

**Progress report of the Plan to accelerate Maternal
Mortality Reduction and Serious Maternal Morbidity
for the Ministry of Health in Suriname**

Period: 2012/2013

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Contents

List of Acronyms	3
Background	4
Introduction.....	4
Specific background	4
Objectives of the consultancy.....	5
The Health Care System	5
Methodology.....	7
Maternal mortality.....	7
Maternal morbidity.....	7
Results	10
Completeness of tool sheet	10
Maternal mortality.....	11
Maternal morbidity.....	11
Prevention of unwanted pregnancies and resulting complications	11
Universal access to affordable, high-quality maternity services within a coordinated health care system	12
Skilled human resources	15
Strategic information for action and accountability	16
Discussion	16
Findings	16
Limitations.....	19
Challenges	21
Opportunities	22
Conclusions	22
Recommendations	23
Acknowledgements	25
Annexes:	25
Bibliography.....	25

List of Acronyms

ABS	Algemeen Bureau voor de Statistiek (National Statistics Bureau)
AZP	Academisch Ziekenhuis Paramaribo (Academic Hospital)
BOG	Bureau voor Openbare Gezondheidszorg (Bureau of Public Health)
BOG Epi	Bureau of Public Health – Department of Epidemiology
BOG F&CH	Bureau of Public Health – Department of Family and Community Health
CBB	Centraal Bureau voor Burgerzaken (Civil Registry)
DH	Diakonessenhuis (Diakonessen hospital)
HR	Human Resources
ICD-10	International Classification of Disease tenth revision
HIV	Human Immunodeficiency Virus
LH	s'Lands Hospital
LMSZN	Stichting Drs. Lachmipersad Mungra Streek Ziekenhuis Nickerie
MDG	Millennium Development Goal
MICS	Multiple Indicator Cluster Survey
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
MZ	Medische Zending (Medical Mission)
NHIS	National Health Information System
POPZiS	Prospectief Onderzoek naar de Perinatale en Zuigelingensterfte in Suriname / Prospective Research on the Perinatal and Neonatal mortality in Suriname
RGD	Regional Health Services
RKZ	Rooms Katholiek Ziekenhuis / St. Vincentius Hospital
SMAP	Safe Motherhood Action Plan
STI	Sexual Transmitted Infections
UNGASS	United Nations General Assembly Special Session on HIV/AIDS

Background

Introduction

In the region of the Americas, between 1990 and 2010 there has been a significant decline in maternal mortality, dropping 43% in Latin America and 30% in the Caribbean.¹ Further advances are promising, as it is currently believed that the knowledge is present in the Region to prevent nearly all cases of maternal mortality. One of the main drivers to achieve this success is the focus on achieving MDG 5, improving maternal health. This provides the motivation to reduce maternal mortality and address the conditions that give rise to these conditions. As such, additional attention is required for severe maternal morbidity. **(Laryea, 2012)**

As an effort to address both maternal mortality and severe morbidity, the 51st Directing Council¹ of PAHO/WHO approved the *Plan to Accelerate Maternal Mortality Reduction and Serious Maternal Morbidity*, Resolution CD51.R12, September 2011 (from now on called the Plan). The Plan includes numerous resolves, including:

- Improve capacity to generate information and research;
- Promote and strengthen information systems and maternal health surveillance;
- Establish a regional information repository

Implementation of the Plan is exclusive for the countries and the Latin American Center for Perinatology / Women & Reproductive Health (CLAP / WR) and PAHO country offices, will provide technical cooperation to facilitate this implementation.

Specific background

In the Plan resolution CD51.R12I, the Director is requested to establish a regional information repository on the Plan's indicators, make it available to all the main stakeholders; and entrust the coordination of such repository to CLAP/WR.

CLAP/WR will have to report periodically to the Governing Bodies on the progress and limitations of the Plan, according to the monitoring and evaluation tool (see Annex A).

¹ The Directing Council replaces the PAHO/WHO supreme governing authority, the Sanitary Conference, during the four years the Conference does not meet. All country members of PAHO/WHO are represented in each governing body.

The Plan indicates the Member States should collect data:

a) On 5 impact indicators and b) 19 process and outcome indicators.

The progress report to CLAP (2012) provided evidence on existing challenges. Few indicators were reported. Considering the above, it was decided to apply another data collection strategy. This assessment in 2014 (progress report 2013-2013) would examine and contextualize data collection challenges in order to enable the MOH to identify improved data collection strategies in light of the new SMAP (Safe Motherhood Action Plan). These findings will be examined and recommendations formulated in a separate report to MOH. The decision was taken to conduct this in-depth assessment in close coordination and supervision with BoG/MoH in order to facilitate ownership and follow-up action.

To prepare a report on progress for 2012 and 2013 a consultancy therefore was established with support from the CLAP/WR and PAHO Suriname office and in agreement with the Ministry of Health in Suriname. It was also decided to engage a consultant with medical knowledge, Dutch language skills and recent practice-based experience in all hospitals/primary care subsystems.

Objectives of the consultancy

The main objective of this consultancy – according to the Terms of Reference - is to measure at country level the evolution of selected indicators included in the Country monitoring tool sheet, (Plan of action to accelerate the reduction of maternal mortality and severe maternal morbidity: monitoring and evaluation strategy CLAP/WR Scientific Publication 1593). This report focuses on the measurement at country level of selected indicators included in the Country Monitoring Tool Sheet (Annex A).

Furthermore it provides an opportunity to gain more insight into challenges and opportunities regarding the current data registration, flow and reporting related to maternal mortality and severe morbidity. This will be reported in more detail in a separate report to be discussed with MoH.

The Health Care System

The main challenges in providing services include covering the sparsely populated areas in the country's interior, the fragmentation and segmentation of the health care system; all factors have an impact on and constitute a challenge for achieving health equity including equitable access to care and preventive collective action. For the provision of primary care in Suriname, there are three general categories providers, general practitioners and two regional service providers - Medical Mission (MZ) in the interior and Regional Health Service (RGD) in the

coastal area. Secondary care is provided by the five hospitals in the country. Of the two private and three public hospitals, four are located in the capital Paramaribo and one in the District of Nickerie. Only two of the hospitals in Paramaribo and the one in Nickerie have an emergency department.

The Ministry of Health's Bureau of Public Health is responsible for the development of disease prevention and control programs. These programs are delivered through the decentralized service delivery network of the Regional Health Services and Medical Mission and to a certain extent directly by the Bureau of Public Health. **(Health in the Americas, 2012 edition: country volume Suriname, 2012)**

The Medical Mission is comprised of a group of religious NGOs, co-funded by the government, who provide first-level care for residents of the rural interior living in traditional settings along the main rivers, many only reachable by river or small aircraft. Health care is provided by health assistants via a network of polyclinics coordinated by a coordination center in Paramaribo. MZ provides deliveries of newborns and preventive health services such as antenatal consultations and health care for children under five.

