Pre-Eclampsia/ Eclampsia: Prevention, Detection and Management Toolkit

As maternal mortality ratios have declined globally, there have been accompanying shifts in the leading causes of maternal deaths, resulting in a higher proportion of maternal mortality due to eclampsia. Pre-eclampsia and eclampsia (PE/E) are now receiving focused attention from donors, governments and providers to further reduce maternal and newborn mortality.

If countries are to achieve the Millennium Development Goal (MDG) 4 (reducing maternal mortality) and MDG5 (reducing child mortality), donors and governments must develop comprehensive and innovative programs to address PE/E as public health priorities. This program guidance document outlines key steps, identifies available resources, and highlights lessons learned to date in the development and implementation of PE/E programs. In the coming years, a broader set of evidence and programmatic guidance will be created as global experience grows in preventing, detecting and managing PE/E.

This Pre-Eclampsia/Eclampsia: Prevention, Detection and Management toolkit was developed by the USAID-funded Maternal and Child Health Integrated Program (MCHIP) as a resource of current evidence, materials and experiences from around the world. It reflects contributions from many donors, agencies, associations, academic institutions and organizations which have identified eclampsia as a priority and contribute in different ways to addressing it. The purpose of this and other MCHIP toolkits is to collect and package resources that are useful to country programs for developing, implementing, monitoring and scaling up maternal health-related interventions at various levels.
This toolkit contains a number of resources developed especially for the toolkit to help guide the user to key evidence. Unique to MCHIP-developed toolkits, a program implementation guide was developed and provides the overall framework to the toolkit tabs/sections. Technical evidence was compiled in an annotated bibliography from an extensive literature review and vetted by a small technical working group; a comprehensive PE/E technical brief and PE/E technical presentation are also available. This toolkit also contains a succinct 2-page advocacy brief and advocacy presentation to raise awareness around PE/E as a public health issue and the proven interventions available to address it.

This toolkit was launched in 2011. Because of a broadening interest in reducing eclampsia-related mortality and morbidity, it is expected that this toolkit will grow significantly in the coming years as country-level programs design, implement and evaluate PE/E-related interventions.

As new information becomes available and experience implementing PE/E programs grows, the toolkit will be updated. Please contribute your materials to the website so others can benefit from tools, research and lessons learned.

Useful Websites, Online Courses and Resources

The Maternal and Child Health Integrated Program (MCHIP) is the USAID Bureau for Global Health’s flagship maternal, neonatal and child health (MNCH) program. MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria and HIV/AIDS, and strongly encourages opportunities for integration. Cross-cutting technical areas include water, sanitation, hygiene, urban health and health systems strengthening. Visit www.mchip.net for more information.

What is the purpose of this toolkit?

The purpose of this and other MCHIP toolkits is to collect and package resources that are useful to country programs for developing, implementing, monitoring and scaling up maternal health related interventions at various levels.

Who developed this toolkit?
This toolkit was developed by the USAID-funded Maternal and Child Health Integrated Program (MCHIP). MCHIP supports programming in maternal, newborn and child health, immunization, family planning, malaria and HIV/AIDS, and strongly encourages opportunities for integration.

**What types of resources are included?**

This toolkit contains current evidence, materials and experiences from around the world. It reflects contributions from many donors, agencies, associations, academic institutions and organizations which have identified eclampsia as a priority and contribute in different ways to addressing it.

**Who are the intended audiences?**

This toolkit is intended for country programs to develop, implement, monitor and scale up maternal health related interventions at various levels.

![Image of a medical examination]

**1. Advocate with Evidence**

Improving outcomes for women and their newborns with PE/E begins with gaining stakeholders’ buy-in. It is often necessary to advocate for these lifesaving interventions to be introduced into the national public health system.

**Demonstrate that PE/E is a public health priority:**

- PE/E are major causes of maternal and perinatal morbidity and mortality.¹

- PE/E complicate 2-8% of pregnancies.² Among pregnant women, 7-15% will develop PE and 1-3% will progress to develop eclampsia.³
PE/E disproportionately affect developing countries: a woman in a developing country is seven times more likely to develop PE, three times more likely for it to progress to eclampsia, and 14 times more likely to die of eclampsia.\textsuperscript{4}

PE is a progressive condition that can lead to stroke, kidney or liver damage, blood-clotting problems, and pulmonary edema.

