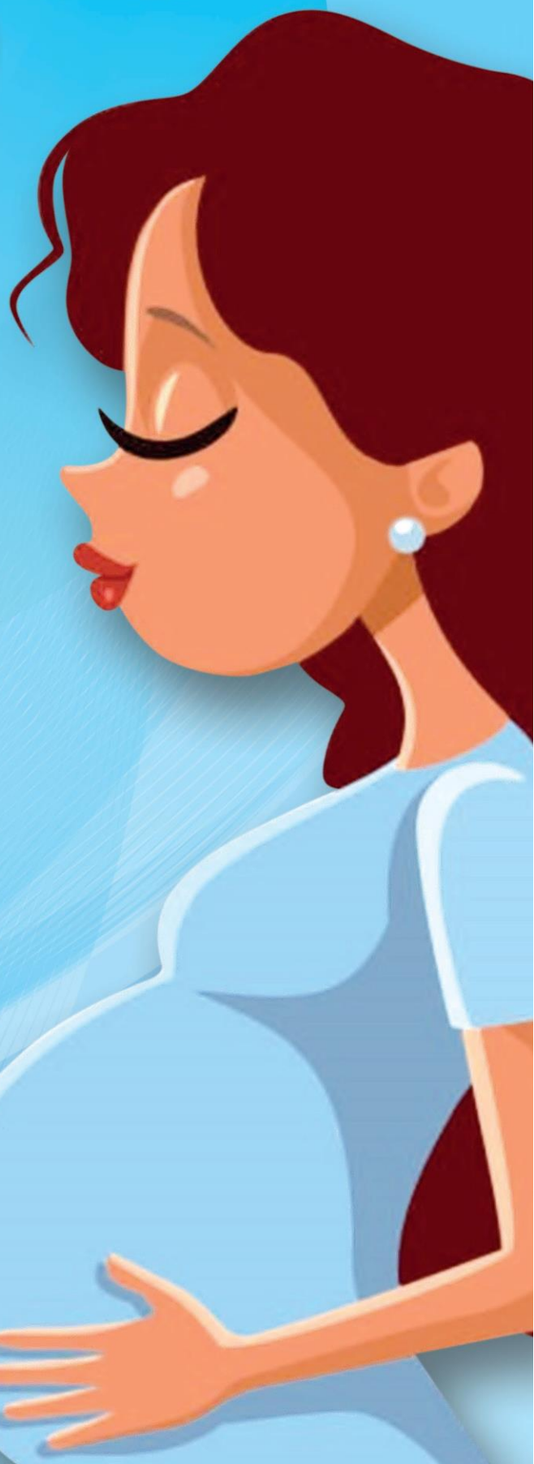
แนวทางการดำเนินงาน ระบบเฝ้าระวังมารดาตาย สำหรับประเทศไทย

Thailand Maternal Death Surveillance and Response Guideline



กรมอนามัย
DEPARTMENT OF HEALTH

สำนักส่งเสริมสุขภาพ กรมอนามัย
กระทรวงสาธารณสุข

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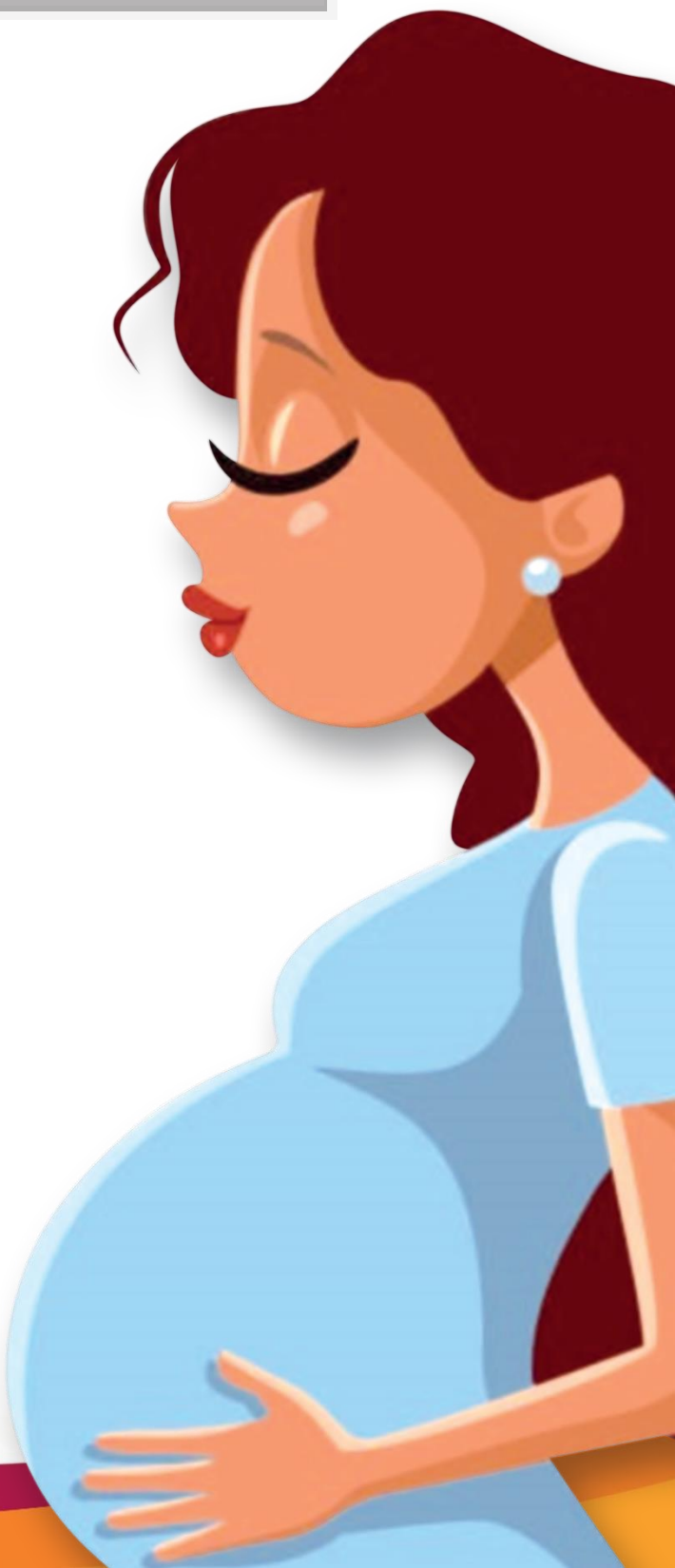

กรมอนามัย
DEPARTMENT OF HEALTH

Bureau of Health Promotion
Department of Health
Ministry of Public Health

Thailand Maternal Death Surveillance and Response Guideline

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Introduction

The key target of Maternal Death Surveillance and Response (MDSR) is a reduction of future preventable maternal mortality through a systemetic data collection. Understanding the underlying factors of death lead to the improving recommendation link to the action for preventing future deaths, in order to improve constinously the quality of health care through the dissemination and use of information for an appropriate decision making. A maternal death review is a crucial strategy for reduction maternal deaths. In Thailand, maternal deaths surveillance and response system has been developed and set up effectively since Y2015. There are maternal deaths notification increasingly. And also attempt to reduce the maternal deaths by improving quality of medical care and medical staff through the implementation of the local of maternal and child committee district and provincial level. The key responsible organization of maternal death surveillance and response is Department of Health. Ongoing MDRS performance, maternal death reporting process have not been efficient, got only quantity but there is still a lack of quality due to a lot of problems and weaknesses such as an un-systematic data collection, lack of cooperation for death notification because of fear the prosecution and litigation. All factors lead to have bias in data analysis process effect to setting up the national health strategy and policy in future.

World Health Organization (WHO) initiated the maternal death surveillance and response technical guidance in Y2013 to provide the practical guidance to improve maternal death surveillance system in all country. In particular, the aim of maternal death reviews is to improve the quality of health care rather than finding the mistake of medical staff or hospital. Investigate the avoidable factors lead to the maternal deaths is the key. In order to setting up recommended actions, monitoring, evaluation and continuous review for prevention future deaths. In case of zero-reporting, near-missed cases should be considered for collection valuable data for study in future.