The Regional Health Services is a state foundation, which offers health care via public primary care facilities, staffed by general physicians and health practitioners who provide primary care services to residents of Suriname's coastal areas. Persons who are classified as "the poor and near-poor" by the Ministry of Social Affairs (MSA) utilize the RGD services the most. **(Health in the Americas, 2012 edition: country volume Suriname, 2012)**

The five hospitals are listed below:

- 1 s'Lands Hospital (LH): The oldest public hospital in Suriname with a focus on maternal and child health. Has the largest number of deliveries in Suriname.
- 2 Academic Hospital Paramaribo (AZP): Public hospital with (until recently) the only emergency care department in Paramaribo.
- 3 Diakonessenhuis (DH or DKZ): Private hospital with strong collaboration with the Medical Mission (MZ). Medical specialists from the DH are consulted and most referrals from the MZ (hinterland) are to the DH.
- 4 St. Vincentius Hospital (RKZ): Private hospital. This hospital recently (January 2014) added emergency department. Started with research initiatives to advance maternal and neonatal health
- 5 Regional Hospital Nickerie(LMSZN): Regional public hospital in the western district Nickerie

Methodology

According to the terms of reference (ToR) the same methodology should be used that was previously applied to build the country baseline, to collect information, data sources and types of data sources, and presentation of information.

However, considering the limitations encountered in the 2011 baseline study, another approach was chosen:

- A) To conduct the study under the umbrella and supervision of BoG. It was expected that this would overcome some obstacles in data collection and similarly enable BoG/MoH to identify, examine and act upon critical data collection challenges.
- B) Conduct key informant interviews prior to data collection
- C) Include ALL hospitals and primary care subsystems (*)
- D) Include morbidity data

(*) The previous baseline assessment focused in particular on AZP Hospital

Maternal mortality

Data on maternal mortality were obtained from the database of BOG- Epidemiology (BOG-Epi) unit. This database use data from the civil registry(C-forms) and data captured through “active surveillance on maternal mortality”. This database is, constantly updated, to cover for the potential delay in submission of the C-forms.

Maternal morbidity

It was agreed upon to focus and put extra effort in order to overcome lacking or incomplete reporting in the baseline report (2012) on severe maternal morbidity. Regular meetings took place with PAHO Focal Point and BOG/MoH to accompany this work.

The following methods were applied:

- Key informant interviews (see Annex B - functions)
- Data collection in public and private primary and secondary care facilities
- Review of secondary data (MICS 2010)

Key informant discussions

The purpose of the key informant discussions was to gain more insight into challenges and to identify possibilities for improvement of the current data registration, flow and reporting related to maternal mortality and severe morbidity.

Prior to the meetings with the key informants, a letter that mentioned the regional plan and Suriname’s commitment to produce periodic progress reports was sent to the heads of

institutions by the Deputy Director Programme Development BOG. The Consultant was introduced and assistance was asked to accommodate the data collection process and appoint a contact person. After contact with the different appointed data personnel the different possibilities and approaches to gain 2012/2013 data were explored.

After the data was collected within each hospital an interview was planned with the head of the discipline Obstetrics/ Gynecology to identify if additional data on indicators are recorded and available. The data registration, flow and challenges were discussed as well as opportunities for improvement.

Data collection in public and private primary and secondary care facilities

As reported in the baseline study (2012), data on maternal morbidity is not collected routinely and was difficult to obtain from the different hospitals. Only data from one hospital AZP was reported. Within the scope of the current consultancy it was decided to include all providers and to collect data from all the hospitals.

The primary health care facilities were not included in the search for severe maternal morbidity cases as key informants from these facilities, indicated that all cases of severe maternal morbidity are eventually referred to the hospitals. To avoid duplication and in light of limited time, the data collection on severe maternal morbidity therefore focused on all the hospitals as this would provide national data.

Secondly, taking into account the diverse context (see Table below) of each hospital, tailor-made approaches were applied for data collection in each hospital.

Criteria for inclusion

In addition medical records were reviewed in all hospitals, if blood loss of more than 1200 cc, had been reported, and verifying the following inclusion criteria:
Hemorrhage requiring hysterectomy and / or 3 or more units of blood and / or stay in the ICU.

Regarding inclusion of “Severe pre-eclampsia”: only the cases specified as “severe pre-eclampsia” were included. Cases of pre-eclampsia not further specified were not included.

<i>Institution</i>	<i>Context</i>	<i>Data collection method</i>	<i>Approach</i>	<i>Comments</i>
AZP : Academic Hospital, Paramaribo (public)	Electronic access database	Specific ICD-10 codes used to select cases of interest	List of cases with specific ICD-10 codes requested and received. Selected cases of hemorrhage medical records reviewed for inclusion criteria	Poor data quality, discrepancies in data, retrieving records was time consuming
DH: Diakonessen hospital, Paramaribo (private)	Electronic access database and Electronic parturition book	Electronic parturition book used to select the cases of interest.	Digital version of parturition book received. Selected medical records reviewed	Due to shortage of human resources and time constraints only supplied with electronic parturition books. Record retrieving was easy
LH: s' Lands hospital, Paramaribo (public)	Parturition book available. Cases are coded at medical registry using ICD-10 but these are not entered in a data base	Parturition book used to select cases of interest	Manually going through parturition book. Selected medical records reviewed for inclusion criteria	Parturition book does not capture all possible cases of maternal morbidity. Two of six medical records were not retrievable.
LMSZN: Lachmipersad Mungra regional hospital Nickerie (public)	Electronic access database	Specific ICD-10 codes used to select cases of interest	List of cases with specific ICD-10 codes requested and received. Selected cases of hemorrhage medical records reviewed for inclusion criteria	Due to shortage of human resources and overburdening of staff the requested data was received with delay. Record easily retrieved and reviewed.
RKZ: Sint Vincentius hospital	Until 1 October 2013 no parturition	Using labor reports and the maternity	Manually going through labor reports until 31	Time consuming process to go through the labor

Paramaribo (private)	book. The details on the deliveries were noted on labor reports.	book the cases of interest were identified.	Augustus 2012. From 1 September 2012 until 31 December 2013 manually going through maternity books.	reports. The labor reports have limited information on inclusion criteria.
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Results

The data collected from different data sources was used to complete the Country monitoring tool sheet (appendix A: Country monitoring tool sheet) as much as possible.

Completeness of tool sheet

Table 1 and 2 shows the completeness of data over 2012 and 2013 specified by area

Table 1: completeness of 2012 data

Area / Year : 2012	Number of indicators	Number completed	Percentage completed	Baseline percentage
Maternal mortality	35	30	86	83
Maternal morbidity	17	16	94	0
Prevention of unwanted pregnancies	16	14	88	81
Access to maternity services	10	7	70	60
Skilled human resources	5	4	80	80
Strategic information	4	4	100	100

Table 2: completeness of 2013 data

Area/year: 2013	Number of indicators	Number completed	Percentage completed	Baseline percentage
Maternal mortality	35	29	83	83
Maternal morbidity	17	16	94	0
Prevention of unwanted pregnancies	16	14	88	81
Access to maternity services	10	7	70	60
Skilled human resources	5	4	80	80
Strategic information	4	4	100	100

Maternal mortality

The total number of maternal mortality cases in 2012 was four and in 2013 thirteen cases were registered.

