Small Victories, New Challenges
Two Decades of Maternal Mortality Surveillance in Jamaica
A McCaw-Binns1, K Lewis-Bell2

ABSTRACT

Objectives: The paper summarizes the changing epidemiology of maternal mortality and the new challenges as Jamaica seeks to contribute to the international goal to reduce maternal mortality by 75% worldwide between 1990 and 2015.

Methods: This is a review of Jamaica’s two decades of maternal mortality surveillance experience.

Results: Jamaica began episodic reproductive age mortality surveys between 1981 and 1983. In order to move to continuous surveillance, maternal deaths were made a Class 1 notifiable event in 1998. Reporting has steadily improved with over 80% of deaths notified, however events in the first trimester and after the first week post-partum were less likely to be reported. While gestational hypertension remains the leading cause of death, the cause-specific mortality rate has declined in response to specific efforts to reduce its prevalence and consequences. Haemorrhage and infection also declined significantly in prevalence and rank. HIV disease moved rapidly to become the fourth-ranked cause of maternal death. Another lifestyle problem is the growing prevalence of obesity, with its contribution to deaths from heart disease, diabetes mellitus and gestational hypertension.

A national maternal mortality surveillance committee has been established to monitor national trends and address policy issues. One of its first tasks will be to develop clinical guidelines to standardize management of the leading direct and indirect complications of pregnancy.

Conclusion: Jamaica has the capacity to achieve MDG5, however, local and national maternal morbidity committees and health teams will have to systematically address the deficiencies identified.

RESUMEN

Objetivos: El presente trabajo resume la epidemiología cambiante de la mortalidad materna y los nuevos desafíos en el momento en que Jamaica busca contribuir a la meta internacional de reducir la mortalidad materna en un 75% a nivel mundial entre 1990 y 2015.

Métodos: Éste es un examen de la experiencia de Jamaica durante dos décadas de vigilancia de mortalidad materna, en el que se resumen los hallazgos claves del estudio durante el periodo, junto con la evidencia internacional.

Resultados: Jamaica empezó las encuestas episódicas de mortalidad en la edad reproductiva entre 1981 y 1983. Con el propósito de pasar a una vigilancia continua, las muertes maternas comenzaron a ser tratadas como eventos notificables de clase 1 en 1998. Se ha producido un mejoramiento constante en el número de reportes, con la notificación de más del 80% de las muertes. Sin embargo, los eventos en el primer trimestre y después de la primera semana postnatal, presentaron una probabilidad menor de ser reportados. Si bien la hipertensión gestacional sigue siendo la causa principal de muerte, la tasa de mortalidad específica por causa ha disminuido en respuesta a los esfuerzos específicos por reducir su prevalencia y sus consecuencias. Las hemorragias e infecciones también disminuyeron significativamente en prevalencia y rango. La enfermedad de VIH pasó rápidamente a ocupar la cuarta posición como causa de muerte materna.

Pequeñas Victorias, Nuevos Desafíos:
Dos Décadas de Vigilancia de la Mortalidad Materna en Jamaica
A McCaw-Binns1, K Lewis-Bell2
Otros problemas de estilo de vida son la creciente prevalencia de la obesidad, con su contribución a las muertes por enfermedad cardíaca, diabetes mellitus e hipertensión gestacional. Se ha creado un comité nacional de vigilancia de la mortalidad materna a fin de monitorear las tendencias nacionales y abordar los problemas de las políticas a seguir. Una de sus primeras tareas será desarrollar lineamientos clínicos a fin de estandarizar el tratamiento (manejo) de las principales complicaciones directas e indirectas del embarazo.

**Conclusion**: Jamaica tiene la capacidad de lograr MDG5. Sin embargo, los comités de mortalidad materna y equipos de salud a nivel nacional y local, tendrán que abordar sistemáticamente las deficiencias identificadas.

**INTRODUCTION**

Jamaica has been monitoring maternal mortality for over 20 years, given established difficulties worldwide with case ascertainment from vital registration (1–3). The global safe motherhood campaign, born out of an enquiry by Rosenfield and Maine of what happened to the M in MCH (4), and launched at the epic 1987 Nairobi conference, has been energized by the inclusion among the millennium development goals of the target to reduce the incidence of maternal mortality by 75% between 1990 and 2015.