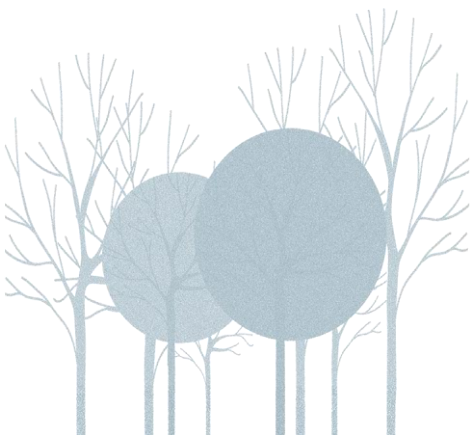
In the past, there is no any manual or guildline about maternal death review process in Thailand. To ensure that the maternal death review implementation will be implemented in the same standard in any local or national level, therefore Department of Health provides “Thailand Maternal Death Surveillance and Response Guideline” following the WHO technical guidance which was considered and appoved by National Maternal and Child Health Committee, Public Health Service Plan Committee and The Royal Thai College of Obstrtricians and Gynoecologists Committee for setting up the guildline and standardized implimentation for Physician and medical staff, aim to reduction and prevention the maternal mortality including continuous improvement the quality of maternal health care in future.

Department of Health

Contents

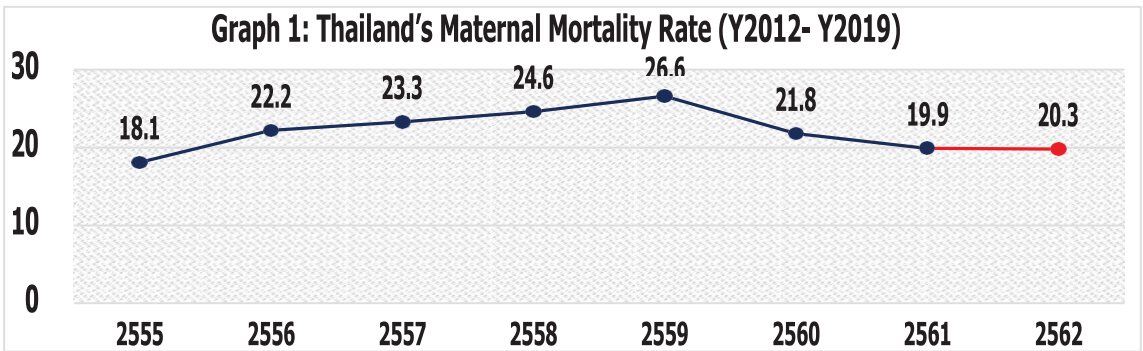
Abbreviations

MDR	=	Maternal Death Review
MDSR	=	Maternal Death Surveillance and Response
MMR	=	Maternal Mortality Ratio
WHO	=	World Health Organization
ICD	=	International Statistical Classification of Diseases and Health Related Problems
MCHB	=	Maternal and Child Health Board
RCA	=	Root Cause Analysis
CE	=	Confidential Enquiry
CRVS	=	Civil Registration and Vital Statistics



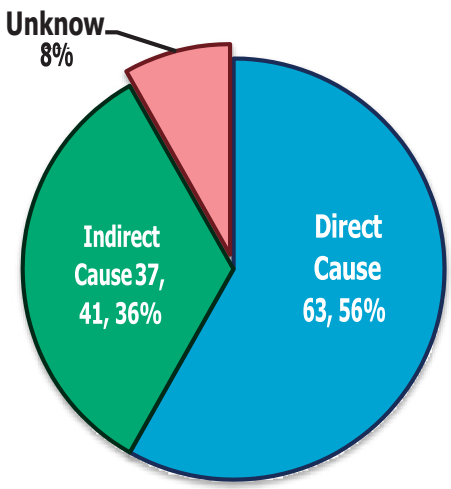
Marternal Death Situation in Thailand

The cooperation agreement between the government of the Kingdom of Thailand and the United Nations, regarding the reduction and prevention of maternal and child mortality, aims to improve the quality of pregnancy and childbirth. The Ministry of Public Health has defined 5 different age populations to implement sustainable improvement of the maternal and child health care facilities during pregnancy, as well as the childbirth and postpartum state. However, the maternal mortality ratio was used for maternal death indicator, it was identified in Twenty-Year National Strategic Plan for Public Health. Maternal death is a significant problem even if the maternal ratio has shown an appreciable decline but the performance still not achieved the goal. Ongoing surveillance in Y2012-Y2019, the marteranl mortality ratio averages were 18.1, 22.2, 23.3, 24.6, 26.6, 21.8, 19.9 and 20.3 per one-hundred thousand live births, respectively



Source : Y2012-Y2018 Public Health Statistics Y2019 Bureau of Health Promotion, Department of health

Referring to data souce from Bureau of Health Promotion, Department of Health, There are 113 maternal deaths in Y2019, an estimated maternal mortality ratio of 20.3 per one-hundred thousand live births. The goal required at least 17 per one-hundred thousand live births so it does not achieve the goal. For the cause of maternal death identification, three factors were classified; 56 percentage (63 maternal deaths) caused from direct causes, 36 percentage (41 maternal deaths) caused from indirect cause and 8 percentage can not identify the cause of death. Chart 2: The percentage of cause of maternal deaths Y2019 (Direct and Indirect cause)



Definition of Maternal Death Surveillance System

Referring to Epidemology principle mentioned on Public Health Surveillance is the continuous, systematic collection, analysis and interpretation of health related data needed for the planning, implementation and evaluation of public health practice, aim to prevention and control desease and other health problem. For the Maternal Death Surveillance and Response (MDSR) was defined as the same concept; continuous, systematic collection, analysis, interpretation and dissemination of data regarding maternal death, analysis the cause of maternal deaths and setting up recommended actions lead to prevent future deaths. Aim to reduction the maternal mortality and avoid factors that contribute to maternal death for preventing similar deaths in the future

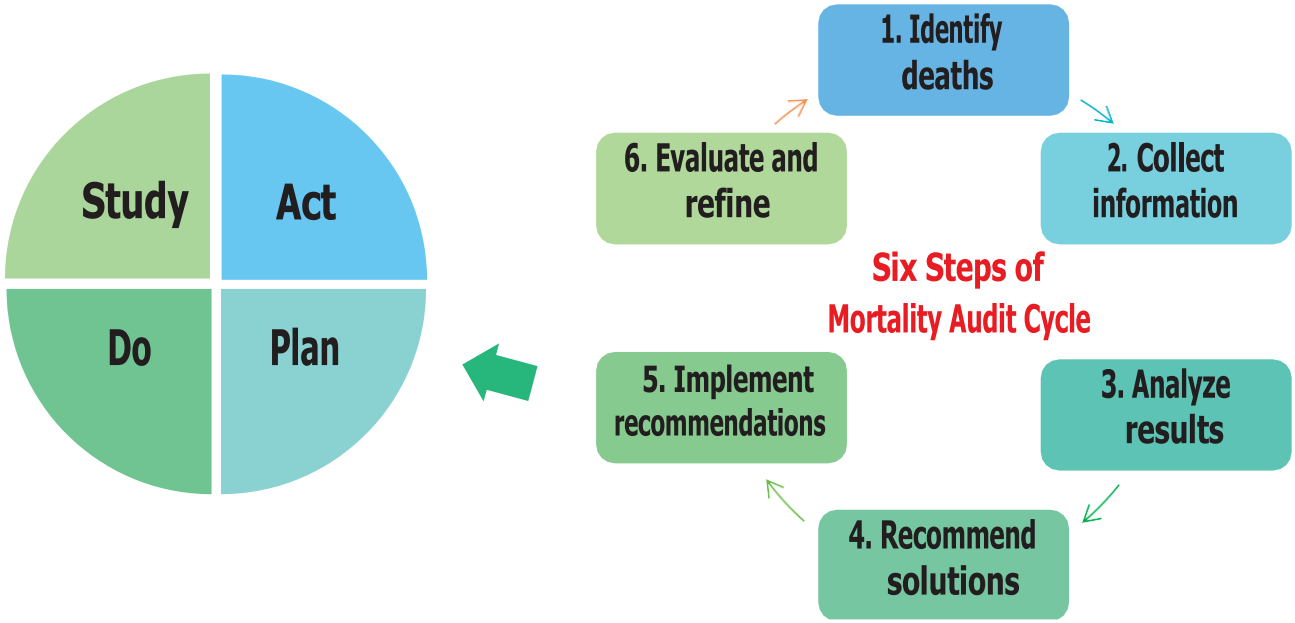
Definition of Maternal Mortality Ratio (MMR)

The maternal mortality ratio (MMR) is defined as the number of maternal deaths during a given time period per 100,000 live births during the same time period. A maternal death refers to a female deaths from any cause related to or aggravated by pregnancy or its manangement (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy.

$$\text{Maternal Mortality Ratio} = \frac{\text{Number of maternal deaths}}{\text{Number of live births}} \times 100{,}000$$

Six Steps of Mortality Audit

Flow chart of maternal death review (MDR) defined by WHO



Step 1 Identify deaths

Maternal deaths during the period of review are identified from wards or emergency departments. The data sources include referral notes, ward admissions and individual clinical records, outpatient and inpatient department registers and discharge and death registers. The death should be notified to committee of MDSR center.

