challenging as Sierra Leone, CHWs (June 2006) included VAS for children 6-59 months old and post-partum women, mebendazole for children 12-59 months old, and the promotion of exclusive breastfeeding and iodized salt consumption. The distribution strategies used Peripheral Health Units, temporary posts and mobile teams. VAS and deworming coverage were 92 percent and 88 percent respectively[31]. Community Directed Treatment with Ivermectin (CDTI) systems for onchocerciasis control have been used as a successful approach to ensure periodic VAS to children 6-59 months old in Cameroon, DR-Congo and Nigeria[32-33].

Countries in West and Central Africa have successfully implemented Child Health Weeks as one-stop opportunities for vitamin A supplementation complemented by improved outreach and facility-based routine services. In GHANA, Child Health Weeks provide a package of services that include vitamin A supplementation, immunization, deworming, re-treatment of insecticide-treated bednets, adequate supply of child health cards, and birth registration

Way forward

- In countries where a post-NIDs VAS strategy is missing, plan and scale up a 'new routine' for children under five years of age that uses classic routine EPI contacts and a mix of facil-

ity-based, outreach and community-owned mechanisms for the regular delivery of a package of essential preventive services - including VAS - for child survival. This 'new routine' needs to be district specific and led by the primary health care system.

- Simultaneously, raise awareness of the importance of VAS for the management of common childhood illnesses and severe malnutrition in the context of facility- and community-IMCI and facility- and community-based care for children with severe malnutrition.

4.4. Institutional leadership

Leadership for VAD control and VAS programming is normally with the Nutrition Section at the Ministry of Health. The level of institutionalization of Nutrition leadership within governmental bodies varies significantly from country to country; it can be as high as a National Nutrition Agency (NaNA) attached to the office of the Vice President (Gambia) to as low as a bureau within the Reproductive Health Division at the Ministry of Health (Niger, 2004).

The capacity for VAS programming of the Nutrition Section at the Ministry of Health is often strengthened by technical, implementing and financial partners that support high and sustained VAS coverage goals. The most frequent partners for VAS programming are: UNICEF for policy advocacy, strategy development, program communication, operational support to regions and districts, and supply procurement and management (including vitamin A supplements); Helen Keller International (HKI) for technical support, strategy development, and program implementation at the regional and district levels; USAID - through central/bilateral agreements and NGO-implemented child survival programs - for technical and operational support in focus regions and districts; the World Bank for operational support in community-IMCI through programs such as the *Programme pour le Renforcement de la Nutrition* (PRN) in Senegal; and CIDA and the Micronutrient Initiative (MI), for the provision of vitamin A supplements and financial support. At the regional level, the ECOWAS (Economic Community of West African States) Nutrition Forum has provided opportunities for regional advocacy and goal setting and has led to the adoption of high (above 80 percent) and sustained bi-annual VAS coverage as a regional goal[34].

Wherever institutional recognition for and empowerment of the Nutrition Section in the Ministry of Health are in place, so are the key elements of a national VAS policy, strategy, guidelines and planning. However, there are instances where key leadership positions for Nutrition in the Ministry of Health are missing or sub-optimally staffed. This creates dependency on partners for jumpstarting or advancing policy and program action for VAS and results in poor national ownership of key processes and outcomes - including within the Ministry of Health. In 2004, assessments conducted by UNICEF and MI in six countries in West and Central Africa (Burkina Faso, DR-Congo, Mali, Niger, Nigeria, and Senegal) identified the need to strengthen the capacity of the Nutrition Section at the Ministry of Health to play a leadership role in policy and program action for VAS.

Way forward

- The leadership role in Nutrition for Child Survival at the Ministry of Health needs to be given appropriate institutional recognition and capacity to deliver (including adequate human and financial resources) to ensure timely policy action and program implementation in nutrition for child survival, including VAS.
- Simultaneously, partner agencies need to clarify their comparative advantages, roles, and responsibilities so as to create a public accountability framework, avoid duplication, foster synergies and achieve sustainable results (coverage) and impact (reduction in VAD and child mortality).