The total number of live births is not yet available for 2013 so that the MMR cannot be calculated for that year. Using the number of live births from 2012 as a proxy would reveal a MMR of 127 for 2013.

The cause of death is poorly defined in 1 of 4 cases in 2012 and in 2 of 13 cases in 2013. Furthermore the age was unknown in 1 case of maternal mortality in 2013.

Maternal Mortality Ratio (MMR) among geographic and ethnic sub-populations of women could not be calculated as data on the denominator is lacking. The number of live births among ethnic subpopulations is unknown. Civil registration does not collect data on ethnicity when registering the newborns. Also due to incomplete data regarding place of residence of the maternal mortality cases the MMR could not be calculated per district.

Maternal morbidity

The completion rate shows that for 2012 and 2013 sixteen of the seventeen indicators on maternal morbidity are reported on (see Table)

With regards to the number of reported cases of severe pre-eclampsia it should be noted that the data is not complete. It was found that the severity of a relative high proportion of preeclampsia cases was not further specified.

Prevention of unwanted pregnancies and resulting complications

Data regarding rate of use of contraceptives is based on the MICS 2010 report, which is the most updated relevant source of information. The base line study (2012) also reported based upon MICS 2010 data; therefore it is not possible to measure progress.

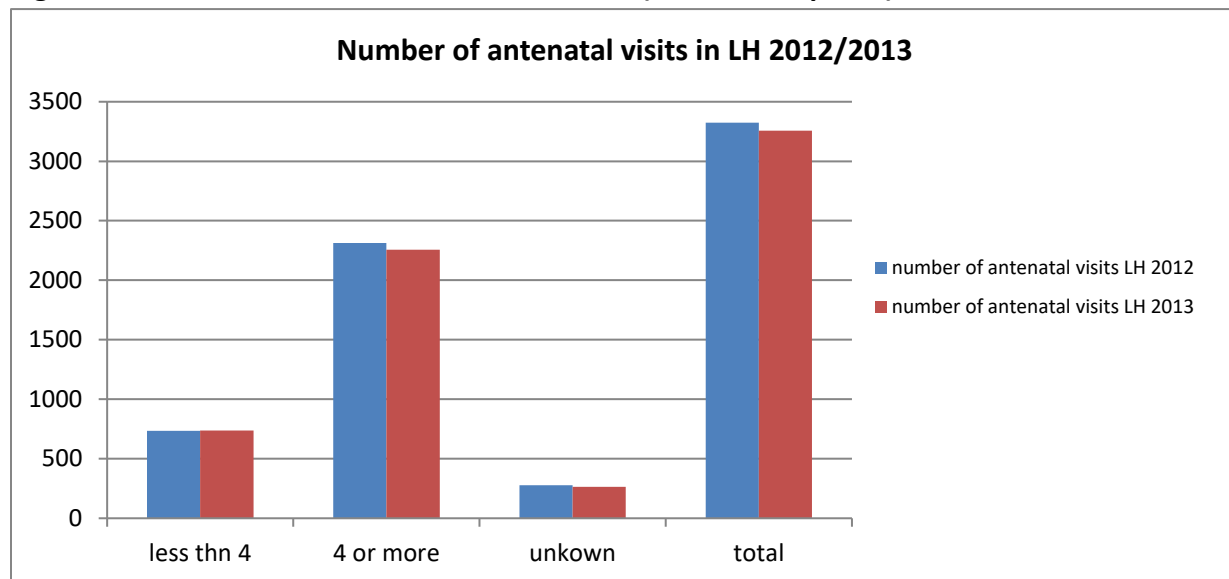
National data regarding postpartum and/or post abortion contraceptive counseling and provision of contraceptives is lacking. The MZ informant revealed that in their region provision of contraceptives is registered at the health posts. Through monthly reports the numbers of contraceptives provided to clients are then reported centrally. The informants from the hospitals acknowledged there is no registration of provision of contraceptives in their institutions. Contraceptive counseling is available in the different institutions but is not registered.

No maternal deaths due to abortion have been reported according to the maternal mortality database from the BOG.

Universal access to affordable, high-quality maternity services within a coordinated health care system

Regarding the coverage of four or more antenatal visits MICS 2010 data is reported as these are the latest available data. Some institutions provided data on antenatal care coverage. The LH data showed that in 92% of the deliveries the number of antenatal visits was recorded for 2012 and 2013. From the deliveries with known number of antenatal visits about 75% of the mothers had four or more antenatal visits for both years.

Figure 1: The number of antenatal visits for LH ('s Lands hospitaal) for 2012 and 2013



LH is the hospital where the most deliveries take place, accounting for about one third of the total births annually.

Institutional coverage of births

For 2012 10176 deliveries were recorded in the hospitals and primary care facilities. The number of total births registered at the civil registry was 10484. This provides an institutional coverage of birth of 97% for 2012. For 2013 9681 institutional births are reported.

Since the total number of births is not (yet) available the coverage cannot be calculated accurately. Using the total number of births from 2012 as a proxy would provide an estimated coverage of 92% for 2013.

Data on the number of women with puerperal visit after discharge and 7th day postpartum is not collected routinely. Informants believe this number to be low as in most cases of

uncomplicated deliveries the women are instructed to return after 2 weeks for a checkup of mother and child.

In LH the women get an appointment for a visit to the “Mother and Child Care “centre. In the area covered by the MZ all women receive a home visit within one week according to protocol. At the RGD the practice is that every woman that delivers is visited at home. The number of women getting home visits is not documented.

Oxytocics and magnesium sulfate use

Although the numbers are not registered, informants from all hospitals except RKZ indicate that all women delivering within these hospital-settings receive oxytocics. The informant from the RKZ clarifies that oxytocine is used only on indication of risk factors. That would be in about half of all the women giving birth at the RKZ. For the MZ region oxytocine use is not a standard practice for every woman giving birth, and only administered on indication after consultation with the gynecologist. At the RGD oxytocine use is standard practice according to informant.

Likewise there is no registration of the number of women with severe preeclampsia / eclampsia that received magnesium sulfate. All key informants from the hospitals indicated that all women with severe preeclampsia and eclampsia receive magnesium sulfate.

Comprehensive emergency obstetric care

All five hospitals are equipped to provide comprehensive emergency obstetric care. Although provision of blood through the national blood transfusion services is considered safe, one informant indicated that shortages in blood supply occur frequently.

