

BIRTH DEFECTS SURVEILLANCE IN MALAWI



Trained midwife for Bwaila, Madalitso Msakatiza, examines baby for major external birth defects.

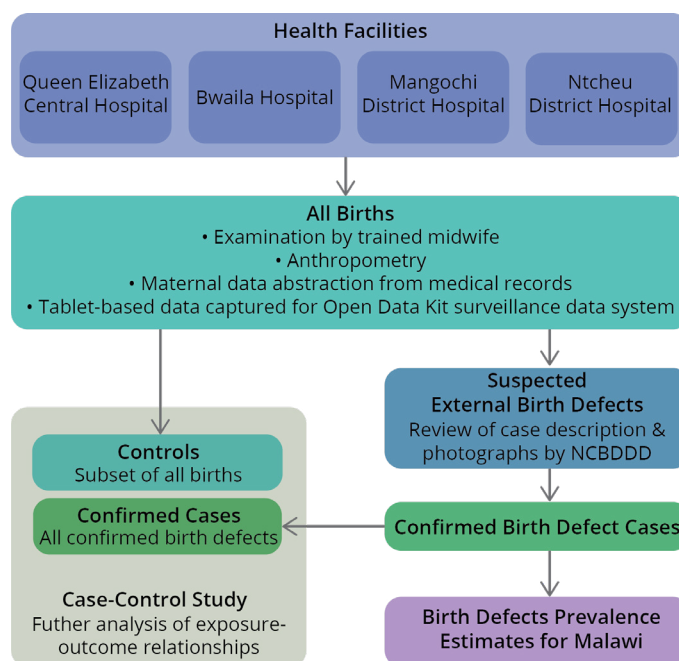
PROJECT RATIONALE

- Reliable data on birth defects is often not available in low- and middle-income countries (LMIC).
- The 63rd World Health Assembly passed a resolution urging LMIC to build capacity to identify and prevent birth defects.¹
- Routine surveillance is essential for public health monitoring of pregnancy outcomes and birth defects, especially in high-HIV burden settings where women living with HIV initiate the use of antiretroviral therapy before or during pregnancy.
- Birth defects surveillance can efficiently identify cases with rare outcomes for recruitment into detailed epidemiological studies.
- Malawi is among the first countries in Africa to implement an active hospital-based birth surveillance system.

The overall objective of the Malawi Birth Defects Surveillance (BDS) is to establish a surveillance system to estimate the prevalence of external birth defects and adverse pregnancy outcomes. All live and still births are registered at four high-volume facilities: Queen Elizabeth Central Hospital (Blantyre District), Bwaila Hospital (Lilongwe District), and District Hospitals in Mangochi and Ntcheu. Within 24 hours of birth or before discharge, a trained midwife examines each newborn, classifies major external defects by ICD-10 code and records adverse birth outcomes and anthropometric measurements. High quality pictures and descriptions of the defects are sent to the Centers for Disease Control and Prevention (CDC) National Center on Birth Defects and Developmental Disabilities (NCBDDD) for confirmation. Demographic and clinical information are collected from maternal health records to estimate the prevalence of birth defects and pregnancy outcomes by maternal characteristics such as gravidity, parity, age, and HIV status.

In addition, a subset of women who provide consent are enrolled in a nested case-control study. Mothers of cases (infants with external major birth defects) and three hospital-matched controls complete an additional in-depth questionnaire to assess associations between external birth defects and maternal exposures such as prior health conditions, medications, and environmental and lifestyle factors.

Birth Defects Surveillance Flow Chart



¹ World Health Organization Sixty-Third World Health Assembly, *Birth Defects Resolution*, 2010.

BDS Implementation Highlights (December 2016–March 2022)

- Trainings for study staff on Good Clinical Practice, online protocol, and Birth Defects Assessment and Reporting conducted by the International Clearinghouse for Birth Defects Surveillance and Research (ICBDSR) in Italy.
- Implementation of tablet-based data collection with Open Data Kit software to minimize errors and ensure consistency across sites.
- Quality assurance monitoring of study implementation, including:
 1. Monthly site visits by the I-TECH BDS study team
 2. Discussions at technical working group meetings and quarterly site visits including the Ministry of Health (MOH), National AIDS Commission (NAC), Public Health Institute of Malawi, and CDC Malawi
 3. External site visits by CDC Atlanta
 4. External site visits by monitors hired by CDC Atlanta
- Review of narrative descriptions and photographs of each newborn with suspected abnormalities to confirm diagnosis and coding by ICBDSR following ICD-10 disease classification criteria.
- Assessment of 185,163 still and live births between October 2016 and March 2022.

Acknowledgements

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Nurse Manager for Mangochi, Felix Banda, doing quality control on BDS files.

Anticipated Data Use & Public Health Implications

- Establishment of baseline prevalence of external birth defects in Malawi.
- Evaluate the impact of introducing new drugs for the management of HIV (e.g., dolutegravir) on the prevalence of external birth defects.
- Advocate for investment in programs and/or interventions to reduce the occurrence of birth defects and adverse pregnancy outcomes.



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