Step 2 Collecting information

Information can be collected from many sources such as hospital registers, operations record, anesthetic record, childbirth record, laboratory tests, radio diagnostic record including interviewing medical staff and family member. And then verify and classify all information as below;

1. Socio-demographic status: Age, ethnicity, occupation, education, socioeconomic factors
2. Antenatal: Obstetric history, planned pregnancy, medical history, antenatal care given
3. Intrapartum: Date and onset of labour, rupture of membranes, date and time of onset of labour, delivery attendant complications, status of the baby APGAR
4. Postpartum/ Postnatal: Date and time for onset of complications

Recommendation Ideally, review within a week of the event

Step 3 Analyzing the information

All information be analyzed and discussed by MDR committee in order to identify the cause of maternal deaths and avoidable factors to prevent similar death in the future. The factor can be cause from man, material, implementation system, management system or surrounding environment etc. Many tools and technicals can be used for analysis the cause of matertal deaths;

1. Root Cause Analysis (RCA) such as Fishbone diagram, 5 Steps, 5 Why
2. Delay approach : decision, reaching and receiving
3. Level approach : Patient-Provider-System Model

Step 4 Recommending Solution

After the cause of maternal death was identified, the next stage is finding the solutions, appropriated recommendations will be formulated for preventing similar death. Recommendation should be communicated to all relevant staff and be classified with specific timeframes, be feasibled and can be implemented. Formulation the appropriate recommendation can use “SMART” technical as below;

Specific	Well definied, Clear
Measurable	Can verify and evaluate
Action-oriented	Clearly step of implementation
Realistic	Possible to achieve the goal
Time-Bound	Clearly defined timeline

Step 5 Implement Changes

Recommendations are made to implement changes that will prevent the occurance of similar deaths in future. Leadership is important to set up action plan with time frame and assign actions to team member of the committee, control resource management (Man Money Material) including follow up on all recommendations

Step 6 Evaluating and Refining

The implementation of recommendations is followed up and evaluated and professional practice refined if necessary. GAP analysis and PDSA technical can use in case of the implementing changes not achive the target,

Identifying of the cause of Maternal Death

Following the Death certicicate (ทร.4/1) as on Ministry of Interior and International form of Medical certificate cause of death. For the leading cause should be recorded in the first sequence of events leading directly to death, underlying cause should be recorded in the next. In addition to the disease, injury or external cause that resulted in the death is essential to record. (See the example as appendix)

Deaths in pregnancy, childbirth and puerperium is defined by WHO as below;

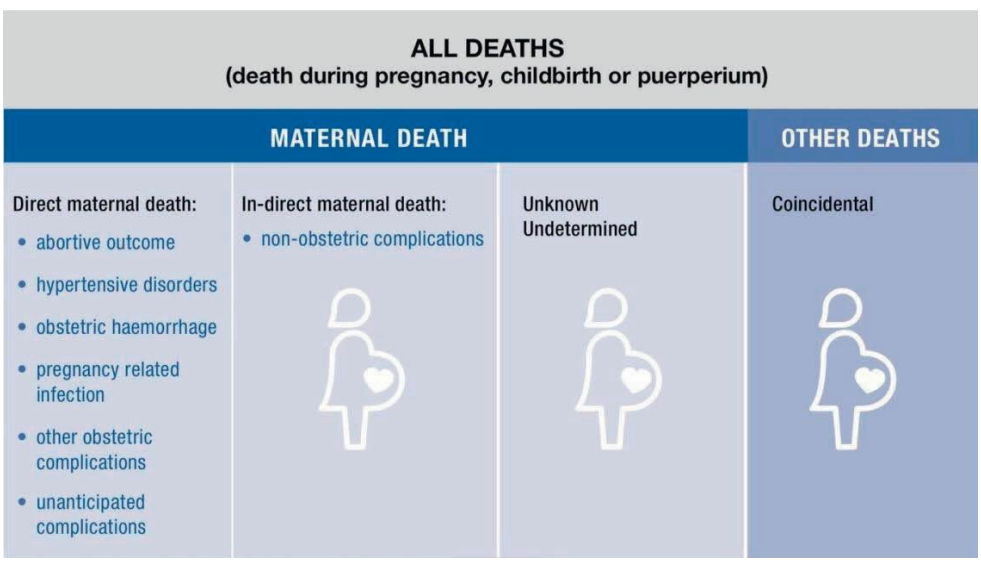
Deaths in pregnancy, childbirth and puerperium is the death of woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death (obstetric and nonobstetric)

Maternal deaths is the death of woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes, Maternal deaths are subdivided into 2 groups as WHO classification;

1. **Direct maternal deaths** are those resulting from obstetric complications of the pregnancy state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above
2. **Indirect maternal deaths** are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy

Coincidental deaths The death from unrelated causes which happen to occure in pregnancy or the puerperium

Late maternal deaths The deaths of a woman from direct or indirect obstetric causes, more than 42 days, but less than 1 year after termination of pregnancy



Classification of cause of maternal death

International Classification of Diseases-Maternal Mortality (ICD-MM): Groupings for underlying cause of maternal death (9 defined groups)

Group 1	Pregnancy with abortive outcome
Group 2	Hypertensive disorders in pregnancy, childbirth, and puerperium
Group 3	Obstetric haemorrhage
Group 4	Pregnancy related infection
Group 5	Other obstetric complications
Group 6	Unanticipated complication of management
Group 7	Non-obstetric complications
Group 8	Unknown/ undetermined causes of death
Group 9	Coincidental causes

Notice

Identification cause of maternal death follows the ICD-MM will use underlying cause lead to the maternal death in the report, which is different from indentification death cause in Death certification report (ทร. 4/1), potential cause be identified in report.

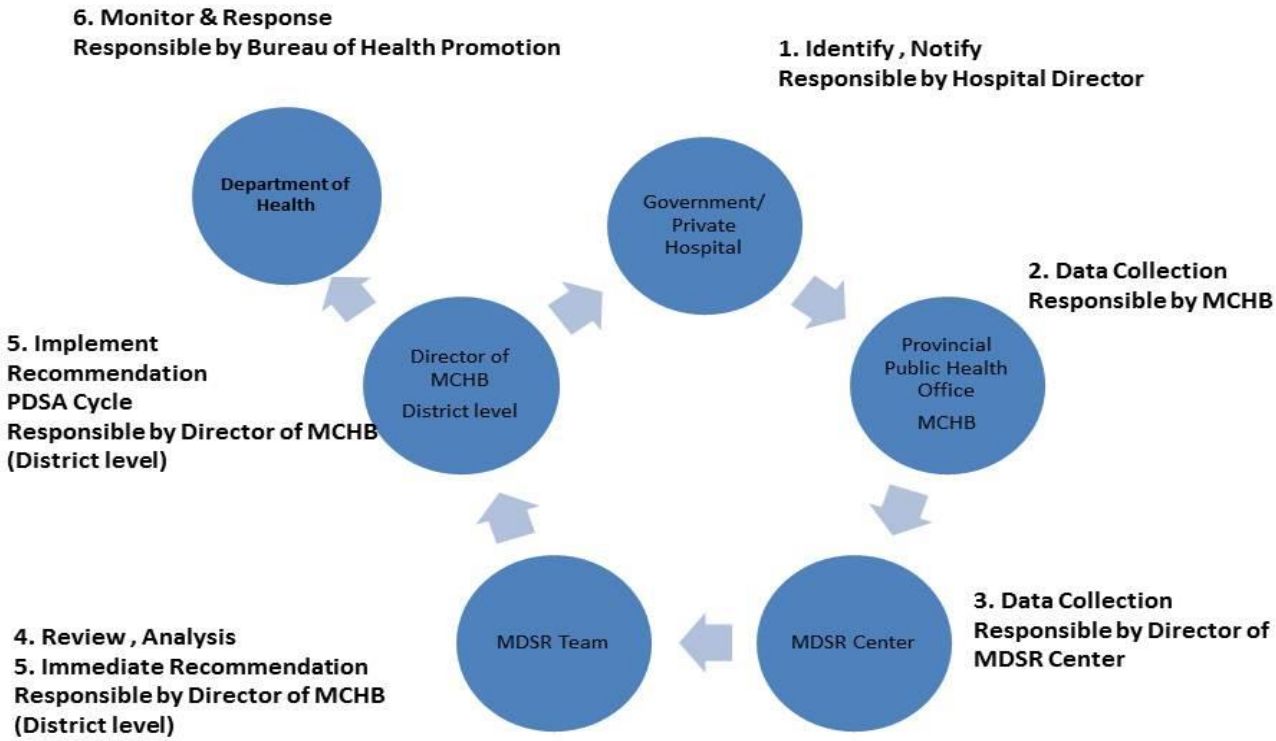
Table: ICD-MM classification for cause of maternal death