Intrafamily violence monitoring

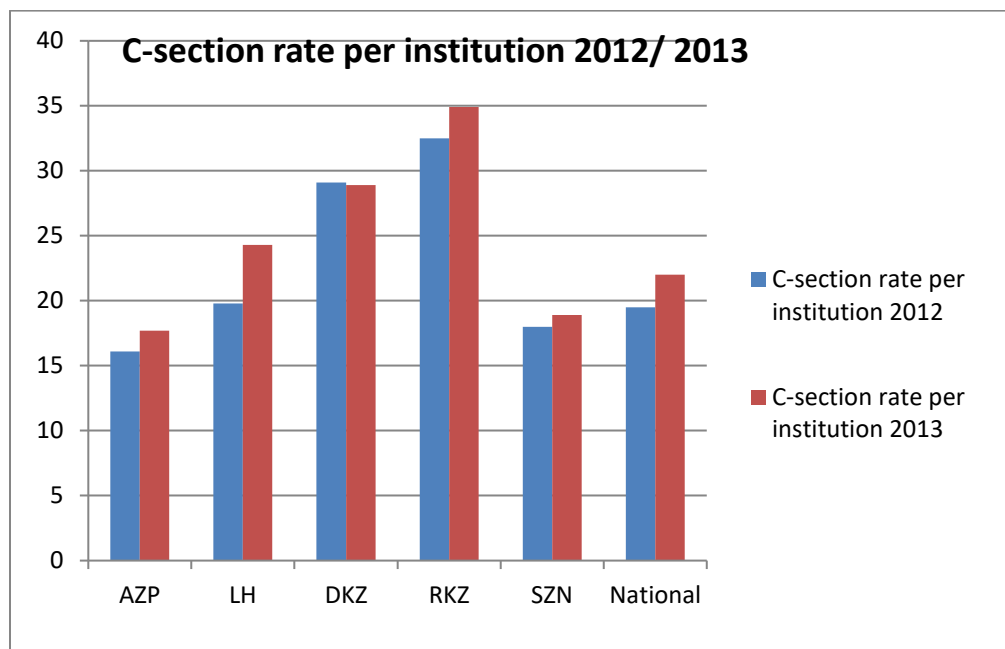
There is no routine screening of intrafamily violence during pregnancy according to key informants. This is done on indication or if the woman explicitly refers to this. According to an informant:

“The violence does not have to be physical. You cannot always see it externally. With women presenting with aspecific complaints, women frequently admitted with hyperemesis we see this. Also with vague complaints as general malaise etc we see that after questioning there is some form of intrafamilial violence or tension. Sometimes the women are discharged and the next day they want to get back into the hospital. This is sometimes also a sign where you have to use a subtle approach to get behind the true reasons for the complaints. It is more the psychosomatic symptoms with which the pregnant women present themselves.”

C-section rate

The C-section rate on national level was calculated for 2012 and 2013 at 19.5 and 22% respectively. The C-section rate varied among the different hospitals as shown in figure 2 below.

Figure2: C-section rate per institution for 2012 and 2013



Obstructed labor

No cases of mortality due to obstructed labor for 2012 and 2013 are reported through the C-forms or the active case finding.

Skilled human resources

With regards to the baseline reporting on coverage of childbirths by skilled birth attendants MICS 2010 data was used. For the current report it was agreed to use the institutional coverage of births as a proxy for coverage of childbirths by skilled birth attendants. This was reported as 97% and 92% for 2012 and 2013 respectively.

On institutional level the MZ data over 2012 showed that 91.4% of the registered births in their area were covered by skilled birth attendants. Data on postnatal care that is provided by skilled personnel is not collected routinely.

Audits on maternal deaths are not routinely performed. Two key informants noted that within their hospital audits are done on maternal and perinatal deaths. According to these informants the audits in LH started two years ago and those in AZP started six months ago, and covered all cases of maternal mortality. The audits are conducted by internal teams. The methodology and procedure used for the audits are not documented and not routinely reported either. In the AZP minutes are taken of the audits and are accessible for review.

An annual maternal health report is lacking. The latest report is from 2008 covering the 2005-2006 periods. However, the data on MMR is gathered by the Epidemiology department from the Bureau of Public Health (BOG), and is available on request.

Strategic information for action and accountability

Multiple “paper based” perinatal information systems are in place which is used by the different health care providers.

There is no registry of severe maternal morbidity at national level. On the institutional level the data on maternal morbidity is not collected routinely either.

The proportion of maternal deaths reported via the vital record system was 2/4 for 2012 and 7/13 for 2013. A delay may exist in receiving the completed c-forms. Mention was made of an opportunity for improvement: “*to talk with medical specialists, to timely fill out the C-forms, to minimize delay*”.

Discussion

Findings

The PAHO acceleration plan

The interviewed key persons were unaware of the existence of “the plan” to reduce maternal morbidity and mortality, indicating that this plan has not been disseminated on all levels and among all the stakeholders.

Maternal mortality

The reported data on maternal mortality is based on the data base from BOG-EPI. The data base shows that the cause of death is poorly classified in some cases. This could be due to incomplete documentation in the medical records. The Surveillance team does not discuss the cases with the responsible medical specialist. Furthermore there are other gaps in the data base encountered such as; the place of residence, age/ date of birth, race and name of medical doctor. As key informants at the epi unit indicate the data is being gathered but is not further analyzed. In their opinion someone should look at the data and provide them with feedback. As the four cases of reported maternal deaths in 2012 seem low in comparison with eleven (11) in 2011 and thirteen (13) in 2013, the question could be asked whether this was reliable. The informant at Epi unit indicated that this is what they got and could not explain the low number for 2012. Verifying the number of deaths for 2012 with another source using data from the POPZIS survey was explored but was not possible since the data is currently being validated and thus not yet available.

The active surveillance system

The surveillance system was established in the year 2000. Since its start is has not been evaluated. Data is gathered and entered in the database. The last report on maternal mortality covered 2005/2006. Since that time there are no reports with analysis of the numbers. Key

informants indicate that the appointed person responsible for analysis and reporting is not performing his duty for some time now for reasons that are related to his positioning. The data officers don't get feedback and do their work as they see well.

MMR

Maternal Mortality Ratio (MMR) greater than 125 (per 100,000 live births) among geographic and ethnic sub-populations of women (i.e. indigenous / non indigenous, rural /urban) was not possible to be determined as data on the denominator was lacking. Civil registration does not collect data on ethnicity when registering the newborns. Looking at and by sub-national level (i.e., department, province, state) the number of live births per district was provided by the Central Bureau of civil registration (CBB) for 2012. However due to incomplete data regarding place of residence of the maternal mortality cases the MMR could not be calculated per district.

On the other hand, reporting MMR on district level should be met with caution due to the small numbers of live births in most districts. One random case of maternal mortality in a district would have huge impact on the MMR.

