MACEPA PATH
Malaria Control and Elimination Partnership in Africa

1554

Comparing data from a malaria routine surveillance system to health facility source records in Ethiopia and Senegal

Steffanie Sinclair-Chritz[1], Callie A. Scott[1], Berhane H. Tesfay[2], Adem Agmas[2], Belendia Serda[2], Asnakew Yeshiwondim[2], Amadou Ba[5], Farba Faye[6], Michael Hainsworth[1], Yakou Dieye[6], Adama Tall[6], Melkamu T. Zeleke[2], Girma S. Guesses[2], Asmamaw L. Ayenew[2], Worku M. Workie[2], Fekadu Muluye[5], El hadji Doucouré[7], Tidiane Thiam[7], Souleymane Ba[7], Erica Berlin[7], Moussa Diop[6], Belay Bezabih[4], Moustapha Cissé[8], Mady Ba[8], Duncan Earle[3], Philippe Guinot[6], Asefaw Getachew[2], Richard Steketee[1], Caterina Guinovart[1]

[1]PATH Seattle; [2]PATH Ethiopia; [3]PATH Zambia; [4]Amhara National Regional State Health Bureau; [5]Independent consultant; [6]PATH Senegal;
[7]Regional and District Health Directorates, Ministry of Health, Matam and Louga regions, Senegal; [8]Programme National de Lutte contre le Paludisme (PNLP)

Background

The governments of Ethiopia and Senegal are working toward achieving malaria-free zones in specifically targeted regions. Accurate, routinely reported information on malaria case rates is required to direct appropriate strategies to achieve this goal and to monitor progress.

The Malaria Control and Elimination Partnership in Africa (MACEPA), a program at PATH, in collaboration with the countries' malaria control programs implemented a malaria surveillance system in some health posts in Amhara Region, Ethiopia, and in Kanel, Linguère, and Ranérou districts in northern Senegal, through which aggregated weekly malaria case counts are reported to DHIS2.

Objective:
To assess the accuracy of the malaria surveillance system as compared with the health facilities' registers in 2013–2015.

Figure 1. Map of Amhara National Regional State in Ethiopia and location of the project health posts

Figure 2. Map of Kanel, Linguère, and Ranérou in Senegal and location of the project health posts

Methods

- 20 health posts in Amhara Region, Ethiopia, and 13 health posts in Kanel, Linguère, and Ranérou districts in northern Senegal were selected to conduct the data validation.
- The selected health posts were visited and data on RDT-confirmed malaria cases (data of diagnosis, age, malaria species, and village) were extracted from paper registers (source records) using a standardized form.
- Data from the malaria surveillance system (aggregated weekly case counts by health post) were extracted from DHIS2.
- Data from source records (data validation dataset), considered the gold standard, were compared to DHIS2 data from the malaria surveillance system for the 2013 and 2014 transmission seasons.

Results

Ethiopia:

- During the main transmission season (September through November), the average weekly incidence of malaria cases per 1,000 population across all 20 health posts for 2013 was 0.85 (95% CI 0.29–1.41) from source records and 1.33 (95% CI 0.79–1.87) from DHIS2. In 2014 it was 0.61 (95% CI 0.02–1.21) and 0.17 (95% CI -0.52–1.82) respectively.
- The number of malaria cases decreased from the 2013 to 2014 transmission season. Figure 3 shows the results by health post.
- From the 2013 to the 2014 transmission season, accuracy reporting to DHIS2 improved. Figure 4 shows the results by health post.

Figure 3. Ethiopia: Comparison of malaria cases from DHIS 2 and from source records (data validation) for the 2013 and 2014 peak transmission seasons

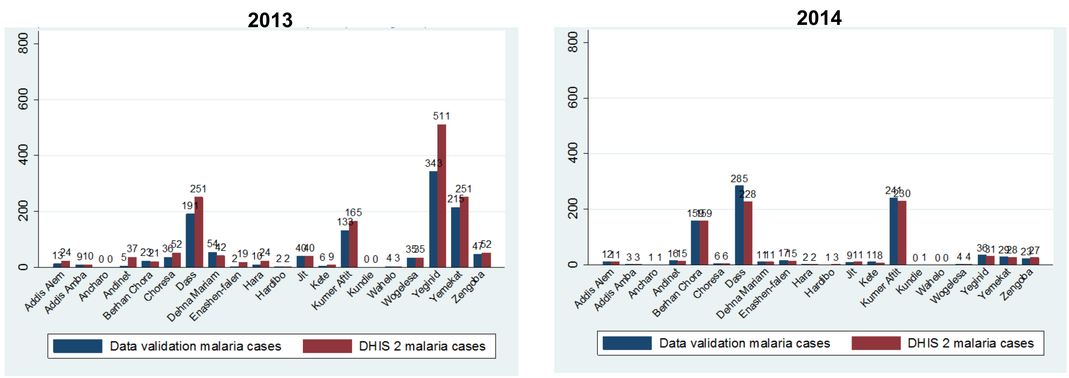
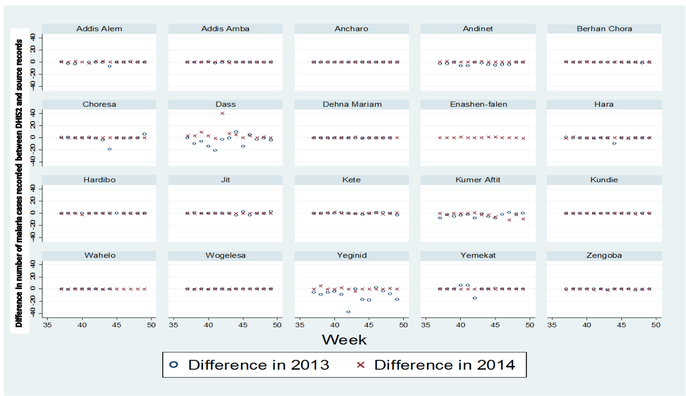