The level of institutionalization of Nutrition - including vitamin A deficiency control and vitamin A supplementation programming - within governmental bodies varies from country to country. In GAMBIA, the National Nutrition Agency is attached to the office of the Vice President. Wherever institutional recognition for and empowerment of the Nutrition leadership is in place, so are the key elements of a national vitamin A supplementation policy, strategy, plan and guidance.

4.5. Institutional coordination

As mentioned, leadership for VAD control and VAS is normally with the Nutrition Section at the Ministry of Health (MOH). Coordination among MOH-Nutrition, MOH-Immunization, MOH-Maternal and Child Health (MCH), and MOH-Roll Back Malaria (RBM) programs is crucial if countries are to ensure that VAS is integrated into all appropriate health and nutrition strategies and programs at the central, regional, and district level. In some countries poor intra-ministerial coordination has led to sub-optimal use of available resources and opportunities to reach and maintain high VAS coverage. However, in an increasing number of countries, intra-ministerial coordination has been institu-

tionalized through a national nutrition forum that oversees policy harmonization and maximizes program implementation.

Coordination at the central level between MOH-Nutrition and partners is important to ensure that: a) policy and program guidance is in line with state-of-the-art international recommendations; and b) partners' support is in line with national policy and program guidance. In West and Central African countries, central-level coordination between MOH-Nutrition and partners is generally fair. In Mali, all stakeholders involved in large-scale VAS for child survival participate at periodic coordination meetings with rotating chairmanship; these meetings serve as a forum to agree on roles and responsibilities and to coordinate efforts for the integration of VAS into national immunization campaigns and National Nutrition Intensification Weeks are discussed. In Guinea, concerted efforts by all agencies involved has ensured harmonization of training and monitoring tools and approaches and has translated into high VAS coverage in the context of Supplemental Immunization Activities and Child Health Weeks[35]. In Senegal, an inter-agency task force coordinated the development of IEC materials for child survival (harmonization) - including VAS - while the national World Bank-supported nutrition project ensured wide dissemination of such IEC materials (cost-saving).

Effective stakeholders' coordination at the district level is crucial to avoid counterproductive 'protection' of agency-specific VAS sites, strategies and tools and avoid duplication (in the training of health workers and community agents for example) and waste of resources and service delivery gaps (coverage). In general, district level coordination between technical/implementing partners is fair. In Senegal, bi-monthly inter-agency meetings chaired by the district medical director are a good example of district-level coordination mechanisms. In Niger, the Core Group - which includes WHO, UNICEF, NGOs and Rotary International - plays a significant coordination role and contributes to ensuring high and sustained VAS coverage. In DR-Congo, an inter-agency coordination committee facilitates partners' coordination at the national and provincial level.

In Nigeria, coordination for VAS is particularly complex as several structures within the Federal Ministry of Health (including two parastatal agencies), the ministries of health of the 36 states and the Federal Capital Territory, and the National Planning Commission are involved in coordination of VAS programs. Moreover, the private sector (profit/non-for-profit), recognized as an important delivery channel for VAS (particularly in Lagos State and other large cities/states), has not yet been effectively integrated into the VAS system[36].

