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Selected Results of an Analysis of the Maternal and Newborn Content of Routine Information Systems in 24 Countries

Introduction and Background

Routine health management information systems (HMIS) provide valuable information for district health managers and facility health workers that can help guide service delivery and district management decisions and measure progress toward national and subnational targets. Several global initiatives have recently issued recommendations for core maternal and newborn health indicators for tracking at global and national levels (e.g., Ending Preventable Maternal Mortality, Every Newborn Action Plan, Every Woman Every Child).

In early 2017 the World Health Organization (WHO) launched a multi-country Quality, Equity and Dignity network to improve quality of care for maternal, newborn, and child health (MNCH) linked to standards, quality statements, and quality measures published by WHO in 2016. Quality measures are intended for use by managers (district, facility) and facility quality improvement teams to monitor and help strengthen essential health functions (e.g., 24/7 availability of essential commodities) and quality of maternal and newborn care in facilities.

To help determine whether countries are currently positioned to calculate quality of care measures for antenatal care (ANC), labor and delivery (L&D), postnatal care, and child health, including recommended global maternal and newborn health indicators, the Maternal and Child Survival Program (MCSP) is reviewing the routine availability of key MNH data elements (designated space to record data point) in HMIS facility registers and facility monthly reporting forms in 24 USAID priority countries.¹

This review of routine HMIS MNCH content across 24 countries can help country and global stakeholders understand which MNCH indicators can be currently calculated using data available in routine information systems. Data gaps identified by the review can help inform revisions to facility registers (and patient records) to capture essential data elements for calculation and use of quality measures by facility health workers and district managers (including aggregation of key quality measures at district level.) The results of this review can also support advocacy for incorporating high-priority MNH data points and indicators into national HMIS.

In 2013, the Maternal Child Health Integrated Project, the predecessor to the MCSP project, reviewed MNH data elements in 13 MCHIP-supported countries.² Building on the 2013 review, MCSP's current review has

¹ Afghanistan, Bangladesh, Burma, Democratic Republic of Congo, Ethiopia, Ghana, Haiti, India, Indonesia, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Nigeria, Pakistan, Rwanda, Senegal, South Sudan, Tanzania, Uganda, Zambia. Yemen was excluded because of political instability.

² The report is available at <http://www.mchip.net/content/review-maternal-and-newborn-health-content-national-health-management-information-systems-13>.

expanded to include postnatal care and child health³ in 24 of USAID's 25 priority countries (Yemen was excluded, due to political instability). In addition, in 2016 MCSP surveyed 35 experts from 22 countries to understand the extent to which HMIS data are available in electronic HMIS tools such as DHIS2, as well as the perceived quality of the data.⁴ About three-fourths of countries reported that data are available electronically at the district level, and all but a few have aggregated electronic data at the national level. However, availability of specific indicators varied widely, and 13 countries rated data quality as poor.

This brief summarizes selected results with respect to which MNH data are being systematically collected at the facility level in the labor and delivery service area using registers, and which MNH data are reported to a higher level in the health information system (usually the district level) using facility monthly summary forms.

Methods

Starting in August 2015, MCSP staff contacted 24 of USAID's current 25 MNCH priority countries to request HMIS forms (client records, service delivery area registers, and monthly facility summary forms). In partnership with USAID, MCSP identified more than 200 data elements of interest, many of which are needed to calculate quality of care and globally recommended indicators. Data elements are pieces of information that could be included in a form and used as a standalone indicator, such as number of women diagnosed with a specific obstetric complication (e.g., postpartum hemorrhage [PPH]), or as a numerator or denominator in a percentage indicator (e.g., percentage of asphyxiated newborns for whom resuscitation actions were taken). Data elements identified for this review relate primarily to provision of high-impact routine MNCH interventions, screening for complications, management of obstetric and newborn complications, and facility-based health outcomes, including maternal and newborn morbidity and mortality.

MCSP staff reviewed the forms using a standardized data abstraction template in Microsoft Excel. MCSP country support teams reviewed completed data abstraction templates for accuracy. Analysis was conducted in Microsoft Excel.

Selected Findings in 24 Countries

Table 1 (below) summarizes selected findings on availability of specific MNH data elements in routine information systems, as part of the routine information system at either the facility level (facility register) or as part of the district/regional and/or national information system (the facility summary form reported to regional, district, and/or national level).

These findings should be considered preliminary; in the coming months, MCSP will publish the complete and final results of the HMIS review across 24 countries.