Figure 4. Difference in number of malaria cases reported per week in DHIS 2 and source records during the 2013 and 2014 transmission seasons for 20 health posts in Amhara National Regional State, Ethiopia
More recorded cases found in source records are labeled as a positive difference and more cases found in DHIS2 are labeled as a negative.



Senegal:

- During the main transmission season (July through January), the average weekly incidence of malaria cases per 1,000 population across all 13 health posts for 2013 was 53.08 (95% CI 30.4–75.76) from source records and 55.98 (95% CI 26.2–85.76) from DHIS2. In 2014, the average weekly incidence of malaria cases per 1,000 population across all 13 health posts was 23.58 (95% CI 12.94–34.22) from source records and 34.32 (95% CI 10.97–57.67).
- The number of malaria cases decreased from the 2013 to 2014 transmission season. Figure 5 shows the results by health post.
- From the 2013 to the 2014 transmission season, accurate reporting to DHIS2 improved. Figure 6 shows the results by health post.

Figure 5. Senegal: Comparison of malaria cases from DHIS 2 and source records (data validation) for the 2013–14 and 2014–15 peak transmission season

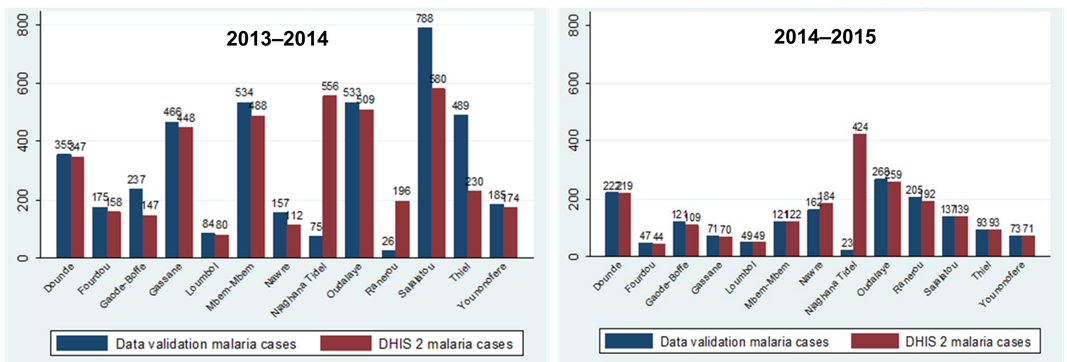
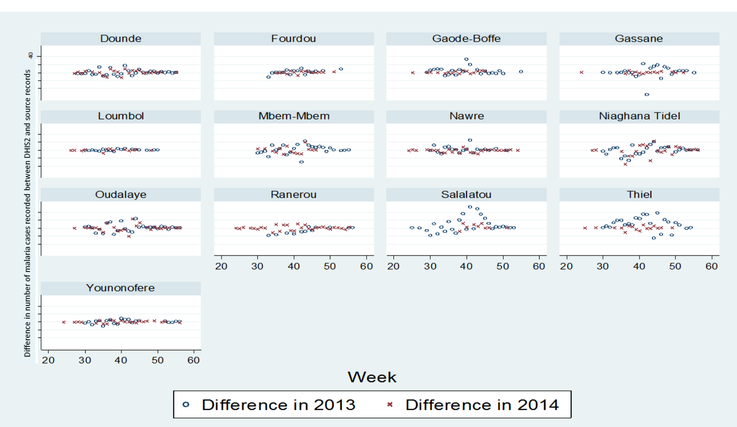


Figure 6. Difference in number of malaria cases reported per week between source records and DHIS 2 during the 2013–14 and 2014–15 transmission seasons for 10 health posts in northern Senegal
More recorded cases found in source records are labeled as a positive difference and more cases found in DHIS2 are labeled as a negative.



Conclusion

- Overall, differences between DHIS 2 data and data extracted from source records are small and these differences decreased from 2013 to 2014, suggesting that a surveillance system with standardized registers and weekly reporting of malaria case counts can provide accurate and timely information on malaria transmission intensity at the health post level.
- The accuracy of the DHIS 2 data varied by health post. Routine monitoring of the discordance between DHIS 2 data and data extracted from source records through data quality audits is warranted.
- Supervision in health posts with higher levels of discordance may result in greater improvements in the accuracy of DHIS 2 data over time.