Represented in Nairobi, Jamaica has actively pursued the Safe Motherhood agenda. It has developed its own process of maternal mortality surveillance, responded to findings by undertaking operations research and implementing interventions, including training, to address some of the deficiencies. This paper is a review of that experience, focussing on 1998–2003.

**METHODS**

The paper is a review of published work and data from studies undertaken by the lead author and collaborators covering the period 1981–2003 which include studies of maternal morbidity (11, 12) and mortality (1, 5, 6, 9, 14), including audits (13, 18). The most recent investigation (1998–2003) and the details of which are published elsewhere (9, 7) involved independently visiting each public hospital and state pathologists (hospital and forensic) to review all deaths among women 10–50-years of age to identify those who had died within one year of the end of a pregnancy. The study was approved by the Ethics Committee, Faculty of Medical Sciences, The University of the West Indies/the University Hospital of the West Indies. Data were analysed using SPSS 12.0 for Windows and EpiInfo.

**FINDINGS**

Vital registration underestimates maternal mortality in Jamaica by 76%, necessitating direct survey methodologies (5–6). As voluntary reporting was not a successful case identification process, in 1998 maternal deaths were made a Class I notifiable event, requiring that cases be reported to public health authorities. A review of 1998–2003 indicated that compliance improved over time increasing from 23% in 1998 to 79% in 2000 to 84% in 2003. Selected cases, however, were under-represented, especially women dying in the first trimester (abortion, ectopic pregnancy) and more than one week after delivery (7) [Table1]. In addition, deaths were less often reported from the western and southern regions and if no post mortem examination had been undertaken, a recommendation of the maternal mortality surveillance committee. Postmortem rates have improved \( p [\text{trend}] = 0.019 \) from 58% (1993–95), falling to 48% in 1998–2000 with the entry of HIV/AIDS, but recovered to 62% in 2001–03. Necropsy rates have been consistently higher in the south-east region (59–75%) and lowest in the southern region (30–53%).

**Registration of maternal deaths**

Comparing data from a 1998 mortality study (8) with maternal deaths for that year, show that under-reporting and misclassification of maternal deaths persist. Of 50 identified deaths, 36 were registered, and far less, 13, appropriately documented so that they could be identified as maternal deaths, yielding maternal mortality ratios (MMR) for 1998 of 111.9/100,000 (all known deaths), 80.6/100,000 (the 36 registered deaths, assuming correct classification), or 29.1/100,000 (the 13 correctly classified deaths). For 1998, the Registrar General reported 18 deaths, five more than we identified – and may include registered occurrences from previous years, deaths at home or in the private sector. The additional cases bring the official MMR to 40.3/100,000. Table 2 compares registered maternal deaths for 1998–2003, with the cases we identified for 1998–2003. The number of registered deaths range from zero in 2001 to 21 in 2000, averaging 13 over the six-year period. The only clear trend is that on average less than one third of maternal deaths were documented appropriately.

**Surveillance and completeness of reporting**

From 2004–2006, the Weekly Surveillance Bulletin of the Ministry of Health reported between 29 and 47 maternal deaths, with the average for the 2004–6 triennium \( n = 40 \) higher than 2001–3 \( n = 31 \), indicating hopefully improved reporting, not increased mortality (Table 2).
Interval between delivery and death

While reporting of late deaths (more than 42 days post delivery) was not required by the Ministry of Health, the 1998–2003 review found that increased access to tertiary intensive care (5.3%, 6.5%, 8.0% of deaths, for 1993–95; 1998–2000, 2001–03 respectively; albeit restricted mainly to residents of the south-east region (7.0%, 11.3%, 13.6%) while improving survival, also increased the duration between delivery and death such that the prevalence of late maternal mortality ≥ 42 days past partum increased from 4% for 1993–95 to 7.5% between 1998–2000 to 11% from 2001–3. Given this change in the epidemiology of maternal deaths, surveillance should be expanded to include late maternal deaths (Table 3).

Non-hospital deaths

Deaths at home or in the private sector have been documented on an ad hoc basis and reported to community
midwives and the forensic pathologists; nine for 1998–2000 and 14 from 2001–03. While they represent a range of complications, conditions most likely to be missed were ectopic pregnancy, and additional cases of abortion, HIV/AIDS and violence (Table 4).