Way forward

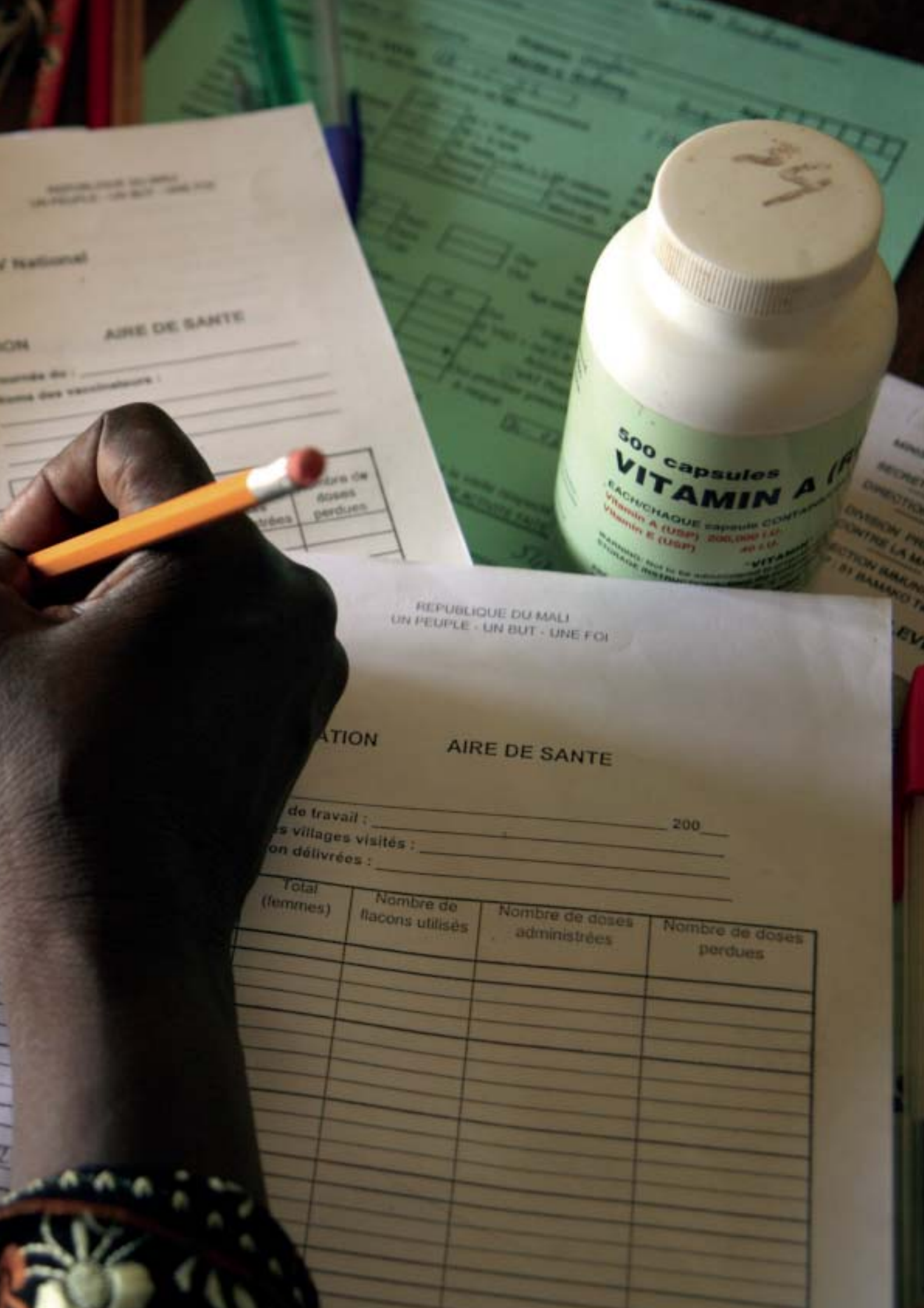
- Consolidate the coordination role of Nutrition at the Ministry of Health to ensure timely and effective coordination among all concerned programs at the Ministry of Health and among its partners.
- In an increasingly decentralized environment, stakeholders' coordination at the central and district level needs to be further strengthened according to agreed-upon roles and responsibilities to improve program coverage and reduce costs (increase cost-effectiveness).

In MALI, all stakeholders involved in large-scale vitamin A supplementation for child survival participate at periodic coordination meetings with rotating chairmanship; these meetings serve as a forum to agree on roles and responsibilities and to coordinate efforts for the integration of vitamin A supplementation into national immunization campaigns and National Nutrition Intensification Weeks are discussed.

4.6. Health workers' training

In most countries in West and Central Africa, pre-service training of health workers in child nutrition is inadequate - in quantity and quality - to sustain long-term VAS programming for children[37]. In general, pre-service training of medical doctors, nurses and midwives gives low importance to nutrition. In medical schools, nutrition training is often not compulsory. In nursing schools it represents a mere 3-5 percent of the total training time and emphasizes scientific theory over national priorities in nutrition for child survival and development[38]. In Senegal, for example, training in nutrition is not compulsory in medical schools and a mere 3 percent of total study time of nurses is dedicated to nutrition. In Burkina Faso, nurses' training includes a nutrition course, but this amounts to less than one week's worth of study. Sub-optimal pre-service training in nutrition results - among other consequences - in missed opportunities for VAS during routine child-care consultations. For example, studies in Niger have shown that only 22 percent of eligible children at well child consultations and 12 percent of children and sick-child consultations receive adequate VAS[39].