³ The child health review is still underway and will be published separately.

⁴ The full report is available online: <http://www.mcsprogram.org/resources/health-management-information-systems-hmis-review/>

Summary results

- **Health Outcome (mortality) monitoring:** Twenty-three of twenty-four countries surveyed routinely record data on maternal deaths in the maternity registers and monthly facility summary reporting forms. It is difficult to determine from the maternity registers and the monthly summary form if the recorded maternal deaths are deaths that occurred prior to discharge from the maternity. Similarly, it is difficult to determine whether maternal death data in facility monthly summary reports capture in-facility death only (institutional mortality) or a combination of community and in-facility deaths. Only 13 of the 24 countries report cause of maternal death in facility monthly reporting forms. Data on audits of maternal deaths are recorded in six of 24 (25%) country facility routine reporting forms and seven of 24 (29%) of country facility registers. Newborn death is recorded in maternity registers of twenty-two (92%) countries' and nineteen (79%) monthly summary forms. Monthly summary forms in 11 countries (46%) have a separate column to record newborn deaths within 7 days. Sixteen of 24 countries (two-thirds) record data on stillbirths disaggregated by fresh and macerated in facility forms while 13 countries (54%) report stillbirths disaggregated by fresh and macerated in monthly summary forms. Newborn cause of death is reported in only six (25%) countries' facility registers and five (21%) countries' facility reporting forms.
- **Maternity admission clinical data points:** Four of 24 countries (16%) record data on blood pressure at admission in maternity registers; none report in monthly summary forms. Only one country records data on admission cervical dilation in register; none report in monthly summary forms. Twelve countries record data on gestational age in facility registers; two report in monthly summary forms. Only one country records data on pulse monitoring in register; none report in monthly summary forms. Two countries record data on temperature at admission in register; none report in monthly summary forms.
- **Essential newborn care:** Birthweight is routinely recorded in nine (38%) countries' facility registers and 19 (80%) countries' facility summary reporting forms. Breastfeeding within one hour of birth is recorded in two thirds of countries' facility registers and (54%) of countries' facility summary reporting forms. Immediate skin-to-skin is recorded in four of 24 (17%) countries' facility registers and in three (12%) countries' facility reporting forms.
- **Newborn asphyxia and prematurity diagnosis and selected management:** Newborn asphyxia is recorded in seven of the 24 (29%) countries' facility registers and 10 (42%) of countries' summary reporting forms. Nine countries (38%) and six countries (25%) respectively record resuscitation in facility registers and monthly summary forms. Eight of the 24 countries (one third) routinely record newborn birthweight (<2000g) or low birth weight in facility registers and monthly summary forms. Only one country records initiation of/referral for KMC in facility registers. Premature birth is recorded in facility registers in 10 countries (42%), while seven (29%) countries' summary reporting forms routinely report prematurity.
- **Hemorrhage and Pre-eclampsia/Eclampsia prevention, diagnosis and selected management:** Only 29% of countries' facility registers (7) and 13% of countries' facility reporting forms (3) routinely record AMTSL (immediate postpartum uterotonic) for prevention of PPH. PPH diagnosis is recorded in facility registers in 45% of countries and in facility reporting forms in 38% of countries' facility reporting forms. Administration of a uterotonic for treatment of PPH is recorded in only two countries' facility registers (8%) and three countries' (13%) facility reporting forms. Blood transfusion is recorded in only three (13%) countries' facility registers and reporting forms. Five countries (20%) record data on PE/E diagnosis in facility registers while four (17%) report in monthly summary forms. One country (4%) record administration antihypertensive in facility registers and summary form. Four countries (17%) record anticonvulsant in facility registers while six (25%) report in monthly reporting forms.

Table 1: Number of Countries Recording Priority MNH Data Points in Routine HMIS (N=24 countries.)