Table 3: Interval between delivery and death, Jamaica: 1993–2003# and by category of death*, 2001–3

<table>
<thead>
<tr>
<th>Time of death</th>
<th>1993–95# (%)</th>
<th>1998–00# (%)</th>
<th>2001–3# (%)</th>
<th>Direct* (%)</th>
<th>Indirect* (%)</th>
<th>Co-incidental** (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undelivered</td>
<td>26.7</td>
<td>17.8</td>
<td>35.9</td>
<td>35.9</td>
<td>36.0</td>
<td>16.0</td>
</tr>
<tr>
<td>&lt;24 hours</td>
<td>23.3</td>
<td>18.6</td>
<td>16.2</td>
<td>21.7</td>
<td>6.0</td>
<td>–</td>
</tr>
<tr>
<td>1–3 days</td>
<td>25.3</td>
<td>25.4</td>
<td>13.4</td>
<td>17.4</td>
<td>6.0</td>
<td>4.0</td>
</tr>
<tr>
<td>4–6 days</td>
<td>6.2</td>
<td>11.0</td>
<td>6.3</td>
<td>6.5</td>
<td>6.0</td>
<td>–</td>
</tr>
<tr>
<td>7–41 days</td>
<td>14.4</td>
<td>19.5</td>
<td>16.9</td>
<td>14.1</td>
<td>22.0</td>
<td>8.0</td>
</tr>
<tr>
<td>42+ days</td>
<td>4.1</td>
<td>7.6</td>
<td>11.3</td>
<td>4.4</td>
<td>24.0</td>
<td>72.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>(n)</td>
<td>(146)</td>
<td>(118)</td>
<td>(142)</td>
<td>(92)</td>
<td>(50)</td>
<td>(25)</td>
</tr>
</tbody>
</table>

# Direct and indirect deaths only

* Direct deaths – deaths attributable to complications of the pregnancy eg eclampsia, haemorrhage

* Indirect deaths – deaths due to medical complications exacerbated by pregnancy eg AIDS, heart disease

** Co-incidental deaths – deaths due to accidents, violence or causes not exacerbated by the pregnancy eg motor vehicle accidents, but also includes other medical conditions more than 6 months after delivery


<table>
<thead>
<tr>
<th>Cause of death</th>
<th>2001–03 (n)</th>
<th>1998–2000 (n)</th>
<th>1993–95 (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non hospital deaths</td>
<td>14</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Direct deaths</td>
<td>6</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Gestational hypertension</td>
<td>1</td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>–</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Embolism</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Abortion</td>
<td>1</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Ectopic pregnancy</td>
<td>3</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td><strong>Indirect deaths</strong></td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>2</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Cardiac disorders</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Asthma</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Infection</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><strong>Co-incidental deaths</strong></td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Accidents/violece</td>
<td>2</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Neoplasm</td>
<td>–</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Other co-incidental</td>
<td>1</td>
<td>1</td>
<td>–</td>
</tr>
</tbody>
</table>


Epidemiological transition: maternal mortality – impact of surveillance

The 1998–2003 study documented an epidemiological transition in maternal mortality in Jamaica, with a significant decline in direct deaths (p < 0.001), unfortunately negated by an increase (p = 0.057) in indirect deaths (9) [Table 5].

Direct deaths

Recognition of the hypertensive disorders as the leading cause of maternal (1–2) and a significant contributor to perinatal mortality (10) led to specific targeted interventions (11–12). While these conditions still retain their first place rank, cause-specific mortality rates have declined since those interventions began in 1996, from approximately 31/100 000 to 22–24/100 000 live-births. Despite the decline, a recent review highlighted deficiencies that still need to be addressed such as more efficient evaluation of patients on presentation to hospital; more consistent use of antihypertensive agents and more aggressive management of severe pre-eclampsia (13). Changes in clinical practice have resulted in a significant decline in haemorrhage and infection mortality, with the latter no longer among the 10 leading causes of maternal death. Increased obstetric trauma, ranked 5th in 1993–95, was noted to be principally due to inappropriate use of misoprostol (14). Issuing of clinical guidelines has led to a decline in observed cases. Diagnosis of embolism has improved with increased necropsy rates. Clinical guidelines and training are needed to reduce mortality from this complication.