In-service training and support by technical and implementing partners compensate - to a significant extent - for the inadequacy of pre-service training for VAS programming. This has translated into widespread recognition among health workers that VAD is a serious health problem and that VAS programs are needed to control VAD. This recognition exists even in countries where data on the prevalence and severity of VAD are absent, national


AIRE DE SANTE
500 capsules
VITAMIN A
REPUBLIQUE DU MALI
UN PEUPLE - UN BUT - UNE FOI
AIRE DE SANTE
Total (femmes)
Nombre de flacons utilisés
Nombre de doses administrées
Nombre de doses perdues

VAS policies and guidelines are sub-optimal and pre-service training of health staff is weak. A recent survey in Guinea shows that two thirds (66 percent) of caregivers - particularly mothers - identify health workers as the primary source of information and counseling on vitamin A and VAS; in rural areas, three in four caregivers (79 percent) identified health workers as their main source of information on the benefits of VAS[40].

However, such in-service training and support by partners usually focuses on large-scale VAS with little attention given to VAS in well-child and sick-child health services. This is partially due to the fact that training on the use of VAS in classic services for healthy and sick children is expected to be covered by the Integrated Management of Childhood Illness (IMCI) strategy. However, the roll-out of facility-based IMCI has been slow, that of Community-based IMCI even slower, and in the vast majority of countries only a limited number of districts and staff benefit from them. Moreover, IMCI training-of-trainers effectiveness is often weak due to its high cost and the rapid turn-over of health staff.

Way forward

- There is a need to review the nutrition training curricula of health workers and align it with national policy and program priorities for child survival, including VAS.
- There is also a need to involve central and district level program officers - governmental and non-governmental - in the pre-service and in-service training of health staff. Ensuring that all future health staff receive up to date training on VAD control and VAS for child survival will go a long way in enhancing the technical basis for VAS programming.
- Implementing partners need to ensure that where agency or project specific training materials are needed these are in line with national policies and guidelines.
- Ensure that capacity building for VAS programming stresses that while VAS is a key preventive intervention for child survival it also is crucial in reducing the severity and case-fatality of severe malnutrition and common childhood illnesses.

A recent survey in GUINEA shows that two thirds (66 percent) of caregivers - particularly mothers - identify health workers as the primary source of information and counseling on vitamin A and vitamin A supplementation. In rural areas, three in four caregivers (79 percent) identified health workers as their main source of information on the benefits of vitamin A supplementation.

4.7. Community resource persons

In general, policy makers, program planners and government partners consider that effective decentralization is crucial to improve the coverage, quality, and impact of essential health and nutrition interventions for child survival. Some countries like Ghana have put in place national initiatives to train a whole new generation of community nurses (health workers with a two-year training) to expand access to and quality of essential child survival services - including VAS - particularly in rural and underserved areas.

However, in most countries health staff shortages and rapid staff turnover translate into few qualified staff in place at any given time. In such a context of decentralization and health staff shortages, national policy makers, program planners, and international partners show a growing interest in community-based action for child nutrition and health as part of an extended Primary Health Care (PHC) system. In general, district health officials are willing to take the responsibility for achieving high and sustained VAS coverage through the gradual involvement of community resource persons in VAS programming (including the delivery of VAC). National level policy makers and district level program planners see the involvement of community resource persons as a cost-effective and sustainable approach to achieving high VAS coverage along with other essential interventions for child survival. Experience in the region shows that community resource persons can be trained and supervised to routinely distribute vitamin A supplements to children and that this can be a low cost and sustainable strategy to achieve and maintain high VAS coverage[41].

With growing interest in community-led action for child survival, there is also growing recognition of the need to ensure that community resource persons receive timely and supportive supervision. In theory, supervision of community resource persons is to be ensured by health staff at the district level. However in practice, supervision of community resource persons is often hampered by insufficient health staff or staff time, suboptimal supervisory skills (health staff is seldom trained in supportive supervision), long distances (as seen in Mauritania and Niger), lack of transportation, and/or insecurity (as seen in war-torn regions in Chad and DR-Congo). Moreover, in a context of underpaid workforce, health workers usually expect additional financial compensation if they are to supervise community resource persons. As a result, in districts supported by implementing partners, health workers often receive some kind of financial compensation from partners to ensure that community resource persons receive adequate supervision.