Maternal morbidity

Data on maternal morbidity in the different facilities are registered using diverse methods. Furthermore there are no uniform criteria used in the different hospitals when categorizing the severity of maternal morbidity cases. The morbidity data is not regularly reported to health information systems as there are no requests or agreements on this. Discussion revealed that the medical registrations from the hospitals are primarily not focused to provide data on research and program monitoring. For regular reporting of maternal morbidity data from health care facilities it will be necessary to reach agreement on a uniform format for reporting, criteria for classification and procedures.

Contraceptive use

Data on contraceptive provision is not registered by all the service providers. Key informant reveals that in some cases the number of contraceptives provided could be gathered but, this would be of limited value since the denominator (number of women aged 15 to 44 years) in their catchment area would be unknown. Also, most health care facilities lack a clear defined catchment area. Furthermore the health facilities are not the only source of contraceptive provision. Condoms can be purchased in supermarkets. Pharmacies provide contraceptives that can be purchased (the "pill") or provided free of charge (condoms).

National data regarding postpartum and/or post abortion contraceptive counseling and provision of contraceptives is lacking, since there is no registration of the contraceptive counseling. It is necessary to reach agreement on uniform registration and reporting between the service providers and the MOH/ BOG.

There were no maternal deaths reported due to abortion. Since abortion is illegal in Suriname except on medical indication (for life saving purposes) it is possible that these cases are not captured as they are registered under another diagnosis.

Maternity services

Coverage of four or more antenatal visits is reported based upon MICS 2010 data. Antenatal visits are recorded in the antenatal card and copied to the client record in case of referral to secondary care. The number of antenatal visits in some hospitals ie in LH is noted in the “Partus book”. The number of antenatal care visits has been captured from the LH partus book..

At the primary care level MZ captures the number of antenatal visits in the perinatal form covering prenatal, natal and postpartum period. A delay occurs in receiving the forms at central level.

The RGD facilities have a monthly reporting on maternal health care. However the number of antenatal visits is not included. To report on the antenatal care coverage of four or more visits would require data gathering at the level of the facility going through the medical records.

Institutional coverage of births

The institutional coverage of births for 2012 was calculated at 97%, whereas the percentage for 2013 was estimated 92%. The number of births at the MZ proved to be challenging to obtain, due the earlier mentioned problems with incomplete return of their perinatal forms. The calculations are thus based on incomplete reporting from the MZ.

Furthermore it should be noted that some births are registered as institutional although the actual birth took place at home or during transportation/ on the way to the hospital. Data on puerperal visit after discharge is not routinely collected.

Oxytocics and magnesium sulfate use

Although not registered in most institutions oxytocine is given to all women to prevent post partum hemorrhage. In the RKZ hospital and the MZ region oxytocine use is not a standard practice for every woman giving birth, and only administered on indication. Use of magnesium sulfate is standard practice in all health facilities in cases of severe preeclampsia and eclampsia, according to key informants. Lack of consistent documentation, makes it impossible to report on those indicators.

C-section rate

The C-section rate on national level was calculated for 2012 and 2013 at 19.5 and 22% respectively. The c-section rate between the different hospitals varied as abovementioned (see Figure 2). RKZ hospital presents the highest C-section rate, probably related to the large number of women with repeat C-sections. DKZ being is the referral hospital for the MZ; the

high risk population is referred to this hospital, which partly may explain the high C-section rate. The relative low C-section rate in AZP needs further inquiry.

Skilled human resources

Coverage of childbirths by skilled birth attendants is based upon MICS 2010 data. Since this was based on 2010 data, it was agreed to use the institutional coverage of births as a proxy for coverage of childbirths by skilled birth attendants.

Data on postnatal care that is provided by skilled personnel is not collected routinely. According to existing protocols, home visits should take place within one week if delivery took place within primary care providers (MZ and RGD). If delivery took place within hospital-setting, this may not be the case. The number of women getting home visits is not documented.

Audits on maternal deaths are not routinely performed. Two key informants noted that within their hospital audits are done on maternal and perinatal deaths. According to these informants the audits in LH started two years ago and those in AZP started six months ago, and covered all cases of maternal mortality. The audits are conducted by internal teams. The methodology and procedure used for the audits are not documented and not routinely reported either. In the AZP minutes are taken of the audits and are accessible for review.

An annual maternal health report is lacking since the latest report is from 2008 covering the 2005-2006 period. The data on MMR is gathered by the Epidemiology department of the Bureau of Public Health (BOG), and is available on request.

Strategic information for action and accountability

Multiple “paper based” perinatal information systems in place which are used by the different health care providers.

There is no registry of severe maternal morbidity at national level. On the institutional level all the institutions have their own manner of documenting thereby using diverse criteria Data on maternal morbidity is sometimes collected on request or for research purposes.

The proportion of maternal deaths that are reported via the vital record system was 2/4 for 2012 and 7/13 for 2013. The C-forms from the hospitals are often received with delay. The C form does not include /specify maternal mortality. It is also possible that cases are captured after a while when a hint is received regarding a possible maternal mortality case and followed upon by the surveillance team.

Limitations

Though this study included the primary and secondary level of care with regards to the collection of data on morbidity and in light with limited time and resources it was decided to

focus the data collection on the hospitals as the assumption was that all cases of severe maternal morbidity at the primary level would be eventually referred to the hospitals. For each hospital tailor-made approaches were followed taking into account the different realities of the hospitals. Each approach has its own set of limitations (see Table).

The diversity in data collection methods used (i.e. manually going through the partusbook, using electronic database) can have implications for accuracy, as well as the period that is covered in the parturition book and possibility of surveyor bias

In the hospitals where the “Partus book” provides the main source to identify the relevant cases of morbidity, it should be noted that this only provides information on the limited period when the women are in the delivery room. Any complication that arises in the maternity ward is not noted in the “Partus book”. Complications that arose in the antenatal period and women recovered from at the time of delivery may not be noted. It was observed that cases included in the “partus book” could be missed due to unclear handwriting, the use of non-standard abbreviations, inconsistently written information or little information and loss of concentration due to fatigue of the surveyor or distracting circumstances. It deserves mention that the review of the Partus book in LH took place in the delivery room and implied review of approx. 7000 rows for 2012 and 2013.

Using ICD-10 codes to identify the morbidity cases has limitations also. The quality of data depends on qualified personnel and adequate quality control. In the provided data from AZP there were such inconsistencies that put doubt to the quality control. From the 760 received cases of pregnant women, ten (10) had recorded ‘male’ for sex. Furthermore: from the 760 cases more than 120 were duplicate entries.

There are no uniform criteria used in the different hospitals when categorizing the severity of maternal morbidity cases. Also the number of pre-eclampsia cases without further specification is relatively high in all hospitals. Key informants had their doubts on some of the findings related to the number of maternal morbidity cases. As this could not be substantiated with documentation it was decided to report only the numbers that were registered.

Considering above mentioned limitations there could be doubt on the accuracy and completeness of the reported numbers of morbidity. Within the scope of the study and the limited time it was not possible to provide more accurate and complete data.

