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CLINICAL ARTICLE

Experiences with facility-based maternal death reviews in northern Nigeria

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ABSTRACT

Objective: To evaluate the effectiveness of the maternal death review (MDR) system and process in improving quality of maternal and newborn health care in northern Nigeria. **Methods:** A combination of quantitative and qualitative methods was used, including review of MDR forms and of health management information system data on maternal deaths (MDs), as well as semi-structured interviews with members of 11 MDR committees. **Results:** Facility-based MDRs were initiated in 75 emergency obstetric and newborn care facilities in northern Nigeria and were initially conducted in the 33 hospitals; however, the process stopped after some time and had to be revitalized. Main reasons were transfer of key members of MDR committees, lack of supportive supervision, and shortage of staff. Ninety-three (12.1%) of 768 identified MDs were recorded on MDR forms and 52 (6.7%) had been reviewed. MDRs resulted in improved quality of care, including mobilization of additional resources. Challenges were fear of blame, shortage of staff, transfer of MDR team members, inadequate supportive supervision, and poor record keeping. **Conclusion:** MDR requires teamwork, commitment, and champions at health facility level to spearhead the process. MDR needs to be institutionalized in the Ministry of Health, which provides oversight, policy guidance, and support, including supportive supervision.

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1. Introduction

Achievement of the Millennium Development Goal related to maternal health requires not only increasing coverage and access of key interventions but also improvement of quality of care (QoC) [1]. Review of maternal deaths (MDs) in health facilities, also sometimes called maternal death audit, assists in identifying important QoC problems. In addition to identifying obstetric causes, these maternal death reviews (MDRs) shed light on why women are dying by identifying contributing—and often avoidable—factors and help to discover important shortcomings in care and weaknesses in organization and provision of health services [2]. WHO recommends that health facilities providing obstetric care should review their maternal and perinatal deaths, and initiate action to address the identified problems. Facility-based MDR is defined as a “qualitative, in-depth investigation of the causes of and circumstances surrounding MDs occurring at health facilities” [3]. The main purposes of MDR are to answer the question “why did this woman die?”, to initiate action to solve identified problems, to improve QoC, and to save lives in the future. For those taking part, it is a valuable learning experience and

each death tells an important story of what went wrong and what could have been done better. Facility-based MDR usually does not provide information on what happened before the woman reached the health facility, unless relatives or carers at community level are interviewed. The main principles of MDR are to maintain anonymity, confidentiality, and a non-threatening environment without accusing or blaming people, and commitment to act. Its main purpose is identifying, analyzing, and solving problems, rather than punishing people. For the steps in initiating and conducting MDR, we refer to the WHO publication *Beyond the Numbers: Reviewing Maternal Deaths and Complications to Make Pregnancy Safer* [3]. Other methods used to improve quality of maternal and newborn health (MNH) are perinatal death review (PNDR) [4], near-miss review [5,6], criterion-based audit [7,8], and confidential enquiries into maternal and perinatal deaths [9,10].

Since 2010, the Partnership for Reviving Routine Immunization in Northern Nigeria – Maternal Newborn and Child Health (PRRINN-MNCH) program has initiated facility-based MDR in emergency obstetric and newborn care (EmONC) facilities in Katsina, Yobe, and Zamfara states in northern Nigeria as part of a wider continuous quality improvement (QI) initiative to improve quality of MNCH services. At each health facility, multidisciplinary QI teams review identified MDs after the chairperson—who is the champion of the MDR process—has collected all of the information, including patient records and additional data from interviews with health workers who were involved in the

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cases. The three-delays model developed by Thaddeus and Maine is used as an analytic framework for analyzing the contributing factors [11]. Mentoring support is given to the QI teams through supportive supervision, which the program supports and tries to strengthen in the states. At additional quarterly meetings at local government area (LGA) level (the Nigerian equivalent of a district), QI teams present and discuss some of their MDs and share experiences with MDR. To build capacity in the states to establish QI initiatives, including MDR and PNDR, selected doctors and midwives with experience in QI and MDR have been trained as trainers and supportive supervisors. In an inter-state workshop, tools for MDR recording and reporting have been developed. These include a recording form, a notification form, a follow-up form, and a staff interview guide. A guideline was developed on how to complete the forms. The forms were approved by the State Ministries of Health. (Interested readers can request electronic copies of the forms via E-mail to the corresponding author.)

Between July 2010 and early 2013, MDR had been initiated in 75 EmONC facilities (25 in each state), of which 31 are general hospitals, two are secondary specialist referral hospitals (federal medical centers), and 42 are primary healthcare (PHC) centers, which had been upgraded to basic EmONC (BEmONC) facilities. In July 2011, a preliminary rapid assessment of the MDR process was conducted in Zamfara and Katsina states. Because of the precarious security situation, this was not possible in Yobe state. Two years later, the present more in-depth evaluation of the MDR process was carried out. The aim of the present study was to review the MDR system and process in EmONC health facilities and to evaluate its effectiveness in improving quality of MNH care. The analysis of the causes and contributing factors of the reviewed MD cases, which was part of the evaluation, will be reported in another paper.