In Cameroon, "how to" guides, job aids and monitoring checklists have been successfully used with community-based health workers to effectively ensure the integration of large-scale VAS into community-based distribution systems[42]. In Guinea, monitoring tools have been designed for people with low literacy levels and community distributors successfully reported their monthly distribution levels to the health center where they had received their supplies for VAS; community distributors were found to be important sources and channels for improving awareness of VAD and ensuring high VAS coverage[43].

Way forward

- In an increasingly decentralized environment where qualified health staff is insufficient, the involvement of community resource persons in child survival programming, including VAS, becomes essential.
- If community resource persons are to ensure access to and quality of VAS for child survival, adequate training and supervision schemes need to be strengthened and skill-based training and supervision materials (protocols, job aids, and checklists) developed and disseminated.

Experience in West and Central Africa shows that community resource persons can be trained to routinely distribute vitamin A supplements to children. In CAMEROON "how to" guides and job aids have been used with community resource persons to effectively ensure the integration of large-scale vitamin A supplementation into community-based distribution systems

4.8. Program communication

In West and Central Africa, communities and caregivers associate the term 'vitamin' with positive perceptions. VAS is very popular, particularly large-scale VAS events for children, as most communication efforts in VAS programming have focused on social mobilization for mass supplementation, including the use of media. A good number of countries have made effective use of community radio networks and community resource persons and groups to mobilize communities around large scale VAS for children.

In Mali, community mobilization is supported through information dissemination using a network of 144 public, private and community radio stations to ensure large and widespread information dissemination at the national level[44]. In rural areas, 'traditional' communication channels such as town criers and other social networks appear to be even more effective than more 'modern' methods (i.e. radio and television) in reaching target groups[45]. In Ghana, the combination of radio and gong-gong/town criers has been used as the main source of information on the benefits of VAS in non-NIDs large-scale VAS events[46]. In DR-Congo, video and audiotapes distributed over the country to broadcast networks have played a crucial role in mobilization[47].

Communication strategies and tools based on formative research have been developed in a good number of countries to improve caregivers' understanding of the importance of VAS for child survival. In some countries like DR-Congo, Ghana, Nigeria and Senegal inter-agency IEC task forces have ensured consistency and harmonization of behavior change communication (BCC) tools for VAS and child survival. This has avoided the risk of inconsistent messages regarding VAS that have been observed in project and agency-specific IEC/BCC materials in other countries. Many countries in the region have the expertise to develop adequate IEC materials in a way that is cost-effective and ensures a good quality final product that is disseminated in a timely manner. In Ghana, the use of extensive and carefully tested BCC methods, with remarkable coverage results in a short period of time underlines the importance of this element of VAS programs[48].

Way forward

- Experience in West and Central Africa shows that advocacy and communication are crucial in generating caregivers' demand for VAS. There is a need to strengthen national IEC task forces for the development of effective program communication strategies and tools that create and sustain awareness about the negative consequences of VAD and articulate a clear, unambiguous, and action-oriented message about the critical positive role of regular VAS for child survival.
- Program communication for VAS in regular child health contacts (healthy and sick child visits) needs to be strengthened. Health workers need to be provided with adequate communication and counseling tools and proper orientation in the use of such tools to improve provider-client communication around VAS for child survival.

Many countries have developed communication strategies to improve caregivers' understanding of the importance of vitamin A supplementation for child survival. In DR-CONGO, an inter-agency task force has ensured coherence and consistency of information, education, and behavior change communication tools for vitamin A supplementation.

4.9. Procurement and supply

Most of the VAC available in country are provided by a CIDA-funded MI donation to the national Ministry of Health through UNICEF. Such VAC are to be provided free of charge to families in the context of preventive and treatment programs for children 6-59 months old. In general it is well understood that when countries need VAC for programs targeting population groups such as school-age children or mothers in the early postpartum, they need to procure VAC for these population groups. Countries such as Ghana, Togo and many others are successfully integrating VAS into health and nutrition programs for school-age children and mothers.