Group name	Potential causes of death
1. Pregnancies with abortive Outcome	☐ Ectopic pregnancy ☐ Hydatidiform mole ☐Failed attempted abortion ☐ Complication of abortion (Genital tract and pelvic infection, Excessive hemorrhage, Embolism,Renal failure, metabolic disorders, damage to pelvic organs)
2. Hypertensive disorders in pregnancy, childbirth, and the puerperium	☐ Pregnancy induced hypertension ☐ Eclampsia ☐ Gestational Hypertension
3. Obstetric haemorrhage	☐ Placenta adherens ☐ Placenta previa ☐ Abruptio placentae ☐ Antepartum hemorrhage ☐ Intrapartum hemorrhage ☐ Postpartum hemorrhage (Retained placenta, Uterine atony, Perineal laceration) ☐ Obstetric trauma (Rupture of uterus, Laceration of cervix, High vaginal laceration)
4. Pregnancy-related infection	☐ Chorioamnionitis ☐ Puerperal infection ☐ Infections of genitourinary tract
5. Other obstetric complications	☐ Venous complications : DVT ☐ Liver disorders : Acute fatty liver ☐ Postpartum cardiomyopathy ☐ Intentional self -harm ☐ Obstetric embolism (Amniotic fluid embolism, Pulmonary embolism)
6. Unanticipated complications of management	☐ Complications of anesthesia (Aspiration pneumonitis, Brain anoxia, High spinal block, Failed or difficult intubation) ☐ Complications of surgery (Unintentional cut, Puncture, Perforation, Foreign body accidentally left) ☐ Complications of medical care(Mismatched blood used in transfusion, Excessive amount of fluid transfusion, Failure in dosage, Anaphylaxis due to drug, Non administration of necessary drug, substance)
7. Non-obstetric complications	☐ Heart vascular diseases ☐ Cerebral hemorrhage ☐ Pneumonia ☐ Neoplasm ☐ AIDS ☐ Autoimmune diseases ☐ Malignancy ☐ Endocrine diseases ☐ Infections that are not a direct result of pregnancy
8. Unknown/undetermined	☐ The underlying cause is unknown or was not determined
9. Coincidental causes	☐ External causes except intentional self-harm (Accidental, Assault) ☐ Diseases not aggravated by the pregnancy

Remark : 1-6 Direct cause
7 Indirect cause

MDSR System in Thailand

Flow Chart of MDSR System



MDSR Procedure

For any maternal death occurrance follow this procedure as below;

1. Government Hospital/ Private Hospital
   - Notify Hospital Director, Director of Provincial Public Heath Office and Director of Maternal and Child Health Committee provincial level on the occurrence of maternal death within 24 hours
   - Implement follows the risk management process
2. Provincial Public Health Office
   - Notify primary data of maternal death to Maternal Death Surveilllamce Center within 24 hours
3. Maternal and Child Health Board (MCHB)
   - Collect relevant data on maternal death and carry out detailed analysis

4. Maternal Death Surveillance Center
   - Send the maternal death primary report to Department of Healhth within 24 hours through website http://savemom.anamai.moph.go.th
   - Coordinate the Maternal and Child Health Committee provincial level for collecting all maternal death cases
   - Conduct the maternal death review meeting for investigation the cause of maternal death
   - Complete and send the Confidential Enquiries Form (CE-62) to Department of Health within 30 days through website http://savemom.anamai.moph.go.th
5. Bureau of Helath Promotion, Department of Health
   - Investigate the cause of maternal death and report to The Perinatal Society of Thailand every 3 months
   - Arrange an annual maternal death report and make recommendations to government for policy and strategy formulations

Maternal Death Surveillance Center

Location : Regional Health Promotion Center 1-12, Metropolitan Health and Wellness Institution

Directors : Director of Regional Health Promotion Center 1-12, Director of Metropolitan Health and Wellness Institution

Secretary : Maternal and Child Health Techincal Officer who is secretary of Maternal death review committee

Roles and Responsibility

1. Coordinate the Maternal and Child Health Committee provincial level for collecting all maternal death cases
2. Coordinate the Maternal and Child Health Committee provincial level for collecting all maternal death cases
3. Send the primary report of maternal death and the Confident Enquiries Report (CE-62) to Department of Heatlh within 24 hours through website http://savemom.anamai.moph.go.th
4. Support implementation of maternal death surveillance to maternal and child health committee provincial level and also support “Save Mom” operation

Maternal Death Review Committee

This committee should have the following members;

1. Director of Maternal & Child Health Committee district level	1 person Director
2. Director of Maternal & Child Health Committee provincial level or Obstetrician & Gynecologist Representative	1 person Committee
3. Secretary of Maternal & Child Health Committee provincial level	1 person Committee
4. Specialist from The Royal Thai College of Obstetrician & Gynaecologists	1 person Committee
5. Related Physician; Internist, Anesthesiologist, Surgeon, Pediatrician	1 person Committee

6. Related Nursing Representative; ER, ANC, LR, PP, ICU — 1 person Committee
7. Maternal & Child Health Techinical Officer — 1 person Secretary

Roles and Responsibility

1. Review and investigate the cause of maternal death to find out the systematic corrective action.
2. Set up the recommended actions/ corrective action for prevention similar death occurrence
3. Send the Confident Enquiries Report (CE-62) to Department of Heatlh within 30 days though website http://savemom.anamai.moph.go.th

Remark : 1. In case of maternal death occure, Director and Secretary of Maternal & Child Health Committee in charge of review and investigation the cause of maternal death 2. Invite relevant Physician to be a part of investigation team if necessary 3. The physician who had treated the mother should not in part of the investigation team 4. Four- Seven persons are enough for investigation team 5. Specialist from The Royal Thai College of Onstetricians and Gynaecologists should be participated in investigation team (if necessary)

Principles and Guildlines for Maternal Death Review Meeting

The Principal of Maternal Death Review (MDR)

1. Emphasizing " No Name and No Blame"
2. Be confidential
3. Focus on finding mistake from system not from the person
4. MDR meeting is the benefit for quality of care improvement
5. MDR meeting should arrange continuously and keep reporting even if there is no case of death (Zero- reporting)
6. The patient medical record from hospital is the crucial data sources
7. No identification and mention on any name in meeting (Anonymized)
8. MDR meeting will be completed should have response/ action plan
9. Response/ Action plan shouldl be set up from multi-disciplinary team

The Guildlines for Maternal Death Review (MDR)

1. Management level or Senior Physician should be in part of MDR meeting
2. MDR Meeting should arrange continuously with specific date and timeframe
3. MDR meeting duration should not over than 1 hour and refreshments should be provided at the meeting
4. Prepare data completely for presentation
5. No mention on the patient name, clinic or hospital name and concernd Person name

6. Maternal death review (MDR) is not used for litigation purpose
7. MDR team should aware about “No Blame” approach
8. Maternal death review lead to systematic quality improvement, the purpose is not for prosecution anyone so should separate from criminal investigation
9. All relevant docurments from MDR meeting should not send through social application such as Line application
10. Be Confidential

How to fill in the Confidential Enquires Form (CE - 62)

In the past, Thailand, Department of Health efforts have been made to strengthen maternal death reporting by using ก-1 Form. It was developed to be using Confidential Enquiry in Y2015. However, In Y2019 all maternal death cases were collected and reported includes marginalized ethnic groups and migrant workers, to benefit for setting up recommendations to improve the health facilities. Equity to access the health facilities is the key target. The Classification of the cause of maternal death followed the guildline of WHO (The WHO application of ICD-10 to deaths during pregnancy, childbirth and the puerperium: ICD-MM) There are 9 defined groups for maternal death, cause of deaths were extracted and coded according to ICD-10. However, Three Delays Model which identified three groups of factors effect to accessing the maternal helath care, was used also for determination the maternal death. 3-Delays factors as below;

1. Delay decision to seek care reflects to the heath care education, socio-economic, education, social culture and religion beliefs
2. Delay in reaching care reflects to transportation for reach a medical facility
3. Delay in receiving adequate health care reflects to quality of health care service, adequacy of medical supplies, skill and experience of medical staff. However, to benefit for setting up the corrective action, only one potential cuase be identified in Confidential Enquiries Form CE-62, for analysis following 3-Delays factors can be indentified in many factors cuase.