Indirect deaths

The introduction of HIV disease into the antenatal population has led to its meteoric rise in importance as an indirect cause of death, now the leading indirect cause and ranked fourth overall. The increasing prevalence of obesity, among young women in the reproductive age has contributed to increased complications associated with this lifestyle disorder, with all deaths between 2001–3 from cardiac disease and diabetes mellitus occurring among obese women, including 2/3 of the cases of gestational hypertension. Many deaths from these conditions occur beyond the traditional puerperium, suggest-
Millennium Development Goal #5
Jamaica, a co-signatory to the Millennium Development project, has implicitly agreed to pursue the fifth goal (MDG5) to improve maternal health, particularly the target of reducing maternal mortality by 75% from its 1990 level. This means that Jamaican has agreed that it can/will reduce the maternal mortality ratio from 105/100 000 (1990) to 27.5/100 000 by 2015. In the Figure, data from 1998–2003 are plotted against monitoring and evaluation provides an opportunity to identify constraints to progress and make corrections so that the goal remains achievable.

DISCUSSION
Surveillance
Jamaica has demonstrated that it is possible to establish a maternal mortality surveillance system in a developing country and achieve relatively good reporting compliance. The practice of identifying and reporting on maternal deaths in Jamaica has contributed to an increased awareness by health teams of the importance of case review to prevention. In at least 3 of the four regions, annual or more frequent case reviews routinely occur. Continued evaluations are needed to identify and plug the gaps in reporting at the field level.

The establishment of a national maternal mortality surveillance committee to monitor trends and assist regions to develop appropriate action plans to further reduce deaths will complement the surveillance process. As health teams reported, some problems have policy implications not easily resolved at the local level. One such urgent need is the development/revision of clinical guidelines for the leading complications of pregnancy, particularly gestational hypertension, pulmonary embolism, haemorrhage, complications.

![Figure: Maternal mortality reduction: Jamaica can we get back on track to achieve MDG5?](image-url)
of abortion, HIV/AIDS, sickle cell disease, heart disease and diabetes mellitus to standardize the management of the more common complications. Given the growing importance of indirect complications, more collaboration is needed with the medical team to improve care to women with medical problems exacerbated by pregnancy.

Public education programmes need to be developed to ensure that women and their families prepare for pregnancy and recognize the signs and symptoms of pregnancy complications in order to seek timely and appropriate care.

**Surveillance and completeness of reporting**

Improved reporting of maternal deaths by the Weekly Surveillance Bulletin suggests willingness of health teams to monitor these events. As teams were interested in monitoring late and co-incidental deaths, the national committee has to develop new guidance to facilitate the identification of these cases. Teams must widen their active surveillance to all female wards and the Accident and Emergency departments as post-partum deaths, especially those occurring among women discharged after the birth and then readmitted, are usually managed on non-obstetric wards. Appendices 1–5 present the forms that have been approved by the national maternal mortality surveillance committee for use.

**Registation of maternal deaths**

The persistence of poor documentation of the incidence and causes of maternal deaths requires specific training of medical officers. The addition to the medical certificate of a tick box to prompt physicians to note whether a female decedent was recently pregnant should help improve the identification of these cases by the Registrar and if necessary request corrections. Appendix 5 represents the effort from the national committee to develop a tool for use by regional health authorities to inform the Registrar of all maternal deaths reviewed on a quarterly basis. It is hoped that this process will facilitate the two-way sharing of information on cases, especially those which occur outside of institutions and may not come to the attention of the health team.

Training at the Registrar’s General Department (RGD) may also be needed to ensure that coders are able to evaluate cases and code them correctly, especially indirect deaths, for which different codes exist for the same condition to distinguish between those that are pregnancy related and those that are not. A manual on death certification has been produced and should be available to guide physicians and midwives on the proper completion of the medical and fetal death certificates (15).

**Non-hospital deaths**

Given that certain complications are more likely to occur outside of hospital eg ectopic pregnancy, complications of abortion, accidents and violence, including suicide, efforts to identify and report on these deaths are commendable. The ad hoc reporting of these deaths can be formalized by monitoring funeral parlours, the police, the local district registrar as well as by inviting private practitioners, especially in districts/regions where private hospitals or nursing homes attend births, to participate in the routine clinical review meetings. Once practitioners understand that the process is not punitive, willingness to report will develop.

**Achieving Millennium Development Goal #5**

The western health region has demonstrated that it is possible for maternal mortality to decrease, even under existing constraints. In regions such as the west and the north-east where the number of deaths are low due to lower incidence or smaller populations, interest can be maintained by auditing complicated cases where the women survived, defined as severe acute maternal morbidity or SAMM(16). There are lessons to be learnt from these women, including their views on how their condition was managed, to ensure that the quality improvement process is ongoing.