In some countries, VAC fall under cost-recovery schemes and central and regional pharmacies maintain VAC stocks, as CIDA/MI-donated VAC are to be given free of charge to children. This provides a basis for long-term systematic VAS. However, it sometimes creates uncertainties about procurement mechanisms and VAC use (free of charge or cost recovery). Moreover, some international NGOs procure VAC (often as gift in kind) from sources other than UNICEF or the central or regional pharmacies. This often results in the use of VAC of different shapes, colors, and dosages - sometimes in the same district - undermining training and social mobilization efforts.

Countries are increasingly using 100,000 IU capsules (CIDA/MI-donated blue capsules) for infants 6-11 months old and 200,000 IU capsules (CIDA/MI-donated red capsules) for children 12-59 months old. However shortages of 100,000 IU capsules are often reported. Similarly, district-level program planners and service providers often report that CIDA-donated containers of 500 capsules are too large for small-size health centers and community-based distribution programs.

Experience has shown that when the estimation of annual VAC needs is conducted by the Ministry of Health and the UNICEF country office taking into account the VAC needs estimated by districts themselves, excess of VAC in some districts, shortages of VAC in others, sub-optimal VAS coverage, and VAC losses due to expiration are largely avoided. However, underestimation of VAC needs still happens - even in the context of supplemental immunization campaigns and child survival days - for two major reasons: a) biannual coverage through large-scale VAS is above the anticipated 80-to-90 percent because the numerator (number of children supplemented) and/or the denominator (target child population) are underestimated; and/or b) the VAC needs for well-child and sick-child health contacts are underestimated.

Countries are increasingly including a contingency stock of VAC for emergency preparedness and response. Countries such as Côte d'Ivoire have documented effective community-based VAS in emergency situations[49]. In Guinea Bissau, children who were offered VAS at home during the war had a 12 percent reduction in mortality, showing the beneficial impact of VAS on childhood mortality in an emergency situation. However, in many countries the 'contingency stock' is still limited to the VAC not used in large-scale VAS events.

Way forward

- The estimation, procurement and supply of VAC needs to be streamlined to take into account the actual needs of the different national programs (preventive and curative) and target groups (preschool-age children, school-age children, post-partum women), planning for universal coverage and including provisions for emergency response.
- District-level planning needs to be strengthened to avoid supply disruptions that hinder systematic VAS of all eligible children. This will need to include adequate provisions of capsules containing 200,000 IU (children 12-59 months old and mothers in the early postpartum period) and 100,000 IU (infants 6-11 months old).
- More responsive packaging (smaller containers) will significantly improve social mobilization efforts and will translate into increased VAS coverage.

Besides their needs for preventive and treatment programs, countries are increasingly including a contingency stock of vitamin A capsules in their annual planning for emergency response. Countries such as CÔTE D'IVOIRE have documented effective community-based vitamin A supplementation in emergency situations. In GUINEA BISSAU, child mortality was 12 percent lower among children who were offered vitamin A supplements at home during the war, showing the beneficial impact of vitamin A supplementation on childhood mortality in an emergency situation

4.10. Monitoring, reporting and evaluation

Most countries produce reliable coverage estimates of large scale VAS events for child survival, although in general administrative data report higher coverage than post-event population-based coverage surveys. Imprecision in administrative coverage figures is often due to factors that affect the numerator and/or the denominator of the estimates such as: a) poor access to up-to-date population estimates for children 6-59 months old (denominator); the case of Nigeria is certainly extreme as the esti-

mates on the population of children 6-59 months old range from 20 million (UNICEF's State of the World Children 2006) to 35 million (according to NIDs estimates); b) lack of correction for transitory population movements (denominator); this has been the case in DR-Congo with more than 2 million internally displaced people; and/or c) inclusion of non-target children such as children aged over 59 months old in the numerator. Post-event VAS coverage surveys are normally used to validate administrative data and to improve understanding of VAS program performance. There are a number of examples where such surveys have identified low-performing regions and specific obstacles in the VAS program.

