# Preliminary results of vitamin A supplementation (VAS) coverage in 2018 for the first round of VAS distribution in Mali and Burkina Faso

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# Mali

## Background

The first round of National Immunization Day (NID) took place in Mali from 20 to 23 April 2018. Services delivered included vitamin A supplements to children 6-59 months (100,000 IU capsules for children 6-11 months and 200,000 IU capsules for children 12-59 months), deworming tablets (Albendazole) for children 12-59 months and polio vaccine for children who were not up to date in their immunization for polio. The NID campaign was organised nationally. Services were distributed door-to-door by teams consisting of facility health personnel and community workers.

HKI provided technical and financial support to the regions of Segou and Kayes during the campaign. The selection of these two regions for HKI support was based on the experience developed by HKI in these regions over the last years. Other partners provided support to the rest of the country.

HKI conducted the post-event coverage survey (PECS) from 22 May to 1 June 2018. Three separate surveys were organised, one in Segou, one in Kayes, and one combining all accessible areas of the country (including Segou and Kayes). For each survey, the sample size was 30 clusters of 30 children, so 900 children. Some areas were excluded due to high security risks. Decisions to exclude areas based on security concerns were made in consultation with the Ministry of Health. Nine teams of three surveyors were deployed to conduct the three surveys simultaneously. Clusters were selected in coordination with the National Institute of Statistics of Mali, using the Institute's official population data. Clusters were selected using probability proportional to size. In each cluster, 30 households were randomly selected, and in each household one child 6 to 59 months was selected.

## Coverage Estimates based on Administrative Data

**Table 1** provides VAS coverage stratified by two age categories (i.e. 6-11m and 12-59m) based on "Administrative Data". Administrative data uses population projections to estimate the denominator (i.e. number of children in each category that reside in the area) and "tally sheets" which record the number of children who received VAS as the numerator. Population projections or estimates are often inaccurate and therefore can over- or underestimate the true VAS coverage. As shown in **Tables 1 and 2**, based on Administrative data, both VAS and deworming coverage exceeds 100% for all regions and age groups, except for children 6-11m in Kayes where VAS coverage was estimated at 97%. Coverage estimates that exceed 100% likely reflect the inaccuracy of the population estimates for children 6-11 m and 6-59 m of age. They can also reflect inaccuracy in the filling of tally sheets during the campaign or in compiling tally sheets into reports after the campaign is over. The national estimate represents all regions of the country, including Kayes and Segou.

***Table 1 Coverage for VAS from Mali NIDs implemented in April 2018 based on Administrative Data***

| | 6-11 months | | | 12-59 months | | |
|---|---|---|---|---|---|---|
| | Target number of children based on population estimates | Number. who received VAS based on Tally sheets | VAS Coverage (%) | Target number of children based on population estimates | Number who received VAS based on Tally sheets | VAS Coverage (%) |
| Kayes | 63,058 | 61,284 | 97% | 451,568 | 477,029 | 106% |
| Segou | 61,418 | 71,965 | 117% | 552,761 | 685,707 | 124% |
| National | 490,347 | 552,893 | 113% | 4,292,845 | 4,973,687 | 116% |

**Table 2** shows that deworming coverage exceeded 100% for all regions based on Administrative data. These high and improbable coverage rates are likely the result of the same inadequacies in the Administrative Data collection process mentioned above for VAS.

***Table 2. Coverage for deworming from Mali NIDs implemented in April 2018 based on Administrative Data***

| | 12-59 months | | |
|---|---|---|---|
| | Target number of children based on population estimates | Number who received deworming tablet | Deworming Coverage (%) |
| Kayes | 451,568 | 470,556 | 104% |
| Segou | 552,761 | 683,248 | 124% |
| National | 4,292,845 | 4,724,672 | 110% |

**Coverage Estimates based on the Post-Event Coverage Survey (PECS)**

**Vitamin A Supplementation (VAS).** Coverage estimates based on PECS provide a more reliable and valid value because the probability sampling method used generates a representative sample of children eligible to receive VAS (i.e. 6-59 months of age). To assess whether children received the various campaign services, the child's caretaker was asked to identify the products they had received from products shown by the surveyors (i.e. VAS capsules, polio vaccine, deworming tablet).

As shown in **Table 3,** coverage of VAS reached more than 80% in the region of Segou and at national level, and was close to 80% in Kayes (i.e.79.4%). The 80% VAS coverage threshold is important because it is the basis for the 23% mortality reduction estimate. These coverage estimates indicate a large drop from the >90% levels reported in 2016.

One explanation for the lower coverage may be the absence of campaigns in 2016 and 2017; nonetheless, coverage overall remains above the 80% threshold[1].