Careful identification of both the causes of maternal death and underlying determinants of these deaths (17) at the community level (knowledge of the signs of pregnancy complications, where to seek care, the importance of responding immediately and not delaying until the next clinic visit) and ensuring that mothers are compliant with referrals by monitoring adherence can help reduce maternal mortality. In addition, with repeat visits the following week supported by home visits if necessary, careful review of the systemic deficiencies in quality (18) and timeliness of care within facilities and addressing these deficiencies in a meaningful way can all contribute to reducing maternal mortality in Jamaica and ensuring that we do achieve MDG5. All regions except the western region (25% decline required) need to halve between 2003 and 2010 the number of deaths occurring in their region (Table 6). Do we have the political will (commitment) and technical determination to take on the challenge?

**REFERENCES**


APPENDICES
1. MATERNAL MORTALITY CASE REVIEW SUMMARY (FORM 1 OF 5) – summarizes information from forms 2 to 4 for entry into the database.
2. MATERNAL MORTALITY CLINICAL SUMMARY (FORM 2 OF 5) – summarizes data from the hospital clinical record.
3. MATERNAL MORTALITY HOME VISIT AND ANTENATAL REPORT (FORM 3 OF 5) – for use by the community midwife/public health nurse to do the home visit and document information from the health centre/private practitioners antenatal service record
4. MATERNAL MORTALITY POST MORTEM SUMMARY (FORM 4 OF 5) – for use to summarize information from the post mortem report
5. MATERNAL MORTALITY RGD NOTIFICATION LIST (FORM 5 OF 5) – for use by regional health authorities to notify the local district registrar of the findings of the regional review panel regarding the cause of the death of the mother, in the parish of occurrence where the death will be registered. This may not be consistent with what is on the registered medical certificate and is intended to encourage registrars to review and if necessary request corrections from the certifying officer.
**MINISTRY OF HEALTH**

**JAMAICA**

**MATERNAL MORTALITY CASE REVIEW SUMMARY (FORM 1 OF 5)**

**INSTRUCTIONS:** To be completed on all deaths during pregnancy or within one year after termination of pregnancy once case review has been completed. The summary, with supporting documents are then shared with (1) institution in which the death occurred (2) parish of residence of the mother (3) the Ministry of Health.

<table>
<thead>
<tr>
<th>DEMOGRAPHIC DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PATIENT’S INITIALS</td>
</tr>
<tr>
<td>DATE OF DEATH</td>
</tr>
<tr>
<td>PARISH OF RESIDENCE</td>
</tr>
</tbody>
</table>

| HOME [ ] |

**ANTENATAL INFORMATION**


TOTAL NUMBER OF ANTENATAL VISITS, ALL SITES (ENTER ZERO IF NO ANTENATAL CARE)


NUMBER OF VISITS TO HIGH RISK CLINIC

REASON FOR REFERRAL

**CLINICAL INFORMATION**

PLACE OF DELIVERY (CHECK ONLY ONE)


METHOD OF DELIVERY (CHECK ONLY ONE)


OUTCOME OF THIS PREGNANCY (CHECK ONLY ONE)


REASON FOR ANTEPARTUM ADMISSION

DATE OF MOST RECENT ADMISSION (1)


DISCHARGE DIAGNOSIS

COMPLICATION/RISK FACTOR 1

COMPLICATION/RISK FACTOR 2

COMPLICATION/RISK FACTOR 3


DATE TRANSFERRED (TIME OR ARRIVAL)


**CAUSE OF DEATH**

**TIME OF DEATH** [1] MATERNAL (pregnant – 42 days post partum) [2] LATE MATERNAL DEATH (43–364 days)


**UNDERLYING CAUSE**

**INTERMEDIATE CAUSE**

**IMMEDIATE CAUSE**


**QUICK CODES – DIRECT DEATHS**


**QUICK CODES – INDIRECT DEATHS**


[26] RESPIRATORY DISORDER [27] SUICIDE [28] OTHER INDIRECT (specify)________________________

**QUICK CODES – CO-INCIDENTAL DEATHS**

[31] HOMICIDE [32] MVA [33] OTHER CO-INCIDENTAL including non pregnancy related medical complications