Submitting Maternal Death Report

Maternal Death Surveillance Center is responsible for submit the maternal death report to the Bureau of Health Promotion, Department of Health through the website http://savemom.anamai.moph.go.th , Two crucial reports needed as below;

1. Primary Maternal Death Reporting Form

When the maternal death occure, all information such as place of death, age of maternal death, hospital name which refer this case, gestational age, and the primary cause of death will be notified by submitted the report within 24 hours

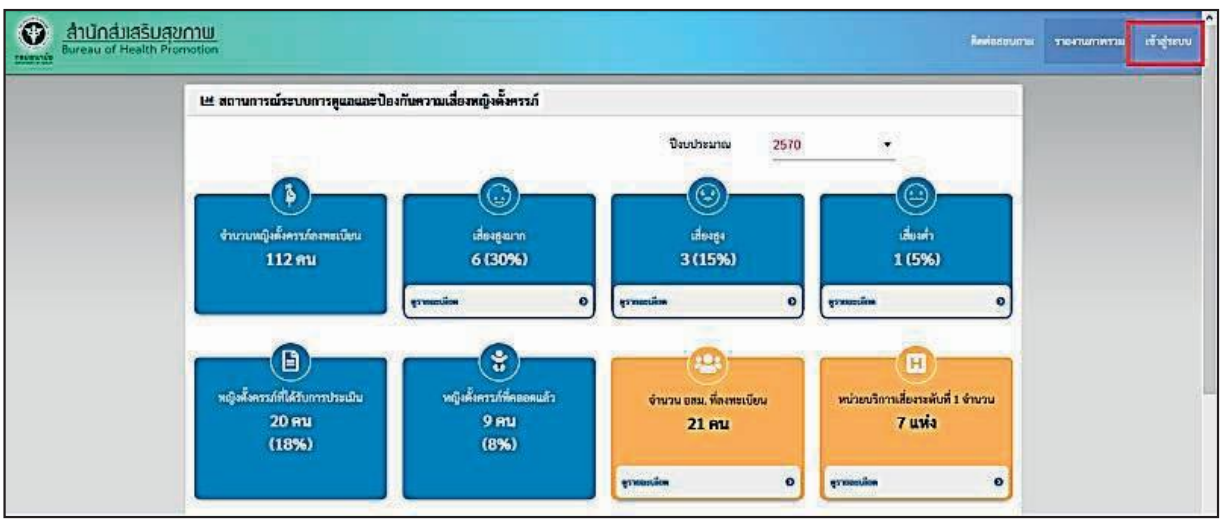
2. Confidential Enquiries Report (CE-62)

Maternal Death Review Process will be conducted to find out the cause of maternal death, and also the recommendation/ corrective action for improvement quality of care. Completed report should be submitted within 30 days after the maternal death occured

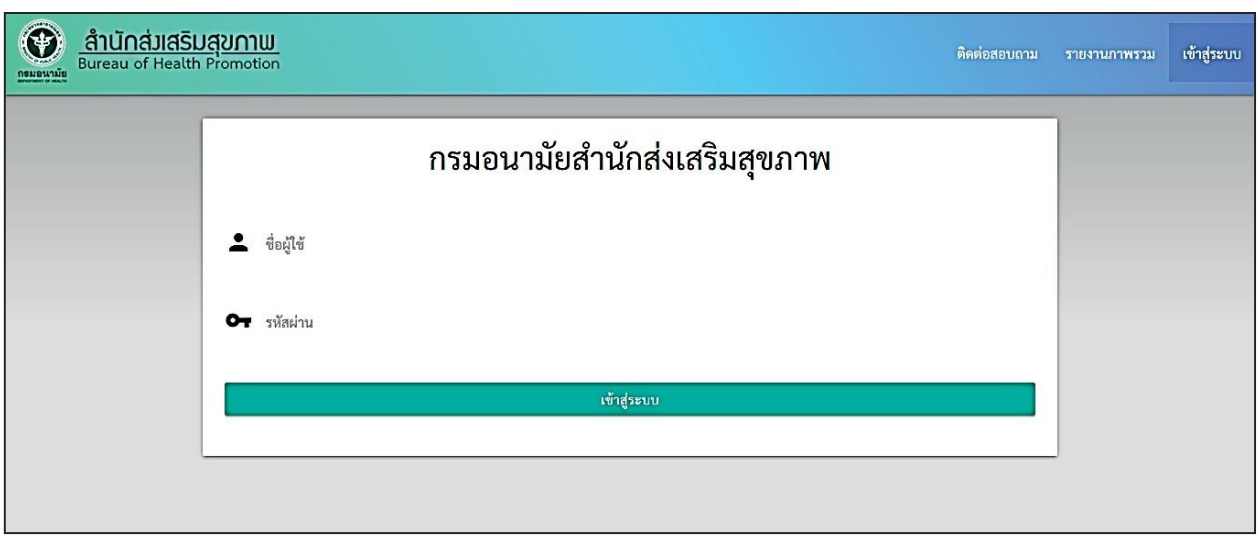
How to fill in the Confidential Enquires Form (CE - 62)

1. Enter to Website

- Enter to website http://savemom.anamai.moph.go.th

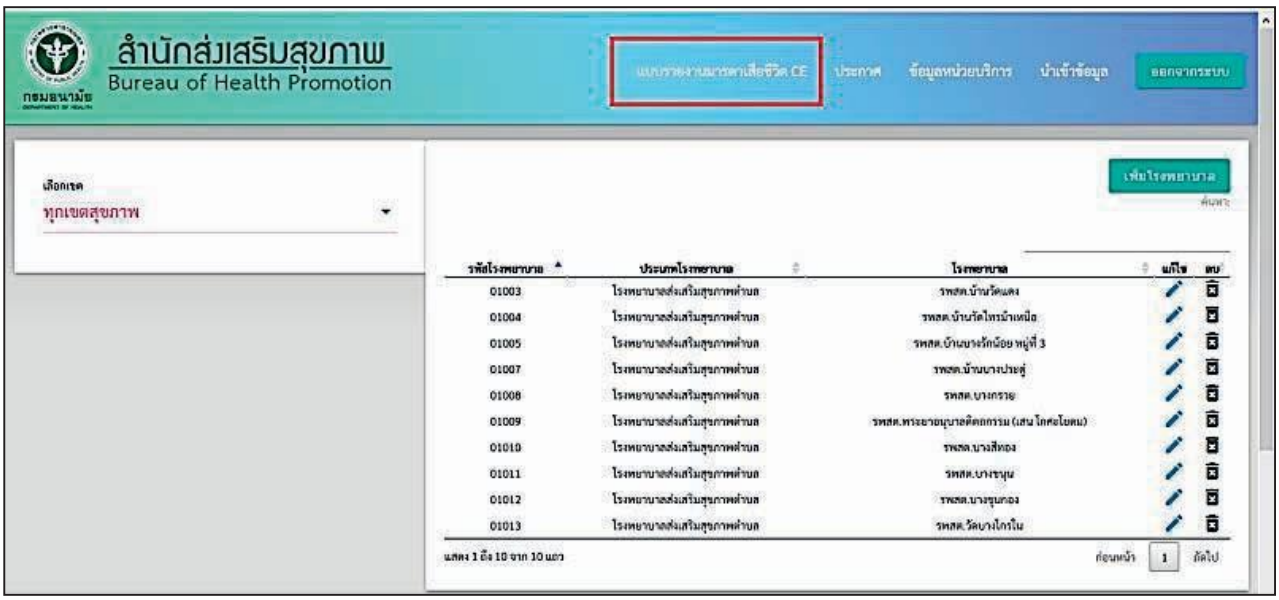


- Click “Enter to Bureau of Health Promotion System”
- Log in to system by typing Username and Password