***Table 3. Coverage of services provided during Mali NIDs implemented in April 2018 based on PECs data***

| | Segou (n=881)[1] | | | Kayes (n=881) | | | National (n=878) | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. received | % | 95% CI | No. received | % | 95% CI | No. received | % | 95% CI |
| VAS | 759 | 86.2 | 84.0, 88.5 | 699 | 79.4 | 76.5, 82.0 | 706 | 80.5 | 77.6, 83.0 |
| Polio | 216 | 24.2 | 21.4, 27.2 | 315 | 36.1 | 32.9, 39.4 | 312 | 35.9 | 32.8, 39.2 |
| Deworming[2] | 522 | 69.9 | 66.5, 73.1 | 463 | 63.8 | 60.2, 67.2 | 432 | 61.5 | 57.8, 65.0 |

[1] n's include 50 (Segou), 31 (Kayes) and 52 (National) don't know/don't remember responses
[2] n's for deworming are 747, 726 and 703, respectively, and are smaller than VAS because deworming only targets children 12-59 m of age

**Table 4** shows the coverage of VAS in urban, rural and peri-urban areas by region. VAS coverage in Segou and the overall national level are similar, however they are slightly lower in rural areas in Kayes, and within Kayes VAS coverage was ~7% higher in urban (85.8%) vs rural (78.4%) areas and 12% higher than peri-urban areas (73.5%). Further investigation is on-going to understand the reasons for these coverage differences.

Finally, there was no significant differences in VAS coverage between younger (6-11m) and older children (2-59m) and between girls and boys.

***Table 4.–VAS coverage by per age, location, and sex during Mali NIDs implemented in April 2018 based on PECS data.***

| | Segou (n=881) | | | Kayes (n=881) | | | National (n=878) | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. received | % | 95% CI | No. received | % | 95% CI | No. received | % | 95% CI |
| Rural | 654 | 85.9 | 83.3, 88.2 | 536 | 78.4 | 75.1, 81.3 | 459 | 79.4 | 75.9, 82.5 |
| Urban | 105 | 87.5 | 80.2, 92.4 | 127 | 85.8 | 79.1, 90.6 | 235 | 83.0 | 78.2, 87.0 |
| Peri - urban | - | - | - | 36 | 73.5 | 59.9, 84.2 | 12 | 70.6 | 42.9, 88.5 |
| Children 6-11m | 116 | 86.6 | 79.6, 91.4 | 119 | 77.8 | 69.4, 82.8 | 135 | 77.1 | 70.3, 82.8 |
| Children 12-59m | 643 | 86.1 | 83.4, 88.4 | 580 | 79.9 | 76.8, 82.6 | 571 | 81.2 | 78.2, 83.9 |
| Boys | 383 | 87.2 | 83.8, 90.1 | 372 | 78.9 | 74.9, 82.3 | 362 | 81.2 | 77.2, 83.2 |
| Girls | 376 | 85.1 | 81.4, 88.1 | 327 | 79.9 | 75.8, 83.6 | 344 | 79.6 | 75.5, 83.2 |

[1] Evidence indicates that when Vas is distributed to at least 80% of children 6-59 months, it can contribute to reducing under five mortality by up to 23%.

**Polio.** Coverage of polio varied between 24.2% and 36.1% between regions (Table 3). The vaccine was only supposed to be provided to children who could not demonstrate being up to date with the vaccination calendar, so this small proportion of children having received polio vaccine during the campaign was expected.

**Deworming.** Coverage of deworming was also much lower than for VAS, reaching between 61.5% and 69.9% (Table 3). Although further investigation is being conducted, initial reports indicate that low availability of tablets at the facility-level represents the main cause for this low coverage. Unlike vitamin A capsules, deworming tablets are usually not purchased by government partners, and the Government of Mali does not have sufficient resources to purchase enough tablets.

## Burkina Faso

### Background

From 12 June to 11 July 2018, the Government of Burkina Faso organised the first round of the national campaign called Vitamin A Days Plus (JVA+). This campaign was organised using two different delivery models. In urban settings, teams of health workers and community workers delivered services over a five-day period using a door-to-door approach (12 to 16 June). In rural areas, community workers paid by the government of Burkina Faso were given up to five weeks (12 June to 11 July) to distribute the services in their catchment area (the number of households each community worker covers varies widely between areas). Services delivered were vitamin A supplements to children 6-59 months (100,000 IU capsules for children 6-11 months and 200,000 IU capsules for children 12-59 months), deworming tablets (Albendazole) for children 12-59 months and measurement of mid-upper arm circumference (MUAC) using an insertion tape to screen for child wasting.

HKI provided support for the campaign to the central Ministry of Health of Burkina Faso and to the regions of Est, Centre Sud and Plateau Central. Support provided did not allow HKI to influence the organisation of the campaign in either rural or urban areas as the Ministry of Health requested HKI to first measure the exact coverage in both settings before being able to propose changes to the organization of the campaigns.