In general, countries lack a systematic approach to the collection of information on VAS coverage in non-event national VAS efforts. In some countries, tools for information collection (i.e. "cards") are simply not available whereas in others a variety of tools (growth cards, vaccination cards, child health cards, mother and child cards...) are available. Where tools are available, the information they contain on VAS is often limited to infants (0-11 months old) and sometimes young children (12-23 months old). In few instances, do cards have a provision to record VAS status in all relevant age-groups (maternal supplementation 0-8 wks post-partum, 6-11 months, and 12-59 months).

Program monitoring, evaluation and research have been important in advancing policy action and program implementation for VAS in West and Central Africa. For example, research in Congo showed that children who were moderately-to-severely wasted had significantly lower serum retinol values than those who were not wasted[50] while research in DR-Congo showed that among children who suffered VAD at baseline, mean weight increments were higher in the children who benefited from VAS[51]. Ghana benefited from the mortality studies conducted in the northern part of the country and hosted the West African Regional Conference on vitamin A in 1993. Recent program evaluation in Ghana shows that the national large scale VAS program plausibly explains the sharp decline in mortality observed among children 1-4 years old as no other measurable factors could explain the mortality decline observed[52]. In Niger, a plausible link is being documented between the decline in underfive mortality observed between 2000 and 2006 (from 280 to 198 or a 30 percent reduction) and high and sustained VAS coverage over the same period, as other indicators of service provision for children did not improve significantly.

Way forward

- It will be important to review the existing national data collection tools and develop simple and standardized tools that allow the collection and retro-information of relevant VAS data that reflect the proportion of children receiving two vitamin A doses annually.
- It will also be important to instill a sense of purpose and performance to the timely collection and reporting of standardized, relevant, and accurate information on VAS for decision making, so that data collection and reporting are not perceived as a meaningless burden.
- VAS coverage estimates will need to be derived separately for: a) annual coverage of infants 6-11 months; b) first semester coverage for children 12-59 months (VAS coverage achieved via events or routine delivery between January 1 and June 30); and c) second semester coverage for children 12-59 months and (VAS coverage achieved via events or routine delivery between from July 1 to December 31). Universal coverage in all three categories needs to be the goal; districts and countries reporting 80 percent coverage or above in each category can be considered "on track".
- In "on track' countries, good quality program evaluation and research need to document the contribution of VAS programs to child mortality reduction; this evidence is needed to consolidate gains in well performing countries and advance programming in countries that lag behind.

Program monitoring, evaluation and research are important in advancing policy action and program implementation for VAS. Program evaluation in NIGER is documenting the link between the sharp decline in under-five mortality observed between 2000 and 2006 (from 280 to 198 or a 30 percent reduction) and high and sustained vitamin A supplementation coverage over the same period, as other indicators of service provision for children did not improve significantly.

4.11. Financial resources

Cost estimates of national VAS programs in West and Central Africa are limited. The cost of Ghana's national VAS program is the best documented. In Ghana, the Ministry of Health initiated the VAS program in 1995 through a UNICEF-supported pilot supplementation activity in the three northern regions. In the year 2000, the VAS program became a nationwide undertaking. Currently, the Government provides 73 percent of total costs and partners the remaining 27 percent. The average cost per child dosed twice per year is 0.25 US$ if only program-specific costs are considered. The annual average is 0.90 US$ if personnel and capital costs are also included. Assuming a 19 percent reduction in the mortality rate of children 6-59 months old due to the VAS

program, the annual cost per child death averted is estimated at about 77 US$ if only program-specific costs are considered and 277 US$ when all personnel and capital costs are included[53].

In Niger, the estimated cost of bi-annual VAS has been estimated at 0.24 US$ (program-specific costs) per child per year for two VAS doses[54]. In Senegal, Burkina Faso and Mali, this cost has been estimated at 0.33, 0.34 and 0.36 US$ per child per year respectively for two VAS doses. As these cost analyses increasingly refer to the provision of an integrated package of essential nutrition and health services, the more efficiently this package will be delivered, the lower the VAS cost will be and the higher its cost-effectiveness.