**EVALUATION OF THE ASSESSMENT TEAM**

**AVOIDABLE FACTORS PRESENT:** [1] NO [2] YES, IF YES, SPECIFY ALL THAT APPLY

[1] DELAY 1 (PATIENT DID NOT RECOGNIZE PROBLEM)

[2] DELAY 2 (PATIENT DELAY SEEKING CARE)

[3] DELAY 3 (DELAYED ACCESS TO CARE – COST, TRANSPORTATION, OTHER COMMUNITY ISSUES)


**DETAIL SOURCES BELOW IF DELAY 4**

[41] providers of care at time of death (training, quality, availability)

[42] decision making process (recognition of serious problem, correct diagnosis, consultation process)

[43] actions taken (e.g. referral, emergency obstetric care, appropriate treatment)

[44] delays in referral (e.g. transport, money, permission, physical environment)

[45] facilities (e.g. quality, blood, anaesthesia, supplies, drugs)

**REVIEW TEAM**

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<tr>
<th>Obstetrician</th>
<th>Midwife</th>
<th>Epidemiologist</th>
<th>MO(H)</th>
<th>MO(H)</th>
<th>Other</th>
<th>Other</th>
</tr>
</thead>
</table>

**DATE OF REVIEW __/__/____**

**DATE SUMMARY SENT TO MO(H) PARISH OF RESIDENCE __/__/____**

**DATE SUMMARY SENT TO HOSPITAL OF DEATH __/__/____**

**DATE SUMMARY SENT TO MINISTRY OF HEALTH __/__/____**
## DEMOGRAPHIC INFORMATION

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<td>Cottage hospital [4]</td>
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<tr>
<td></td>
<td>Public maternity centre [5]</td>
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<td></td>
<td>Private maternity centre [6]</td>
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<td></td>
<td>Private hospital [7]</td>
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<td>Home [8]</td>
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<tr>
<td></td>
<td>Other [9] (specify)</td>
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<th>AUTOPSY REPORT AVAILABLE</th>
<th>WHERE AUTOPSY PERFORMED</th>
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<tr>
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<td>Yes [1]</td>
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<td>Unknown [9]</td>
<td>Date Autopsy performed:</td>
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<th>DISCHARGE DIAGNOSIS</th>
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<th>DATE OF ADMISSION (3)</th>
<th>Reason: delivery [1] other specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE OF DISCHARGE (3)</td>
<td>DISCHARGE DIAGNOSIS</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>DATE OF ADMISSION (4)</th>
<th>Reason: delivery [1] other specify</th>
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<td>DATE OF DISCHARGE (4)</td>
<td>DISCHARGE DIAGNOSIS</td>
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</tr>
</tbody>
</table>

| COMPLICATION/RISK FACTOR 1 | |
|-----------------------------| |

| COMPLICATION/RISK FACTOR 2 | |
|----------------------------| |

| COMPLICATION/RISK FACTOR 3 | |
|-----------------------------| |

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<table>
<thead>
<tr>
<th>DATE TRANSFERRED</th>
<th>TIME OF ARRIVAL</th>
</tr>
</thead>
<tbody>
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|-----------------|---------------------------------------------------------------|

<table>
<thead>
<tr>
<th>PREGNANCY HISTORY (enter number of events; if none, enter zero “0”)</th>
</tr>
</thead>
</table>

- Number of previous pregnancies (excluding current pregnancy) __________ |
- Outcomes 1. full term live births __________ 2. premature live births (< 2500 g) __________ 3. stillbirths __________ |
- 4. spontaneous abortions __________ 5. induced abortions __________ 6. ectopic pregnancies __________ |
- 7. trophoblastic diseases __________ |

| PREVIOUS COMPLICATIONS OF PREGNANCY | |
|-------------------------------------| |
**DELIVERY INFORMATION**

<table>
<thead>
<tr>
<th>Date Admitted for Delivery</th>
<th>Date This Pregnancy Terminated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong><strong>/</strong></strong>/____</td>
<td><strong><strong>/</strong></strong>/____</td>
</tr>
</tbody>
</table>

Attendant at Delivery (☐ Only One Or the Most Highly Trained Attendant if More Than One)

- Nana/self [1]
- District midwife [2]
- Registered nurse/midwife [3]
- Obstetrician [4]
- Other med. pract. [5] (Specify) _______________
- Other trained personnel [6] (Specify) _______________