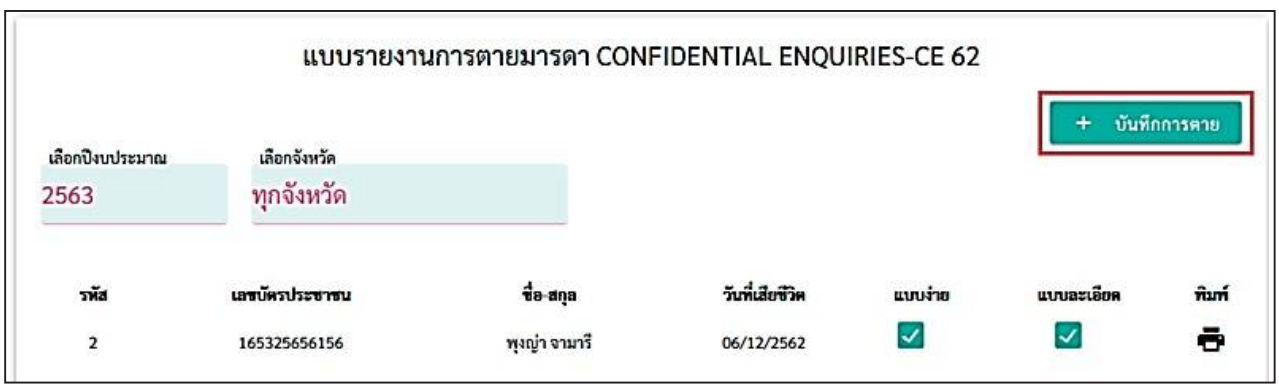
2. Enter to Confidential Enquiries Report (CE)

- Click on the button “Confidential Enquiries Report (CE)”



3. Fill in the Confidential Enquiries Form (CE-62)

- Click on the button “ + ” to access the Primary Confidential Enquiries Form

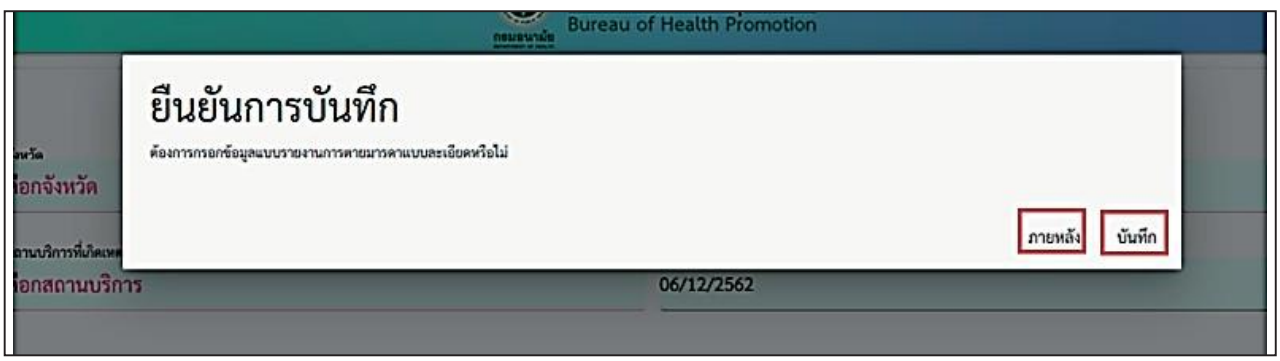


4. Fill in the Primary Confidential Enquires Form (CE-62)

- Fill the form with primary data of maternal death
- After completed the form, click on button “Record” Confirmation message will pop up

**Click on the button “Confirm” will enter to the next page, Click on the button “Later” will go back to the previous page

Record Confirmation Later Record

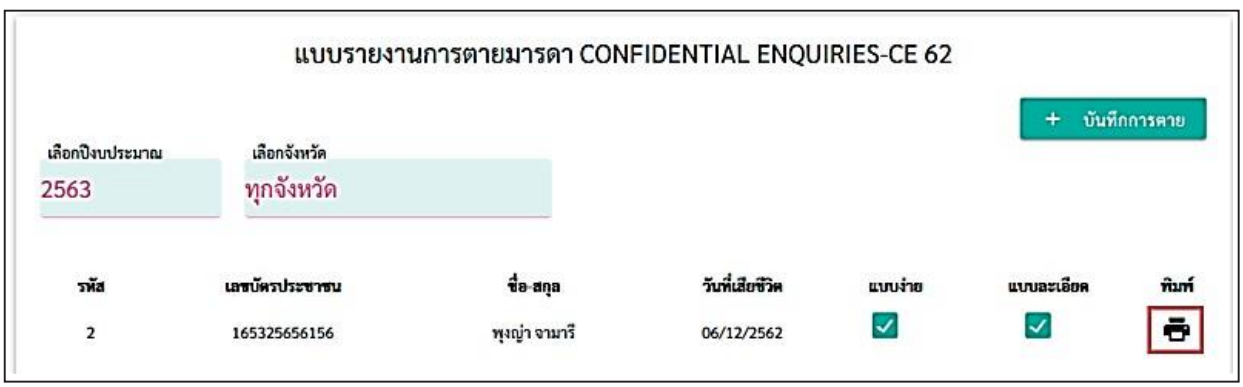


5. How to fill in the maternal death details on Confidential Enquiries Form (CE-62)

- Click on the button “Confirm” will enter to the main page of Confidential Enquiries Form
- Completed the form and then click on the button “Arrow” enter to the next page

- After completing the form, click on the button “Confirm” All data will be recorded in the system and then go back to the main page

6. How to print out the Confidential Inquiries Form (CE-62)



- Click on the button “Printer Picture” on the mother name that need to print
- The details of the report will be display as below; and then click on Ctrl + P to print it

แบบรายงานการตายมารดา CONFIDENTIAL ENQUIRIES-CE62

ชื่อสถานบริการ

ตำบล	อำเภอ	จังหวัด
วันที่รายงาน 6	เดือน ธันวาคม	พ.ศ. 2562

1. ข้อมูลทั่วไป

ชื่อ	นามสกุล	อายุ
สัญชาติ	☐ ไทย (เป็นคนไทย หรือคนที่มีเลข 13 หลัก แต่ไม่ระบุสัญชาติ) ☐ ต่างด้าว (ลาว พม่า กัมพูชา) ☐ กลุ่มชาติพันธุ์ ☐ อื่นๆ	
อาชีพ	เลขประจำตัวประชาชน	
เลขที่ผู้ป่วยนอก	เลขที่ผู้ป่วยใน	
วันที่เสียชีวิต	อายุครรภ์ขณะมารดาเสียชีวิต	

2. ข้อมูลการฝากครรภ์

ตั้งครรภ์ที่	เคยคลอด (ครั้ง)	เคยแท้ง (ครั้ง)
วันที่มาฝากครรภ์ครั้งแรก (สัปดาห์)	จำนวนครั้งของการฝากครรภ์ (ครั้ง)	
HB/HCT ครั้งที่ 1	HB/HCT ครั้งที่ 2	HB/HCT ครั้งที่ 3
ANTI HIV	VNRI	

Conclusion and Next Steps

In Thailand have been the maternal death causes analysis over the last a decade, was implemented by maternal and child health committee provincial level (MCH Board) and still maintain continuously improvement. This document was published for physicians and medical staff implementation follows this standardized guildlines to investigate the accurate maternal death causes includes collectiong and analysis process, challenging and also reporting to Management level to set up policy and planning for reduction preventable maternal mortality