In general, countries lack a business plan outlining over a number of years: a) the direct and indirect costs of the national VAS program (at the central and district level); b) the current and future contributions by central government (central budget), districts (decentralized budget), and development partners; and the progressive transition towards independence from donor funding for VAS. In some countries, one way to increase government's contribution to VAS programming has been accessing budgetary assistance funds. In Mali, for example, a PROFILES analysis for nutrition advocacy was conducted in 1998 and contributed to the inclusion of the VAS coverage as a progress indicator of the PRODESS (Social and Health Sector Development Program, 1998-2003) and later on the Poverty Reduction Strategy Paper (PRSP). As a result the MOH was able to finance 49 percent of the total cost of the National Week for the Intensification of Nutrition Activities with HIPC (Highly Indebted Poor Countries) funds for poverty reduction. Similarly, in Burkina Faso, VAS coverage is one of the indicators included in the National Development Plan and PRSP. A similar pattern has been observed in Ghana and Senegal. In such countries, there are indications of political will to assume fiscal responsibility for VAS programs (including the supply of VAC), starting with the use of budgetary assistance funds (PRSP and basket funding)

Way forward

- The cost of VAS delivery will be decreased and the cost-effectiveness of VAS programs improved if twice-yearly VAS is integrated into packages of essential evidence-based, low-cost, high-impact child survival interventions delivered at national-scale.
- It will be important to support countries in the development and implementation of an exit strategy towards non-reliance on donor funding for VAS. Such an exit strategy needs to spell out how governments are planning to gradually take on most of the financial costs of VAS programs.
- This will imply strengthening the capacity of MOH-Nutrition to ensure that VAS coverage is included as a progress indicator for child survival and that national governments assume fiscal responsibility for VAS programs using the different financing mechanisms available.

Countries such as BURKINA FASO and MALI have adopted vitamin A supplementation coverage as a progress indicator in their National Health Development Programs and Poverty Reduction Strategies. The estimated program cost of vitamin A supplementation ranges between US$ 0.25 and 0.36 per child per year for two vitamin A supplementation doses.

5 VITAMIN A SUPPLEMENTATION IN WEST AND CENTRAL AFRICA. CONCLUSION

In West and Central Africa, bi-annual high-dose VAS of children 6-59 months old is seen as the most feasible, affordable and effective strategy to control VAD in the short and medium term. Since the late 1990s, VAS was integrated into NIDs for the eradication of poliomyelitis. This integration was a breakthrough as it allowed many countries to ensure a four-to-six month vitamin A reserve to more than 80 percent of children 6-59 months old once annually. However, maximizing the child survival impact of VAS requires at least twice-yearly VAS. Therefore, complementary VAS delivery mechanisms were needed to ensure that all children 6-59 months old in West and Central Africa receive preventive VAS twice annually. This became even more imperative as NIDs started to be phased out.

Over the last years, alternative VAS strategies such as National Measles Campaigns (Congo, DR-Congo), Emergency Nutrition Response (Mauritania, Niger), National Micronutrient Days (Burkina Faso, Niger), National VAS and Deworming Days (Congo, DR-Congo, Senegal, Togo), National Nutrition Weeks (Mali), and National Child Survival/Health Days (Chad, Central Africa Republic, Ghana, Guinea, Guinea Bissau, Liberia, Mauritania, Senegal, Sierra Leone, Togo), have demonstrated that countries in West and Central Africa can deliver vitamin A supplements to children twice yearly. In particular, the institutionalization of Child Survival/Health Days has provided and effective way to ensure the periodic, active and sustainable distribution of vitamin A supplements through existing permanent institutions. In combination with the integration of VAS into the Expanded Program of Immunization (EPI) and the therapeutic dosing of children suffering from undernutrition or common childhood infectious diseases (pneumonia, diarrhea, malaria, and measles), these strategies have effectively delivered vitamin A supplements to children.

At the United Nations Millennium Summit in 2000, world leaders made a commitment to reduce mortality rates in children by two-thirds between 1990 and 2015. Meanwhile, research and epidemiological evidence have demonstrated the centrality of VAS to child survival. In West and Central Africa, effective and sustained VAS programs have the promise to be among the most cost-effective and high-impact interventions towards the achievement of the Millennium Development Goal for the reduction of child mortality. Among the many challenges that countries in West and Central Africa will need to face in the coming years, the control of vitamin A deficiency in children is one that can be overcome. The need is urgent, and the solutions are known, effective, and affordable.

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