Number of births:

The number of live births as provided by the CBB may actually differ from the real number of live births. If a child is alive at birth but dead at the time of registration, due to legal regulations the CBB has to register it as a stillbirth. This leads to a underreporting of the number of live births, which consequently will lead to a higher calculated MMR.

Some births are registered as institutional although the actual birth took place at home or during transportation/ on the way to the hospital.

The number of births for 2013 could not be provided by the CBB since their data was not complete and they were awaiting the data from the regional offices. It was mentioned that the data for 2013 could be expected around May 2014.

Use of MICS 2010

Secondary data (MICS 2010) was used to report for diverse indicators. However, recent data was not available and therefore it is not possible to measure progress (the baseline study 2011 also reported using MICS 2010 data).

Challenges

The challenges that were encountered during the process of data collection are described below. Data gathering on maternal morbidity proved to be a time consuming process. Despite timely notification of the planned data collection there were some institutions where the internal processing of the request for assistance took some time. It took some phone calls and e-mails from the Deputy Director Programme Development BOG to those responsible to smooth the process.

Due to the busy schedule of the medical specialists, it was a challenge making appointments for the Key person's interviews.

Manually going through the partus books was a time consuming activity.

The Medical Mission (MZ) had difficulty providing the requested data on the number of births within their facility. The MZ data on maternal health indicators depends on the perinatal forms that are supposed to be send to the central office. Since more than half of the forms for 2012 are lacking, any reporting done based on those numbers would be incomplete. With the MZ alternative approaches were explored to come up with reliable and complete data regarding the number of births in their area. Those data are currently gathered.

The RGD was able to provide the total number of births in their facilities. However additional data on percentage of women with four or more antenatal care visits could not readily be produced and would have to be collected at the level of the health facility since this data is normally not included in their monthly reporting to the head office.

Another challenge was the lack of qualified personnel with knowledge of the ICD-10 coding system that could assist in the data gathering. In some cases the medical registration unit was dependent on the expertise of one person to extract the requested data. Due to other "higher" priorities, requests for data for research purposes are not handled in a timely way. The Academic Hospital Paramaribo (AZP) and Regional Hospital Nickerie (SZN) provided the required lists of codes. This proved to be a time consuming process since data personnel were busy with other tasks and gathering data for research or reporting was not their top priority.

Retrieving medical records

In some hospitals retrieving medical records proved to be another unexpected challenge. There is a lack of personnel in the medical registry unit of AZP. When requesting medical records, the investigator is politely asked to "find it yourself". The researcher is taught how the registration system works by an assistant of the registry. This assistant will also assist the investigator should the latter not be able to find a record.

Trying to retrieve medical records proved that some are not to be found even after long search. Some records are not placed in a convenient manner. Sometimes you have to dig into big boxes where medical records are stashed without order to retrieve them which is extremely time consuming.

Record retrieval also provided some physical challenges as you need a lot of work above shoulder altitude and climbing on chairs is often needed to retrieve records.

Once a record is in hand, another challenge is to be faced as the written files and other details are not organized by a uniform structure. Unclear handwriting along with incomplete documentation is another challenge. Within a patient record not all basic and substantial information is documented given the many open spaces we encountered. So even if you have found a record, it does not guarantee that you can find everything you need to determine the severity of a maternal morbidity.

Opportunities

The recently approved Safe Motherhood Plan of Action (SMAP) provides an important opportunity.

Data personnel from some institutions despite being overburdened are doing their best to provide requested data, and offer suggestions to improve reliability of data.

In one hospital the "Partus Book" is digitalized and thus provides a relative easy way to capture the specific cases of maternal morbidity by making use of excel data filters.

Conclusions

The complexity of the developing health system in Suriname provides certain challenges and demanded a tailor-made approach for data collection, and interpretation.

The "PAHO acceleration plan" is not sufficiently known and therefore uniformity in ie criteria and definitions is lacking. Renewed dissemination is relevant.

A uniform system of reporting and consensus on clear guidelines is lacking.

Discrepancy of the number of live births provided by the CBB and the actual number of live births leads to a higher calculated MMR.

MMR calculation was not possible among geographic and ethnic sub-populations of women as the denominator data was lacking.

The maternal mortality data at the BOG- epi unit is gathered and entered into a data base but not further analyzed and reported.

Registry of maternal morbidity at national level is lacking.

Medical registrations are not focused to provide data on research and program monitoring to ensure adequate translation into policy and action.

There are no uniform criteria used in the different hospitals when categorizing the severity of maternal morbidity cases.

Retrieving medical records and data was time consuming, challenging and incomplete.

Despite challenges, the 2012-2013 assessment is more comprehensive than the earlier baseline report.

The lack of qualified personnel with knowledge of the ICD-10 coding system delayed data gathering.

Data on contraceptive provision is not registered by all the service providers but even if registered, it would be of limited value since the denominator data is lacking.

Data on coverage of four or more antenatal visits on national level would require data gathering at facility level which is a whole survey on its own. MICS 2010 is still the latest data source.

The institutional coverage of births for 2012 and 2013 are high and thus are most deliveries done by skilled birth attendants.

The C-section rate on national level was calculated for 2012 and 2013 at 17.5 and 20.1% respectively. The c-section rate between the different hospitals varied as mentioned in the result section.

Oxytocic and Magnesium sulfate practices are not consistently documented making it impossible to report on those indicators even though key persons have stated that these are used according to institutional guidelines.

Recommendations

This report should be discussed with relevant stakeholders for correct interpretation of findings and to ensure translation into policy and actions in daily practice.

The “PAHO acceleration plan” should be disseminated among health care providers and other stakeholders in Suriname. This can be achieved by holdings meetings with key persons from

medical facilities and providing them on literature and guidance on the plan under supervision by the BOG in collaboration with the NHIS.

When developing and implementing a plan of action for safe motherhood, the regional plan should be imbedded into it including an M&E plan which would cover also periodic progress reporting.

Outdated law leads to underreporting of the number of live births provided by the CBB. It is recommended to explore options for removal of the legal barriers on short term.

As the CBB and the health care systems do not use the same divisions it is recommended that these are harmonized so that clear catchment populations can be established per health facility. As this is a complex matter further study on this matter will be required.

As c-forms do not include any mention of maternal mortality it is recommended that the c-form is complemented with an explicit mention to include or exclude maternal mortality.

Since the active surveillance system on maternal mortality was established in 2000 it has not been evaluated. It is recommended that the surveillance system is evaluated on its relevance, performance, sensitivity, completeness and timeliness of reporting. To increase public awareness on this issue, reporting should also include maternal mortality statistics and national MMR presented on a level that is understandable to the public.

Measures should be taken to ensure that the maternal mortality database of the BOG is analyzed and feedback is provided to data officers to improve the quality of the database.