When PE is left untreated, it can progress to the more serious and life-threatening condition of eclampsia, which causes seizures, coma and even death of the mother and baby.

Eclampsia may occur in women previously undiagnosed with hypertension or proteinuria.

About 80% of eclamptic seizures occur intrapartum or within the first 48 hours following delivery.

**Conduct a series of technical updates and develop national PE/E champions.** Providing technical updates to key stakeholders on global evidence from PE/E interventions and results from PE/E prevention, detection and management research and projects will provide stakeholders with the knowledge base to make informed decisions. Key stakeholders who can be powerful champions to support implementation of globally recognized best practices include members of professional associations, pre-service and in-service education personnel, and influential clinicians.

**Promote evidence-based interventions for PE/E prevention, detection and management:**

**Prevention** can reduce severe PE/E-related deaths. Preventive interventions include:

1. *Calcium supplementation during pregnancy*?reducing the incidence of PE by as much as 64% among population with low dietary calcium intake\textsuperscript{5}
2. *Low-dose aspirin supplementation during pregnancy*?associated with a 17% reduction in PE\textsuperscript{6}
3. *Family planning*?delaying pregnancies in teenaged and morbidly obese women, and preventing pregnancy in women who are older than 35 years

**Screening and early detection** can improve prognosis by increasing opportunities for interventions to prevent the progression of PE. Screening during every antenatal care (ANC) visit should include:

1. Blood pressure measurement and the detection of hypertension (diastolic blood pressure over 90 mmHg after 20 weeks gestation indicates gestational hypertension)
2. Simple urine testing for detection of protein in urine (protein levels 2+ and higher associated with diastolic blood pressure more than 90 mmHg after 20 weeks gestation indicates PE)

**Timely management at the appropriate level of care** can prevent mortality associated with severe PE/E. Treatment combines anti-convulsant therapy, anti-hypertensive treatment, timed delivery and careful monitoring of the mother and fetus. The anti-convulsant magnesium sulfate is inexpensive, very effective, and is the drug of choice for seizure prophylaxis in women with severe PE. The woman?s prognosis can be greatly improved if magnesium sulfate is given before referral to a basic or comprehensive emergency obstetric and newborn care facility.
Discuss with government counterparts, global agencies, donors, educational institutions, professional associations, local NGOs and maternal health stakeholders to generate support. Building commitment among technical leaders at the national level before beginning programming improves sustainability and increases the chances for scale-up of interventions. A national PE/E Technical Advisory Group (TAG) led by the Ministry of Health (MOH) can be effective in mobilizing stakeholders, identifying challenges and developing strategies.

Resources:

- **Program Brief: PE/E Prevention, Detection and Management**

  The short program brief summarizes the key information to help advocate for comprehensive programming to reduce PE/E related deaths and improve care. Interventions include: a) Create awareness and generate commitment to address it b) Develop PE/E-focused strategic approaches to identify appropriate prevention, detection and treatment interventions, and integrate appropriate PE/E-related activities, messages and services from community to facility level c) Strengthen ANC services, SBA care and CEmONC services d) Work with communities e) Pilot innovative approaches/technologies and f) Ensure existing M&E system collect data at the community and facility level.

- **PE/E Technical Brief: PE/E Prevention, Detection and Management**

  This technical brief details the evidence and strategic approaches to PE/E prevention, detection and management. PE/E programming can focus on three strategic approaches to prevention of morbidity and mortality: a) Primary prevention?Avoiding the development of the disease; avoiding pregnancy and conditions favorable to PE development b) Secondary prevention?Detecting the disease early, before clinical symptoms appear and c) Tertiary prevention?Treating the disease early in order to prevent progression and complications. These three approaches to prevention can also be thought of as preventing, detecting and managing PE/E. SBAs have a critical role to play in these efforts. This technical brief focuses on care that can be delivered by SBAs at home or in a peripheral outpost or referral facility.
Program Implementation Guidance: Pre-Eclampsia/Eclampsia: Prevention, Detection and Management

This program guidance document outlines key steps, identifies available resources, and highlights lessons learned to date in the development and implementation of PE/E programs. As maternal mortality ratios have declined globally, pre-eclampsia and eclampsia (PE/E) are now receiving focused attention from donors, governments and providers to further reduce maternal and newborn mortality. Serving as the framework for this toolkit, this document provides step-wise guidance and identified available resources on advocacy, policy/planning, training health providers, quality of care, BCC, monitoring & evaluation and planning for scale-up. If countries are to achieve the Millennium Development Goal (MDG) 4 (reducing maternal mortality) and MDG5 (reducing child mortality), donors and governments must develop comprehensive and innovative programs to address PE/E as public health priorities. This document was updated December 2011.

