

Advancing health systems for mothers and newborns through routine health information systems: a case study from Gombe State, Nigeria

Antoinette Alas Bhattacharya¹, Nasir Umar¹, Ahmed Audu², Habila Felix², Elizabeth Allen³, Joanna RM Schellenberg¹, Tanya Marchant¹

¹ Faculty of Infectious and Tropical Disease, London School of Hygiene & Tropical Medicine; ² Gombe State Primary Health Care Development Agency, Nigeria; ³ Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine



Background

Routine health information systems are critical for advancing health systems for mothers and newborns through real-time monitoring of service delivery and coverage. District Health Information System, version 2 (DHIS 2) is an open source software platform used in more than 60 countries, on which global initiatives increasingly rely for such monitoring.

We used facility-reported data in DHIS 2 for Gombe State, north-eastern Nigeria, to present a case study of data quality to monitor priority maternal and neonatal health indicators.



Fig 1 (left). Gombe State, Nigeria

Fig 2 (right). A primary health facility's service registers and treatment cards for women and children in Gombe State, Nigeria.

Methods

We mapped priority indicators referenced by the Ending Preventable Maternal Mortality¹ and Every Newborn Action Plan² to the data available in Gombe State's facility-based data system. For all health facilities in DHIS 2 offering antenatal and postnatal care services (n=497) and labor and delivery services (n=486), we assessed the quality of data for July 2016 - June 2017 according to the World Health Organization data quality review guidance³. We reviewed three data quality dimensions – completeness and timeliness, internal consistency, and external consistency – and considered the opportunities for improvement.

Acknowledgements

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Results

Of 14 priority maternal and neonatal health indicators that could be tracked through facility-based data, 12 were included in Gombe's DHIS 2, suggesting high potential for monitoring (Table 1). During July 2016 - June 2017, facility-reported data in DHIS 2 were incomplete (Figure 3), did not regularly reflect the content of facility service registers, and showed inconsistencies between related indicators (Figure 4), inconsistencies over time, and inconsistencies with an external data source. Data aligned with Gombe's health program priorities, particularly older health programs, were of better quality. There were also differences in data quality by indicator type, with contact indicators having higher overall data quality than indicators related to the provision of commodities or content of care.

Priority maternal and newborn health indicator:	Facility registers	DHIS2	Priority maternal and newborn health indicator:	Facility registers	DHIS2
Main denominators					
Facility deliveries	x	x	Content of antenatal care		
Facility live births	x	x	Hypertension: blood pressure taken		
First antenatal care visits	x	x	Anemia: blood test	x	x
Coverage indicators: care for all women and newborns			Proteinuria: urine test	x	x
Four or more antenatal care visits	x	x	Iron supplementation	x	x
Skilled attendant at birth	x	x	Tetanus protection	x	x
Institutional delivery			Intermittent preventive treatment of malaria in pregnancy	x	x
Oxytocin immediately after birth for prevention of postpartum hemorrhage	x		Known HIV status or tested for HIV and received results	x	x
Early postpartum-postnatal care for woman and newborn			Content of postpartum-postnatal care		
Met need for family planning			No pre-lacteal feeds during first three days of life		
Essential newborn care	x		BCG vaccination during postnatal period	x	x
Respectful maternity care			Polio vaccination at birth	x	x
			Exclusive breastfeeding up to 6 months	x	x

Table 1. Priority maternal and newborn health data in Gombe State's facility registers and reports in DHIS2, June 2016-July 2017

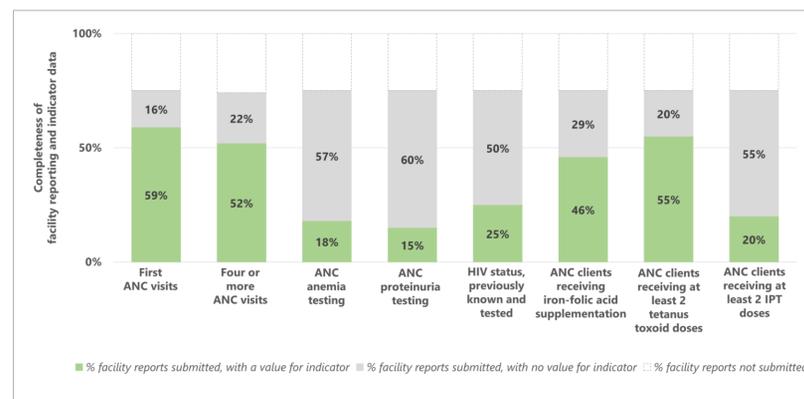


Fig 3. Antenatal care: completeness of facility reporting and indicator data in Gombe State, Nigeria, July 2016-June 2017. Notes: The World Health Organization defined completeness of indicator data to be satisfactory when less than 10% of the expected data were missing values.

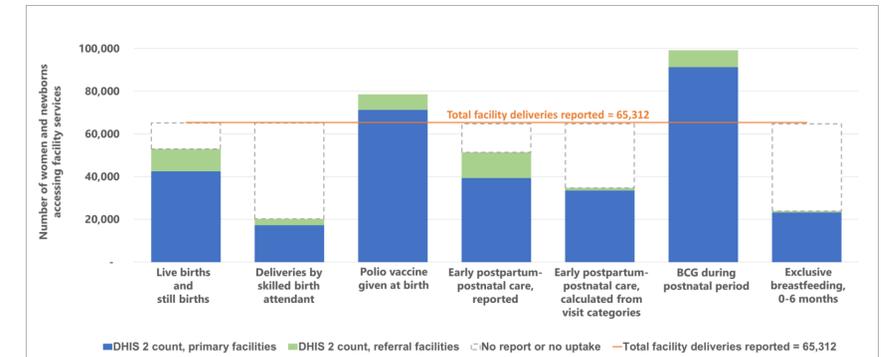


Fig 4. Consistency between related indicators: facility-reported indicators for labor and delivery services in Gombe State, Nigeria, July 2016-June 2017, for 460 primary facilities and 26 referral facilities

Notes: When reviewing internal consistency between related indicators, the World Health Organization guidance recommended that pairs of data elements that we expect to be equal in value fall within +10% of each other.

Conclusions

Our study adds new evidence showing the potential of data in DHIS 2 for local, real-time monitoring of maternal and newborn health services. While the quality of data in DHIS 2 could be strengthened, the data quality metrics for priority indicators were not universally nor equally poor. Coordinated action at multiple levels of the health system is needed to maximize reporting of existing data; rationalize data flow; routinize data quality review, feedback and supervision; and ensure the ongoing maintenance of DHIS 2.

References

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