Because of the two different campaign approaches, the sampling was divided between rural areas (31 clusters) and urban areas (29 clusters). Ideal sampling was calculated as 30 clusters of 30 children, but one of the selected urban clusters was found to be rural when the survey team reached it, so this cluster was coded as rural instead of urban, explaining the difference in the number of clusters between the 2 areas. Clusters were selected in coordination with the National Institute of Statistics of Burkina Faso, using the Institute's official population data. Clusters were selected using probability proportional to size. In each cluster, 30 households were randomly selected, and in each household one

child 6 to 59 months was selected. To produce national estimates, a weight was applied to the whole dataset to account for the proportion of rural vs. urban in the population[i].

**Coverage Estimates based on Administrative Data**

At the time of writing this summary, administrative data had not yet been released by the Ministry of Health.

**Coverage Estimates based on the Post-Event Coverage Survey (PECS)**

**Vitamin A Supplementation**. The results of PECS (**Table 5**) show much higher coverage of services in rural vs. urban areas. In rural areas, the new delivery approach using paid Community Health Workers implemented at the end of 2017 shows promising results, as coverage of VAS and deworming reached ~75%. Therefore, minimal corrective measures are needed for the next round of JVA+. MUAC screening was, however, much lower at 62.1% and further investigation is needed to understand the reasons behind this lower level of coverage.

In urban areas, coverage of all services was much lower compared with rural areas. Only 46%, 27% and 45% of children received VAS, MUAC screening and deworming, respectively (Table 5). These coverage levels are much lower than expected from a door-to-door approach. Preliminary analyses indicate that most households not covered in the urban area either never received the visit of the distribution team and/or where not aware that a campaign was taking place. Major efforts will have to be made in the second round to increase the coverage to the required 80% threshold.

***Table 5. Coverage of services provided during Burkina Faso JVA+ implemented in June 2018 based on PECs data***

| | Rural (n=917) | | | Urban (n=863) | | | National (n=1780) | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. received | % | 95% CI | No. received | % | 95% CI | No. received | % | 95% CI |
| VAS | 695 | 75.9 | 73.0, 78.5 | 399 | 46.3 | 43.0, 49.6 | 817 | 69.3 | 66.6, 71.8 |
| MUAC screening | 569 | 62.1 | 58.9, 65.1 | 232 | 26.9 | 24.0, 29.9 | 639 | 54.2 | 51.3, 57.0 |
| Deworming[1] | 605 | 74.1 | 70.9, 76.9 | 352 | 45.4 | 41.9, 48.9 | 712 | 45.4 | 64.7, 79.4 |

[1] n's for deworming are 817, 776 and 1593, respectively, and are smaller than VAS because deworming only targets children 12-59 m of age

**Table 6** shows that *c*overage of VAS was similar between girls and boys in both *rural and urban* areas, but significantly lower for children 6-11 months compared with children 11-59 months in both areas. Understanding the reason for this difference requires further investigation

### *Table 6. VAS coverage by per age and sex during Burkina Faso JVA+ implemented in June 2018 based on PECS data.*

| | Rural (n=917) | | | Urban (n=863) | | | National (n=1780) | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. received | % | 95% CI | No. received | % | 95% CI | No. received | % | 95% CI |
| Children 6 – 11m | 69 | 69.0 | 59.1, 77.4 | 34 | 39.1 | 29.3, 49.9 | 79 | 62.7 | 53.9, 70.8 |
| Children 12 – 59m | 626 | 76.1 | 70.6, 80.9 | 365 | 48.3 | 42.0, 54.7 | 738 | 70.1 | 67.2, 72.7 |
| Boys | 334 | 74.7 | 72.9, 80.6 | 199 | 44.2 | 39.7, 48.9 | 395 | 67.5 | 67.6, 71.2 |
| Girls | 361 | 77.0 | 72.9, 80.6 | 200 | 48.5 | 43.7, 53.4 | 422 | 70.9 | 67.2, 72.7 |

[i] The process for calculating the weight used to estimate national VAS coverage considered that 78% of the population of Burkina Faso lives in rural areas. Giving rural areas a weight of 1, results in urban areas being given a weight of 0.28. Because of the difference in number of clusters surveyed between rural and urban, a second level of weighting was calculated, providing a weight of 1.06 for urban areas against a weight of 1 for rural areas. Combination of the two weights provided a weight of 0.3 for urban vs 1 for rural areas.

*Weighting of dataset to produce national estimate for PECs data, Burkina Faso, July 2018*

| | Total population | Proportion | Population weight | Sample | Proportion | Sample weight | Final weight applied |
|---|---|---|---|---|---|---|---|
| Urban | 3,140,838 | 0.22 | 0.2863 | 870 | 0.48333 | 1.0690 | 0.3060219 |
| Rural | 10,971,264 | 0.78 | 1 | 930 | 0.51667 | 1 | 1 |
| | 14,112,102 | | | 1,800 | | | |