31. Method of Delivery (☐ Only One)

- Vaginal-spontaneous [1]
- Vaginal-induced [2]
- Caesarean-emergency [3]
- Caesarean-elective [4]
- Undelivered [5]

32. Presentation:

- Cephalic [1]
- Breech [2]
- Other [3] (Specify) _______________
- Not Known [9]

33. Birthweight: __________ LBS/KG


36. If Yes, Who Administered It:

- Nurse anaesthetist [1]
- Resident [2]
- Specialist [3]

25. Gestation at Pregnancy Termination/Maternal Death: _____ Weeks from LMP [99] Not Known

26. Outcome of This Pregnancy (☐ Only One)

- Died undelivered [0]
- Full term live birth [1]
- Premature live birth [2]
- Stillbirth [3]
- Spontaneous abortion [4]
- Induced abortion [5]
- Ectopic pregnancy [6]
- Trophoblastic disease [7]
- Multiple gestation (Specify all outcomes using code numbers from above) [8] twin 1 _____ [9] twin 2 _____

27. If liveborn, did infant survive: Yes [1] No [2]

28. If no, date of death ______________

**Clinical Summary**

______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________
______________________________________________________________________________________________

Signed ______________________ Position ___________________ Date ____/____/____
**MINISTRY OF HEALTH: JAMAICA**

**MATERNAL MORTALITY HOME VISIT AND ANTENATAL REPORT (FORM 3 OF 5)**

INSTRUCTIONS: To be completed by a PHN, community midwife covering the decedent’s community of residence or hospital midwife by visiting with next of kin of the deceased to determine what occurred prior to the patient’s death.

Offer your condolences and explain to the relatives that in an effort to prevent maternal deaths we visit the relatives of all women who died during pregnancy and childbirth to better understand what problems the patient had and how the health services can better provide for these needs so that these problems can be avoided in the future.

### DEMOGRAPHIC INFORMATION

<table>
<thead>
<tr>
<th>PATIENTS NAME</th>
<th>RESIDENCE</th>
<th>DISTRICT / PARISH</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>DATE OF DEATH</th>
<th>AGE AT DEATH</th>
<th>DATE OF DELIVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ /</td>
<td></td>
<td>/ /</td>
</tr>
</tbody>
</table>

**MARTIAL STATUS (ONLY ONE)**

1. Married
2. Common-law
3. Visiting
4. Other, specify
5. Unknown

**PLACE OF DEATH**

<table>
<thead>
<tr>
<th>HOME</th>
<th>District/parish</th>
</tr>
</thead>
</table>

### NEXT OF KIN INTERVIEWED: (CHECK ALL THAT APPLY)

1. Spouse/consort
2. Mother
3. Father
4. Sibling
5. Other relative, specify
6. Other non relative, specify
7. Relationship not stated

**Respondents knowledge:**

b. If no, How long before death did you see her? _______________________
d. Was this person with her when she died? [1] Yes [2] No
e. How long after her death did you hear about it? _______________________
f. Before (name) was pregnant for the last time, was she generally well? [1] Yes [2] No [9] Not known
If no, what problems was she having _______________________

### Antenatal care:


2b. If yes, where did she attend, specify name of :

a. health centre
b. hospital
c. private doctor

3. How many visits did she make ______

4. Date of last visit ________________


7. If yes, where was she referred _______________________

8. Did she go _______________________


12. If yes, where admitted _______________________


---

1. To complete antenatal care record of women seen in the high risk antenatal clinics at hospital
Prior to going into hospital (if died in hospital) or prior to the most recent illness, did the patient complain of any of the following symptoms:

### before going into labour or before delivery (antepartum) (___ ALL THAT APPLY)

- [01] severe headaches
- [02] visual disturbance (seeing spots, seeing double, blindness)
- [03] epigastric pain (stomach aches)
- [04] fits (seizures)
- [05] severe abdominal pain
- [06] swelling of face or hands
- [07] high fever
- [08] extremely short of breath
- [09] yellow skin or eyes
- [10] vaginal bleeding
- [11] severe chest pain
- [12] long labour (more than 12 hours)
- [13] coughing up blood
- [14] severe pain in calves or legs

### if died after delivery, ask about (___ ALL THAT APPLY)

- [15] severe bleeding
- [16] bad smelling discharge
- [17] if c-section, reopened wound
- [18] red, swollen wound
- [19] severe abdominal pain