Domain	Data Elements	Percentage (n) of Countries (N=24)	
		Facility Register	Facility monthly reporting form (to district and/or national level)
Health outcome (mortality)	Maternal death*	95.8 (23)	95.8 (23)
	Maternal death by cause	66.7 (16)	54.2 (13)
	Maternal death audit conducted*	29.2 (7)	25 (6)
	Newborn death*	91.7 (22)	79.2 (19)
	Newborn death by cause	25 (6)	20.8 (5)
	Stillbirths (disaggregated by fresh and macerated)*	66.7 (16)	54.2 (13)
Maternal clinical data, admission to maternity	Blood pressure	16.7 (4)	0 (0)
	Cervical dilation	4.2 (1)	0 (0)
	Gestational Age	50 (12)	8.3 (2)
	Pulse	4.2 (1)	0 (0)
	Temperature	8.3 (2)	0 (0)
Routine newborn care and assessment	Birthweight recorded	37.5 (9)	79.2 (19)
	Breastfeeding within one hour of birth	62.5 (15)	54.2 (13)
	Immediate skin-to-skin care	16.7 (4)	12.5 (3)
Newborn asphyxia and prematurity (diagnosis and selected management)	Asphyxia diagnosed	29.2 (7)	41.7 (10)
	Resuscitation provided*	37.5 (9)	25 (6)
	Low birth weight or birthweight (<2000g) categorization	33.3 (8)	33.3 (8)
	Referral and/or initiation in KMC	4.2 (1)	8.3 (2)
	Prematurity diagnosed	41.7 (10)	29.2 (7)
Postpartum hemorrhage and pre-eclampsia/eclampsia (diagnosis and selected management)	Immediate postpartum uterotonic – PPH prevention*	29.2 (7)	12.5 (3)
	Antepartum Hemorrhage recorded	45.8 (11)	25 (6)
	PPH recorded	45.8 (11)	37.5 (9)
	PPH Management		
	Uterotonic treatment	8.3 (2)	12.5 (3)
	Blood Transfusion	12.5 (3)	12.5 (3)
	Pre-eclampsia/Eclampsia diagnosed	20.8 (5)	16.7 (4)
	Anticonvulsant given for PE/E	16.7 (4)	25 (6)
Anti-hypertensive given for elevated BP	4.2 (1)	4.2 (1)	

*Quality, Equity Dignity Network Core Indicator

Discussion and Conclusion

Most countries track the number (volume) of facility births and also track maternal and perinatal mortality via routine HMIS facility registers and reporting forms. However, this review demonstrates that routine tracking of maternal and newborn death by cause is much less common, with only one half and one fifth of countries respectively tracking maternal and newborn cause of death at subnational level (aggregated data across facilities via facility reporting forms.) Clear information and trends related to facility maternal and perinatal mortality (rate and cause) is vital for managers and health care workers working to improve maternal and newborn health care services and health outcomes. In countries where cause of death is recorded there are often quality issues related to the correct assignment of death, an important focus of MPDSR and quality improvement efforts in many settings.

The HMIS review findings reveal that many maternal and newborn indicators (outcome and process of care) that have been prioritized for measuring and improving quality of care, and that are recommended for country and global monitoring, are not consistently available in routine HMIS data sources. For example, immediate postpartum uterotonic (as part of AMTSL) coverage for PPH prevention (a key EPMM and QED core indicator) can only be tracked at facility level in 29% of 24 countries surveyed. Only one element of essential newborn care—breastfeeding within one hour after birth—is commonly reported in HMIS facility registers and reporting forms.

The findings from this 24 country HMIS review indicate that the incidence and specific treatments for common maternal and newborn complications are also poorly documented in routine information systems. Institutional PPH incidence can only be tracked by managers at subnational level in approximately half of countries, and information on uterotonic treatment for PPH is lacking in most facility registers. Low birthweight is routinely recorded in the HMIS in only one third of the 24 countries and initiation of KMC for premature and low-birth weight babies can only be tracked in 8% of 24 countries surveyed.

Availability of data in standardized facility registers is vital for facility managers and health workers to be able to efficiently extract results and monitor trends in health outcomes and provision of high-impact interventions as part of routine and complications care – to inform management and quality improvement efforts. In the absence of high-quality individual patient records, vital for effective clinical case management, registers are often the only available source of routine information about facility services in low-resource settings. Similarly, availability of data aggregated across facilities (via standard HMIS reporting forms) is vital for regional/district managers to be able to monitor trends in important health indicators within their catchment area. Results demonstrate that district managers in many countries cannot track basic health outcome and quality of care measures (e.g. uterotonic use as part of AMTSL, PPH incidence) in the catchment areas they manage.

Opportunities exist to improve the capture and monitoring of maternal and newborn health indicators as part of routine health information systems. Health systems need to make the most of their HMIS by collecting data that are actionable at different levels of the health system, monitor important health outcomes (e.g., cause of death, case fatality), and that capture the delivery of essential routine interventions and life-saving interventions for complications. Managers and front-line health workers need this data to monitor the performance of vital health system functions and to guide the continuous improvement of health care services for women and newborns.