To achieve registry of severe maternal morbidity at national level it is recommended to reach consensus with involved stakeholders on standard format of reporting and use of uniform criteria for classifying maternal morbidity cases.

Furthermore training in ICD-10 coding system should be conducted to increase the personnel with knowledge of the ICD-10 coding system.

It is recommended that the hospitals where necessary take steps to improve the way they store medical records, so that these records can be retrieved on a timely manner.

Conduct regular surveys to collect data on indicators such as rate of contraceptive use that are otherwise not possible to gather.

Involve data personnel when looking for ways to capture data that are noted in client records but not collected regularly on facility and national level. These should include indicators such as coverage of four or more antenatal visits, standard use of oxytocics and use of magnesium sulfate in cases of severe preeclampsia and eclampsia.

Due to the high national C-section rate in certain hospitals and national it is recommended to do inquiries in those hospitals for the reasons behind the high C-section rate, thereby involving the national section group of gynecologists.

Acknowledgements

Finally, we find it necessary to express our gratitude for the technical support and guide of PAHO Suriname in the person of Dr. Francoise Barten.

Futhermore we want to express our gratitude to everyone who was willing to facilitate the making of this CLAP progress report

Annexes:

Annex A: Country monitoring tool sheet

Annex B: List of key persons

Annex C: Letter send by the BOG

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Annex A:

Information to be completed by the countries for the construction of indicators

Indicators marked in gray will be calculated by PAHO at a regional level in addition to data supplied by countries (white lines). Country offices are to fill two types of cells:

- Cells where the answer is Yes or No, in which case the option that applies to the country should be circled.
- Open cells to be answered with a figure, either an absolute number, percentage, ratio or rate, as appropriate.

COUNTRY SURINAME		
Date of the last plan to reduce the country maternal mortality?	MONTH/YEAR	2013
Since diffusion of the PAHO acceleration Plan, has there been any change/ update since the previous plan?, When?	(MONTH/YEAR) NO	
INDICATOR	2012	2013
4.1.1 Maternal Mortality Ratio (MMR)		
4.1.1.a) Total number of maternal deaths	4	13
4.1.1. b) Total number of live births	10,217	NA
Source/year	Source: CBB 2014	
4.1.1.c) Number of maternal deaths due to:		
Hypertensive disorders (Total)	1	2
• Pre-eclampsia	0	1
• Eclampsia	1	1
• Chronic hypertension	0	0
Hemorrhage (Total)	1	4

• Hemorrhage second half	0	1
• Hemorrhage postpartum	1	3
Sepsis	1	0
Abortion	0	0
Obstructed labor	0	0
Other (Direct)	0	3
Indirect	0	1
Poorly defined	1	3
Suicide /other violent deaths. Note these deaths are not currently included in the MMR	NA	NA
Source/year	BOG-Epi/2014	BOG-Epi/2014
4.1.1–d) Number of maternal deaths by age (Total)	2012 (Total 4)	2013 (Total 13)
10 – 14	0	0
15 – 19	0	4
20 – 24	0	1
25 – 39	4	4
40 - 44	0	2
45 – 49	0	1
50 or more years	0	0
Source/year	BOG –Epi database 2014	BOG-Epi database 2014
4.1.2. Total severe maternal morbidity ratio by cause and age		
4.1.2-a) Total number of severe maternal morbidity cases	77	74
4.1.2-b) No. of severe maternal morbidity cases		
Severe pre-eclampsia	47	49
Eclampsia	17	8
Hemorrhage requiring hysterectomy and / or 3 or more units of blood and / or stay in the ICU	9	12
Hemorrhage after 20 weeks of gestational age that requiring hysterectomy and / or 3 or more units of blood and / or stay in the ICU	2	5
Postpartum hemorrhage requiring hysterectomy and / or 3 or more units of blood and / or stay in the ICU	7	7
Abortion requiring hysterectomy and / or 3 or more units of blood and / or stay in the ICU	0	0
Sepsis	4	5
Other reasons	NA	NA
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.1.2–c) Number of maternal morbidity by age (Total)	77	74
10 – 14	1	0
15 – 19	12	10
20 – 24	13	12

25 – 39	48	44
40 – 44	2	7
45 – 49	0	0
50 or more years	1	1
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.1.5 Number of countries with MMR greater than 125 (per 100,000 live births) among geographic and ethnic sub-populations of women (i.e. indigenous / non indigenous, rural /urban) and by sub-national level (i.e., department, province, state)		
4.1.5 – a) Departments, provinces or states with MMRs greater than 125 per 100,000	NA	NA
4.1.5 – b) Rural areas with MMRs greater than 125 per 100,000.	NA	NA
4.1.5 –c) Urban areas with MMRs greater than 125 per 100,000	NA	NA
4.1.5 –d) Indigenous population with MMRs greater than 125 per 100,000	0	NA
4.1.5 –e) Mixed race population with MMRs greater than 125 per 100,000	NA	NA
4.1.5 –f) African descent population with MMRs greater than 125 per 100,000	NA	NA
4.1.5 –g) Caucasian population with MMRs greater than 125 per 100,000	0	0

INDICATOR (STRATEGIC AREA 1)	YEAR	
	2012	2013
4.2.1.1 Rate of use of modern contraceptive methods by women of reproductive age (Total)	47.6	47.6
4.2.1. 1 a) Rate of use of modern contraceptive methods by age	-----	-----
10 – 14	NA	NA
15 – 19	42.1	42.1
20 – 24	40.1	40.1
25 – 39	49.7	49.7

40 - 44	49.5	49.5
45 – 49	42.5	42.5
50 years or more	NA	NA
Source/year	MICS 2010	MICS 2010
4.2.1. 1–b) Rate of use of modern contraceptive methods by residence	-----	-----
Urban	48.9	48.9
Rural	43.0	43.0
Source/Year	MICS 2010	MICS 2010
4.2.1. Number of countries that have national data on postpartum and/or post-abortion contraceptive counseling and provision of contraceptives by the health services		
4.2.1.2 a) Does your country have national data regarding postpartum contraceptive counseling?	No	No
4.2.1.2 b) Does your country have national data regarding post-abortion contraceptive counseling?	No	No
4.2.1.2 c) Does your country have national data regarding the provision of postpartum contraceptives?	No	No
4.2.1.2 c) Does your country have national data regarding the provision of post-abortion contraceptives?	No	No
Source/year	BOG -FCH	BOG-FCH
4.2.1.3 Percentage of maternal deaths due to abortion reduced by 50%		
4.2.1.3 a) Percentage of maternal deaths due to abortion	0%	0%
Source/ year	BOG-Epi update 2014	BOG-Epi update 2014