### INFORMATION FROM THE ANTENATAL CARE PROVIDER(S) IDENTIFIED BY THE RELATIVES

1. HEALTH CENTRE:  
   - Date 1st visit / / 
   - Date last visit / / 
   - Gestation 1st visit _____ 
   - No. visits _____ 
   - Blood Pressure (Last on Record) _____ / _____ 
   - Albuminuria (Highest Level) ________ 
   - Other complications: ____________________________________________________________

   If yes, date referred _____ / ____ / ____ 
   Reason for referral _________________________________________________________________

2. PRIVATE MD:  
   - Date 1st visit / / 
   - Date last visit / / 
   - Gestation 1st visit _____ 
   - No. visits _____ 
   - Blood Pressure (Last on Record) _____ / _____ 
   - Albuminuria (Highest Level) ________ 
   - Other complications: ____________________________________________________________

   If yes, date referred _____ / ____ / ____ 
   Reason for referral _________________________________________________________________

3. HOSPITAL/high risk ANC:  
   - Date 1st visit / / 
   - Date last visit / / 
   - Gestation 1st visit _____ 
   - No. visits _____ 
   - Blood Pressure (Last on Record) _____ / _____ 
   - Albuminuria (Highest Level) ________ 

   COMPLICATIONS AND OTHER MEDICAL PROBLEMS (IF ANY):
   _________________________________________________________________

### SCREENING TEST RESULTS

- HB: ____________________ [9] not known/not done

SIGNED (PHC RM) ___________________________ POSITION ________________ DATE ____ / ____ / ____

SIGNED (SHC RM) ___________________________ POSITION ________________ DATE ____ / ____ / ____

---

530 Maternal Mortality Surveillance
## MINISTRY OF HEALTH
### JAMAICA
#### MATERNAL MORTALITY POST MORTEM SUMMARY (FORM 4 OF 5)

**INSTRUCTIONS:** To be completed by pathologist or regional surveillance officer from the post mortem findings on any death investigated of a female 10-50 years of age whose death is suspected as being pregnancy related.

### DEMOGRAPHIC INFORMATION

<table>
<thead>
<tr>
<th>PLACE OF DEATH</th>
<th>DOCKET NO.</th>
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<table>
<thead>
<tr>
<th>PATIENT’S INITIALS</th>
<th>DATE OF DEATH</th>
<th>AGE AT DEATH</th>
</tr>
</thead>
</table>

### CLINICAL INFORMATION

**Complications**

________________________________________________________________________________________________
________________________________________________________________________________________________
________________________________________________________________________________________________

**Other Medical Problems/Risk Factors present**

________________________________________________________________________________________________
________________________________________________________________________________________________
________________________________________________________________________________________________

### CAUSE OF DEATH

**IMMEDIATE CAUSE**

________________________________________________________________________________________________

**INTERMEDIATE CAUSE**

________________________________________________________________________________________________

**INTERMEDIATE CAUSE**

________________________________________________________________________________________________

**UNDERLYING CAUSE**

________________________________________________________________________________________________

**Other significant conditions**

________________________________________________________________________________________________

### AUTOPSY DONE BY:

- [1] DM PATHOLOGIST – MINISTRY OF HEALTH/UHWI
- [3] DMO
- [4] OTHER MEDICAL OFFICER

**DATE OF AUTOPSY:**

__/__/____

### REPORT COMPLETED BY:

- [1] INVESTIGATING OFFICER
- [2] SURVEILLANCE OFFICER
- [3] OTHER, SPECIFY

**SIGNATURE:**

________________________________________________________________________________________________

**DATE COMPLETED:**

__/__/____
**JAMAICA**

**MATERNAL MORTALITY RGD NOTIFICATION LIST** (FORM 5 OF 5)

INSTRUCTIONS: To be completed by regional surveillance officer from the CASE REVIEW SUMMARY and forwarded to the CEO, REGISTRAR GENERAL’S DEPARTMENT on a quarterly basis

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<thead>
<tr>
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<tbody>
<tr>
<td>NAME OF DECEDEENT</td>
<td>DATE OF DEATH</td>
<td>PLACE OF DEATH</td>
<td>CAUSE OF DEATH</td>
</tr>
<tr>
<td></td>
<td>Immediate</td>
<td>Intermediate</td>
<td>Underlying</td>
</tr>
</tbody>
</table>

| [ ] | [ ] | [ ] | [ ] |