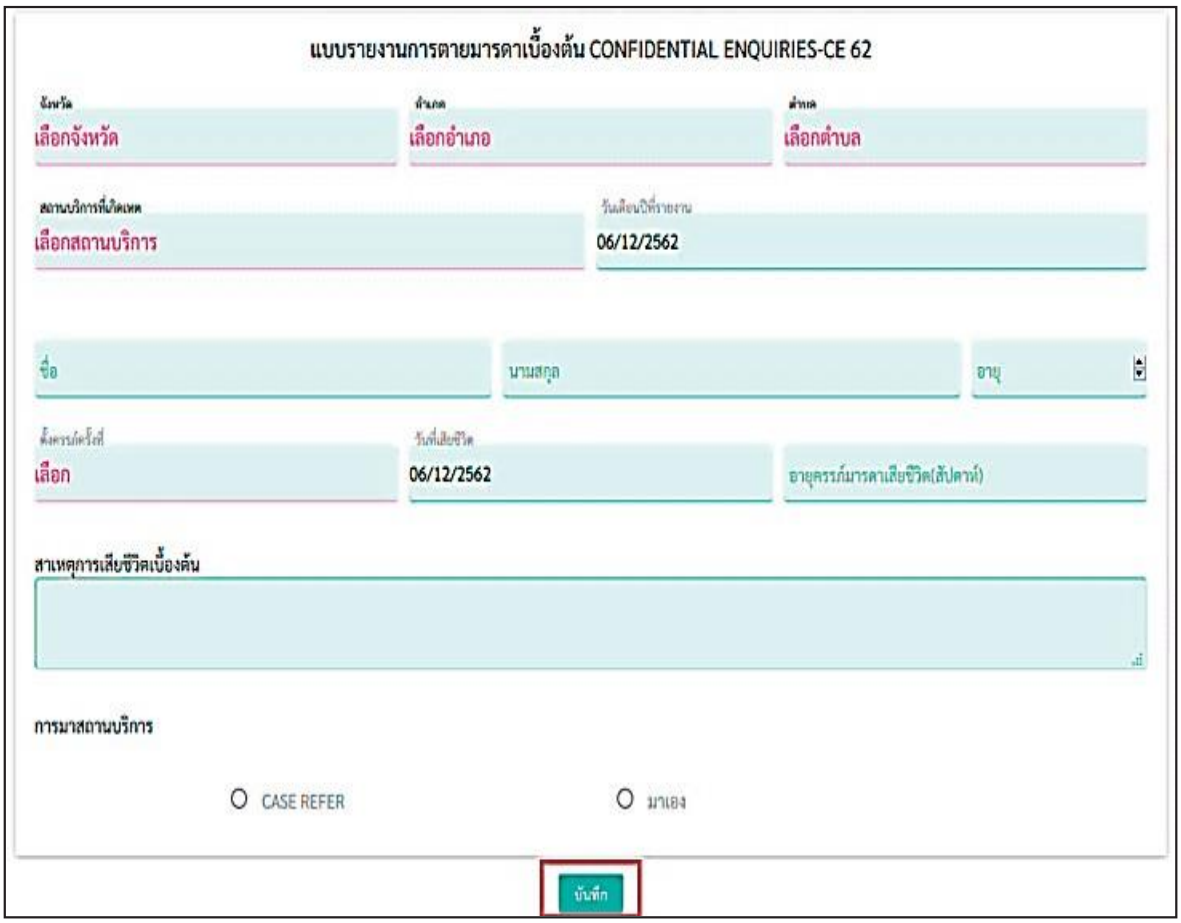
Next Steps for the maternal death surveillance and response, should be implement along with the systematic development of civil registration and vital statistics system (CRVS) defined by Ministry of Interior, aim to improve the quality of collection data covers the maternal death that occure outside the hospital including marginalized ethnic groups and migrant workers. In future, the duration of collection maternal death data will be extended to 1 year after 42 days postpartum (Late Maternal Death) due to maternal death still occure during pregnancy, delivery and puerperium. Furthermore, monitoring and evaluation of MDSR system is significant for continuous improvement and sustainable development

References

1. Dr. Kumnuan Ungchusak. Basics of Epidiology. Nonthaburi: Field Epidemiologist Association of Thailand; Y2016
2. Maternal Death Surveillance and Response (MDSR) technical guidance in Y2013
3. The WHO application of ICD-10 to deaths during pregnancy, childbirth and the puerperium: ICD-MM

Appendices

The Primary Confidential Enquiries Report CE-62



แบบ CE-62 สำนักส่งเสริมสุขภาพ กรมอนามัย 2562

The Confidential Enquiries Report CE-62

Hospital Name.....Sub-district.....District.....
Province.....Report dated.....

1. General Information

Name.....Surname .....Age.....Year
Ethnicity
- ☐ Thai (Have ID card number but not identified ethnicity)
- ☐ Migrant workers (Laos, Myanma, Cambodia)
- ☐ Marginalized group
- ☐ Other .....

Occupation.....ID card number.....
Out- Patient No.....In- Patient No.....
Date of death.....Gestation of death.....
Status of pregnancy of death.....
- ☐ Abortion
- ☐ Antepartum
- ☐ Intrapartum
- ☐ Postpartum

2. Antenatal Information ☐ Yes ☐ No

Time of pregnancy.....How many time of delivery.....How many time of Abortion.....
Gestational age.....weeks Number of antenental visit..... time
Mother weight (1st of antenatal).....kilograms Height..... centimetres
Mother weight before delivery.....kilograms
Hct .....1st time Hct .....2nd time Anti HIV.....
Prescribe birth .....

3. Antenatal Risk

- Complication history.....
- Antenatal Risk Factors
  - ☐ Yes ☐ No
    - ○ Hypertension ○ Proteinurla
    - ○ Glycosuria ○ Cysts
    - ○ Complication ○ Previous C/S
    - ○ Other (Pls identify).....
- Medical treatment history.....

4. Hosptal Admission Information

- Date of admission Date.....Month.....Year.....Time.....
- Reason of admission
  - ☐ Abortion ☐ Ectopic Preganancy ☐ Antenatal care
  - ☐ Labour pain ☐ After deliver ☐ Hemorrhage before deliver

- Status of mother when admission
  - □ Stable □ Severe
  - □ Die before arrived hospital □ Other (pls. identify.....)
- How to reach hospital Case Refer □ Direct

5. Labour Information

A. Labour management

- Use Partograph? □ Yes □ No
  - Phase 1..... hour.... minute
  - Phase 2..... hour.... minute
  - Phase 3..... hour.... minute

B. Labour details

- Date of labour/ Abortion .....Tim.....
- Abortion □ Spontaneous □ Indued by
  □ Physician
  □ Not Physician
- Labour
  Method □ Normal □ C/S □ F/E □ V/E □ BBA
  □ Bleech Birth □ other.....
- Assistant by □ Obstetrician □ Nurse
  □ Midwife □ Traditional Midwife
  □ Physician □ Trining staff
  □ Other.....
- Birth weight ..... gram

C. Neonatal status .....

- Apgar score (1 min) = ... Apgar score (5 min) = ...
- Placenta status and weight.....
- Mother Symptom after delivery.....

6. Maternal death cause identification

Group name	Potential causes of death
1. Pregnancies with abortive outcome	Ectopic pregnancy Hydatidiform mole Failed attempted abortion Complication of abortion (Genital tract and pelvic infection, Excessive hemorrhage, Embolism,Renal failure, metabolic disorders, damage to pelvic organs)
2. Hypertensive disorders in pregnancy, childbirth, and the puerperium	Pregnancy induced hypertension Eclampsia Gestational hypertension

Group name	Potential causes of death
3. Obstetric haemorrhage	Placenta adherens Placenta previa Abruptio placentae Antepartum hemorrhage Intrapartum hemorrhage Postpartum hemorrhage (Retained placenta, Uterine atony, Perineal laceration) Obstetric trauma (Rupture of uterus, Laceration of cervix, High vaginal laceration)
4. Pregnancy-related infection	Chorioamnionitis Puerperal infection Infections of genitourinary tract
5. Other obstetric complications	Venous complications : DVT Liver disorders : Acute fatty liver Postpartum cardiomyopathy Intentional self - harm Obstetric embolism (Amniotic fluid embolism, Pulmonary embolism)
6. Unanticipated complications of management	Complications of anesthesia (Aspiration pneumonitis, Brain anoxia, High spinal block, Failed or difficult intubation) Complications of surgery (Unintentional cut, Puncture, Perforation, Foreign body accidentally left) Complications of medical care(Mismatched blood used in transfusion, Excessive amount of fluid transfusion, Failure in dosage, Anaphylaxis due to drug, Non - administration of necessary drug, substance)
7. Non-obstetric complications	Heart vascular diseases Cerebral hemorrhage Pneumonia Neoplasm AIDS Autoimmune diseases Malignancy Endocrine diseases Infections that are not a direct result of pregnancy
8. Unknown/undetermined	The underlying cause is unknown or was not determined
9. Coincidental causes	External causes except intentional self-harm (Accidental, Assault) Diseases not aggravated by the pregnancy

7. Maternal death causes analysis follow 3 Delays (can choose more than one factor)

Delays	Topic	Yes	No	Reason
1. Maternal and family decision	Delay decision to seek care			
	Deny to seek health care			
2. Communication access	Transportation not available			

Delays	Topic	Yes	No	Reason
3. Medical Staff and medical health care (Quality of medical services)	• Lack of transportation			
	• Communication system between medical health care failed			
	• Lack of medical equipment, medicine and blood bank			
	• Lack of medical staff			
	• Lack of skill and experience			
	• Delay decision to seek care			

8. The Autopsy □ No
□ Yes Autopsy result.....

.....