INDICATOR (STRATEGIC AREA 2)	YEAR	
	2012	2013
4.2.2.1 Number of countries with 70% coverage of four or more antenatal visits		
4.2.2.1 a) Number of women who have used antenatal care services at least four times during pregnancy	67%	67%
Source/year	MICS 2010	MICS 2010
4.2.2.2 Institutional coverage of births		
4.2.2.2 a) Number of births (vaginal and cesarean section) registered in health services	10,176 97% coverage	9,681 92% coverage
Source/year	BOG-FCH	BOG-FCH
4.2.2.3 3 Number of countries that have at least 60% coverage for postpartum visits at 7 days after birth		

4.2.2.3 a) Number of women with puerperal visit between discharge and 7 th postpartum day (vaginal or cesarean section)	NA	NA
Source/year	NHIS 2014	NHIS 2014
4.2.2.4 Number of countries that use oxytocics in 75% of institutional births during the third stage of labor, once the umbilical cord has ceased to pulsate		
4.2.2.4 a) Number of institutional births (including cesarean sections) with use of oxytocic (oxytocin, methylergonovine, misoprostol, etc.) to prevent postpartum hemorrhage	NA	NA
4.2.2.4 b) Total number of institutional births (including cesarean section)	10,176	9,681
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.2.2.5 Number of countries that use magnesium sulfate, in addition to interrupting pregnancy, in 95% of cases of severe preeclampsia/ eclampsia in health services		
4.2.2.5 a) Number of pregnant women with severe preeclampsia/ eclampsia that receive magnesium sulfate in health services	NA	NA
4.2.2.5 b) Total number of pregnant women with severe cases of preeclampsia/ eclampsia	47/17	49/8
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.2.2.6 Number of countries with safe blood available in 95% of the facilities that provide emergency childbirth care		
4.2.2.6 a) Number of institutions that provide CEmOC and have safe blood available	5	5
4.2.2.6 b) Total number of institutions that provide CEmOC	5	5
Source/year	BOG-FCH	BOG-FCH
4.2.2.7 Number of countries monitoring intrafamily violence during pregnancy in 95% of institutional births		
4.2.2.7 a) Number of institutional births (including cesarean section) monitoring intrafamily violence	0	0
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.2.2.8 Number of countries with C-section rates above 20% that are to reduce the rate by at least 20% by 2017		
4.2.2.8 a) C-section rate	19.5	22.0
Source/year	BOG-FCH	BOG-FCH

4.2.2.9 Number of countries with maternal deaths due to obstructed labor		
4.2.2.9.a) Number of maternal deaths due to obstructed labor	0	0
Source/year	BOG-Epi updated jan 2014	BOG-Epi

INDICATOR (STRATEGIC AREA 3)	YEAR	
	2012	2013
4.2.3.1 Number of countries that have 80% coverage of childbirth care provided by skilled personnel, as defined by WHO		
4.2.3.1.a) Percentage coverage of childbirth care provided by skilled personnel, as defined by WHO	97%	92%
Source/year	BOG-FCH 2014	BOG-FCH 2014
Number of countries that have 80% or higher coverage of postnatal care provided by skilled personnel capable of caring for both mother and newborn, as defined by WHO		
4.2.3.2.a) Percentage coverage of postnatal care provided by skilled personnel capable of caring for both mother and newborn, as defined by WHO	NA	NA
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.2.3. Percentage of emergency obstetric care (basic and comprehensive) institutions that perform an audit of all maternal deaths		
4.2.3.3.a) Number of institutions of emergency obstetric care (basic and comprehensive) that perform an audit of all maternal deaths	0	0
4.2.3.3.b) Total number of institutions of emergency obstetric care (basic and comprehensive)	5	5
Source/year	BOG-FCH 2014	BOG-FCH 2014
4.2.3.4 Number of countries that annually present a maternal health report to the public that includes maternal mortality statistics, including the national MMR		
4.2.3.4.a) Does your country annually present a maternal health report to the public that includes maternal mortality statistics, including the national MMR?	No	No
Source/year	BOG-FCH 2014	BOG-FCH 2014

INDICATOR (STRATEGIC AREA 4)	YEAR	
	2012	2013
4.2.4.1 Number of countries where the health system has a functioning perinatal information system		
4.2.4.1. a) Does your country have a functioning perinatal information system?	Yes	Yes
Source/year	BOG-FCH	BOG-FCH

4.2.4.2 Number of countries where the health system maintains a registry of severe maternal Morbidity		
4.2.4.2.a) Does your country health system maintain a registry of severe maternal morbidity?	No	No
Source/year	BOG-FCH	BOG-FCH
4.2.4. Number of countries whose coverage of maternal deaths in vital record systems is 90% or more		
4.2.4.3.a) Number of maternal deaths reported in vital record systems	2 of 4	7 of 13
4.2.4.3.b) Total number of maternal deaths identified by active case-finding	3 of 4	12 of 13
Source/year	BOG-Epi updated 2014	BOG-Epi updated 2014

ANNEX B:

List of key persons and their function who were interviewed between March 10 until March 22, 2014.

Intramural facilities

1. AZP: Head of the department of obstetrics and gynecology.
2. DKZ: Head of the department of obstetrics and gynecology.
3. LH: Acting head of the department of obstetrics and gynaecology.
4. RKZ/SVZ: gynecologist
5. LMSZN: Head of the delivery ward in LMSZN.

Extramural health facilities

1. Regional health service Suriname (RGD)
Focal point of of the midwifery branch within RGD
2. Medical Mission Suriname (MM)
Public health and general physician

Bureau of public health (BOG)

Hospital data surveyors

Data entry personnel from the epidemiology department

Family and community health personnel

Annex c:



**BUREAU VOOR OPENBARE GEZONDHEIDSZORG
DEPARTEMENT VAN VOLKSGEZONDHEID**

Rodekruislaan nr.22 – P.O.Box 767 – Republiek Suriname - Paramaribo
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Email : bogsur@sr.net
Bankrelatie C.B.v.S. rek# 0313100/001-043-968

Uw kenmerk:

Uw brief van:

Ons kenmerk: P.O. 071

Onderwerp: data collectie BOG

Bijlage(n):

Paramaribo,

Aan:

Geachte Heer/ Mevrouw,

in September 2011 werd door de PAHO het regionale plan aangenomen om de reductie van maternale mortaliteit en ernstige maternale morbiditeit te versnellen. Suriname heeft zich gecommiteerd periodiek te rapporteren over de vooruitgang hierbij.

Ter completering van eerdere data collectie van 2012 wordt er gedurende de periode 17 februari tot 15 maart 2014 aanvullende data verzameld door het BOG. De heren Robert Mohamed en Inder Gajadien zijn vanwege het ministerie van Volksgezondheid belast met de dataverzameling. In de komende periode zullen zij met een door u aangewezen medewerker in contact treden.

Gaarne een contactpersoon in Uw organisatie aan wijzen die zal faciliteren bij eerder genoemde datacollectie.

Met hoogachting,

Drs. Maureen G. Wijngaarde – van Dijk, MD, MPH
Onder directeur Programma Ontwikkeling
Bureau voor Openbare Gezondheidszorg
Mobiel # : 07219074