2. Materials and methods

The present evaluation, which was conducted by a national consultant in obstetrics between March 19 and April 30, 2013, used a combination of quantitative and qualitative research methods. Quantitative methods included review of available forms for MDR recording and reporting, and data of reported MDs through the health management information system (HMIS). Qualitative evaluation methods included semi-structured interviews with members of the MDR teams, who provided informed consent for the interviews. Three PRRINN-MNCH-supported LGAs were randomly selected from each state, and one BEmONC and one comprehensive EmONC (CEmONC) facility were randomly selected from the list of EmONC facilities in each selected LGA. A total of 18 facilities were visited and interviews were conducted with 11 MDR teams from nine CEmONC and two BEmONC facilities. The other seven BEmONC facilities were PHC centers that had not experienced any MDs. Ethics approval was not required for the present study, which was requested by the PRRINN-MNCH program.

Quantitative information was entered into a data extraction form and analyzed using SPSS version 18 (IBM, Armonk, NY, USA). In-depth interviews were tape-recorded, transcribed, and analyzed using a thematic framework.

3. Results

All available forms for MDR recording and reporting since the introduction of MDR were retrieved from all 75 EmONC facilities by program staff. The numbers of available forms are presented in Table 1. Ninety-three cases of MD had been reviewed. Table 2 shows the distribution of cases per state. For 10 cases, all three forms were available; for 31 cases, only the copy of the notification form was available, which meant that no MDR had been conducted because there were no recording forms. Twenty-nine of the 52 recording forms were fully completed and so were all 41 notification forms and 10 follow-up forms. Eleven recording forms had no written action plan; of the 41 action plans, only 10 follow-up forms were available. For the same period, 768 MDs had been

Table 1
Availability of MDR forms for analysis.^a

Forms for MD recording	Forms for MD notification	Forms for MD follow-up	Total
54 ^b (51.5)	41 (39.0)	10 (9.5)	105 (100.0)

Abbreviations: MD, maternal death; MDR, maternal death review.

^a Values are given as number (percentage).

^b Two of the 54 recording forms were excluded from the analysis because they were used as referral forms.

reported from the same facilities through the state HMIS. Thus, only 93 (12.1%) HMIS-reported MDs had been recorded on MDR forms and only 52 (6.7%) MDs had actually been reviewed.

In-depth interviews were conducted with members of the MDR teams in 11 hospitals (four hospitals in Katsina, four in Yobe, and three in Zamfara). Seven PHC centers designated as BEmONC facilities were visited but had not experienced any MDs.

Most MDR committees included representatives of relevant departments (e.g. maternity, laboratory/blood bank, pharmacy, operating theater, prenatal clinic), as well as the chief nursing officer, the hospital secretary, the medical records officer, a midwife, and a doctor (usually the chairperson). The usual frequency of MDR meetings was monthly; two hospitals had quarterly meetings. In all visited hospitals, MDRs stopped at some point and most restarted in October 2012, after revitalization of the process by PRRINN-MNCH staff. Transfer of key members of the MDR committees was the main reason given for the discontinuation of MDR, together with lack of supportive supervision and shortage of professional staff for the high workload. All hospitals had received supportive supervision by staff from the PRRINN-MNCH program once or twice, but not from the State Ministry of Health.

All of the people interviewed could recall some actions undertaken and completed, based on the MDRs. These included organizing on-the-job training related to identified problems such as poor use of the partograph; requesting necessary resources from hospital management or the State Ministry of Health (e.g. more skilled staff or equipment); establishment of cupboards with emergency drugs in the labor ward and mechanisms to ensure availability; redistribution of staff such as midwives from other wards to the labor ward; conducting voluntary blood donation campaigns to improve availability of blood in the blood bank; health education in the community on danger signs of pregnancy to improve health-seeking behavior and reduce late presentation; and strengthening the emergency referral system by involving local drivers and having their phone numbers.

When asked about successes and achievements, all respondents were enthusiastic about the MDR process and provided much positive feedback. Maternal death review has initiated improvements in QoC. The most frequently mentioned success was better management of patients. Another achievement was mobilization of resources through hospital management, the community, or the State Ministry of Health. Examples included obtaining a generator for the labor ward (Katsina General Hospital); a bag-valve mask and oxygen (Family Support

Table 2
Distribution of reported MDs per state through routine HMIS and the MDR system.

	Through routine HMIS	Through MDR system ^a
Katsina	475	53 (11.2)
Yobe	82	14 (17)
Zamfara	211	26 (12.3)
Total:	768	93 (12.1)

Abbreviations: HMIS, health management information system; MDR, maternal death review.

^a Values are given as number (percentage) of HMIS-reported MDs reported through the MDR system.

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