9. Maternal Death Summary

.....

.....

.....

10. Is is the preventable death?

□ Yes □ No

11. Recommendation from Maternal Deat Review (Should set up follow "SMART" technique)

Specific	Well defined, clear
Measurable	Can verify and evaluate
Action-oriented	Clearly step of implementation
Realistic	Possible to achieve the goal
Time-Bound	Clearly defined tmeline

.....

.....

.....

Reported by: Name- Surname.....

Position.....

Submitted by: Name- Surname.....

Position.....

Example of Death Certification (ทร. 4/1)

FM-MRS-010-00

ทร. 4/1 ตอนที่ 1

หนังสือรับรองการตาย

รหัสสถานพยาบาล.....

สถานที่ออกหนังสือรับรอง ชื่อสถานพยาบาล.....

อำเภอ.....จังหวัด.....

ที่...../..... วันที่.....เดือน.....พ.ศ.....

1. ผู้ตาย	1.1 ชื่อตัว ชื่อสกุล	1.2 เลขประจำตัวประชาชน ☐ ☐☐☐☐ ☐☐☐☐☐ ☐☐ ☐	1.3 เพศ ☐ ชาย ☐ หญิง	1.4 อายุ ปี
	1.5 สัญชาติ ☐ ไทย ☐ อื่นๆ (ระบุ).....	1.6 อาชีพ		
	1.7 สถานภาพการสมรส ☐ โสด ☐ สมรส ☐ หย่า ☐ แยก ☐ หม้าย	1.8 ตายเมื่อ วันที่ เดือน พ.ศ		
2. สถานที่ที่ตาย	2.1 ☐ ในสถานพยาบาล ☐ นอกสถานพยาบาล			
3. บิดา มารดา ของ ผู้ตาย	3.1 บิดาชื่อ ชื่อสกุล	3.2 สัญชาติ ☐ ไทย ☐ อื่นๆ (ระบุ).....		
	3.3 มารดาชื่อ ชื่อสกุล	3.4 สัญชาติ ☐ ไทย ☐ อื่นๆ (ระบุ).....		
4.สาเหตุการตาย	4.1 โรคที่เป็นสาเหตุการตาย (เขียนเป็นภาษาอังกฤษตัวพิมพ์ใหญ่ (CAPITAL LETTER) ห้ามใช้คำย่อ) a)..... (due to) b)..... (due to) c)..... (due to) d)..... 4.2 โรคหรือภาวะอื่นที่เป็นเหตุหนุน.....	ระยะเวลาตั้งแต่เริ่มเป็นโรคจะกระทั่งเสียชีวิต		
	4.3 โรคหรือภาวะที่ให้เจ้าหน้าที่ทะเบียนราษฎรคัดลอกลงในช่อง “สาเหตุการตาย” ในมรณบัตร (ให้เขียนเพียงโรคหรือภาวะเดียวกันเท่านั้นโดยเขียนเป็นภาษาไทย) 4.4 หากผู้เสียชีวิตเป็นสตรี ☐ ไม่ตั้งครรภ์ ☐ กำลังตั้งครรภ์.....สัปดาห์ ☐ ขณะเสียชีวิต เพิ่งสิ้นสุดการตั้งครรภ์ไม่เกิน 6 สัปดาห์ ☐ ไม่ทราบ			
5. ผู้รับรองการตาย	5.1 ชื่อตัว ชื่อสกุล เลขประจำตัวประชาชน ☐ ☐☐☐☐ ☐☐☐☐☐ ☐☐ ☐			
	5.2 อยู่บ้านเลขที่ หมู่ที่ ซอย ถนน ตำบล/แขวง อำเภอ/เขต จังหวัด ประเทศ			
	5.3 เป็น ☐ แพทย์แผนปัจจุบัน ☐ พยาบาล ☐ เจ้าหน้าที่สาธารณสุข ระบุ.....			
	ขอรับรองว่ารายงานข้างต้นถูกต้อง ลงชื่อ.....ผู้รับรองการตาย (.....) **หมายเหตุ** : สาเหตุการตายที่ระบุในหนังสือรับรองการตายฉบับนี้ ระบุไว้ตามกฎเกณฑ์บัญชีจำแนกโรคระหว่างประเทศ (ICD-10) เพื่อรวบรวมข้อมูลทะเบียนราษฎร , ทำสถิติการตายของประเทศ และใช้ในด้านการวางแผนป้องกันและแก้ปัญหาสาธารณสุขเท่านั้น จึงอาจแตกต่างจากใบรับรองทางกฎหมายชนิดอื่น (เช่น ใบชันสูตรพลิกศพ) ได้			

Example of Death Cause Identification (ทร.4/1)

Example 1

สาเหตุการตาย	1. โรคที่เป็นสาเหตุการตาย (เขียนเป็นภาษาอังกฤษตัวพิมพ์ใหญ่ (CAPITAL LETTER) ห้ามใช้คำย่อ) a) *ACUTE RENAL FAILURE* b) *SEPTIC SHOCK* c) *SEPTIC INCOMPLETE ABORTION* *(กรณีการตายผิดธรรมชาติ โปรดระบุว่าเป็น SUICIDE, HOMICIDE, หรือ ACCIDENT ประเภทใด)*	ระยะเวลาตั้งแต่เริ่มเป็นโรคจนกระทั่งเสียชีวิต *2 ชั่วโมง* *24 ชั่วโมง* *36 ชั่วโมง*
	2. โรคหรือภาวะอื่นที่เป็นต้นเหตุหนุน.....	
	3. โรคหรือภาวะที่ให้เจ้าหน้าที่ทะเบียนราษฎรคัดลอกลงในช่อง "สาเหตุการตาย" ในมรณบัตร *(ให้เติมเพียงโรคหรือภาวะเดียวเท่านั้นโดยเขียนเป็นภาษาไทย)* ***แท้งติดเชื้อ***	
	4. หากผู้เสียชีวิตเป็นสตรี ☐ ไม่ตั้งครรภ์ ☑ กำลังตั้งครรภ์ *10* สัปดาห์ ☐ ขณะตั้งครรภ์ ☐ เพิ่งสิ้นสุดการตั้งครรภ์ไม่เกิน 6 สัปดาห์ ☐ ไม่ทราบ	

Explanation: This case was classified in group 1 Pregnancy with abortive outcome in maternal death report (CE-62)

Example 2

สาเหตุการตาย	1. โรคที่เป็นสาเหตุการตาย (เขียนเป็นภาษาอังกฤษตัวพิมพ์ใหญ่ (CAPITAL LETTER) ห้ามใช้คำย่อ) a) *HYPOVOLEMIC SHOCK* b) *POSTPARTUM HEMORRHAGE* c) *UTERINE ATONY* *(กรณีการตายผิดธรรมชาติ โปรดระบุว่าเป็น SUICIDE, HOMICIDE, หรือ ACCIDENT ประเภทใด)*	ระยะเวลาตั้งแต่เริ่มเป็นโรคจนกระทั่งเสียชีวิต *10 นาที* *30 นาที* *45 นาที*
	2. โรคหรือภาวะอื่นที่เป็นต้นเหตุหนุน *ANEMIA*	
	3. โรคหรือภาวะที่ให้เจ้าหน้าที่ทะเบียนราษฎรคัดลอกลงในช่อง "สาเหตุการตาย" ในมรณบัตร *(ให้เติมเพียงโรคหรือภาวะเดียวเท่านั้นโดยเขียนเป็นภาษาไทย)* ***ตกเลือดหลังคลอด***	
	4. หากผู้เสียชีวิตเป็นสตรี ☐ ไม่ตั้งครรภ์ ☑ กำลังตั้งครรภ์ *40* สัปดาห์ ☐ ขณะตั้งครรภ์ ☐ เพิ่งสิ้นสุดการตั้งครรภ์ไม่เกิน 6 สัปดาห์ ☐ ไม่ทราบ	

Explanation: This case was classified in group 3 Obstetric hemorrhage in maternal death report (CE-62)