Reviews of clinical evidence

Resources:

- WHO Recommendations for Prevention and Treatment of Pre-Eclampsia and Eclampsia: Implications and Actions

  This brief summarizes the latest evidence from the WHO PE/E Guidelines with clinical practice recommendations and proposed program actions. Available in 4 languages

- WHO Recommendations for Prevention and Treatment of Pre-eclampsia and Eclampsia: Evidence Base

  This document reviews the current evidence and summarizes by key intervention in 53 tables. It is the foundation for "WHO Recommendations for Prevention and Treatment of Pre-eclampsia and Eclampsia" (see Section 2 of the PE/E toolkit)
Annotated Bibliography: PE/E Prevention, Detection and Management

The annotated bibliography is the result of an evidence review of nearly 200 articles on preeclampsia/eclampsia (PE/E) prevention, detection and management related topics. After an extensive technical review by members of the PE/E Task Force, the 20 most important articles are abstracted in Section 1 to highlight the key findings and implications for public health programming. These are: a) General information about PE/E?statistics, guidelines, risks and strategies b) PE/E prevention?calcium, aspirin, vitamin D and antioxidants c) Detection, screening and prediction of PE/E d) Treatment?magnesium sulfate including doses/regimens and barriers to scale-up e) Expectant/conservative management of severe PE f) Cardiovascular disease and body mass index.

The bibliography was updated November 2011 and now contains 21 articles.

• **Calcium and Prevention of Pre-eclampsia?Summary of Current Evidence**

This brief reviews the evidence for calcium supplementation during pregnancy for PE/E prevention. It conlcudes that although its effect is only moderate compared to other interventions (including magnesium sulphate and access to EmOC), it is an evidence based, potentially cost-effective intervention with large scale public health implications. This brief was first drafted by Martha C. Carlough, MD, MPH, UNC/CH and IntraHealth International, Inc, and later revised by Fernando Althabe, Jose Belizan, and Gabriela Cormick.

Presentations

Resources:

• **Technical presentation: Understanding the Evidence: Preventing, Detecting & Managing Pre-Eclampsia & Eclampsia**

This technical presentation was developed to assist in presenting the clinical evidence and
strategic approaches to PE/E prevention, detection and management. It accompanies the MCHIP PE/E technical brief and covers in detail the evidence for various interventions as well as some emerging innovations.

• **PE/E Advocacy Presentation: Preventing Maternal Deaths due to Pre-Eclampsia/Eclampsia (PE/E)**

This presentation covers the evidence to help advocate for addressing PE/E prevention, detection and management, as well as the impact of PE/E on maternal and perinatal health. Key issues covered include: 1) Nutritional supplements 2) Antiplatelets 3) Methods for early detection 4) Scaling up use of MgSO4.

• **Presentation: We can Prevent Mortality and Morbidity from PE/E**

This presentation addresses how to achieve maximum impact of reducing mortality from pre-eclampsia/eclampsia from household to hospital. It covers prevention, detection and treatment strategies.

**Other resources**

**Resources:**

• **Interventions for Impact in Essential Obstetric and Newborn Care: Meeting Report, Asia Region, May 2012**

This report summarizes proceedings from the 2012 Asia Regional Meeting on *Interventions for Impact in Essential Obstetric and Newborn Care* held in Dhaka, Bangladesh in May 2012. The meeting was designed to assist country programs, donors, and governments in developing and implementing comprehensive and innovative programs to address public health priorities in maternal and newborn health. This report reviews the remarkable progress being made in Asia region toward achieving the Millennium Development Goal 5 target of reducing maternal deaths by 75% from 1990 to 2015 and refocuses efforts to sustain improvements achieved thus far.
Generic Terms of Reference: Technical Advisory Group (TAG) for Reducing PE/E

This document can be used as a template to develop a national-level technical advisory group on reducing pre-eclampsia/eclampsia. This document is the terms of reference (TOR) for the eclampsia TAG which provides guidance on: 1) Preventing PE/E in Pregnant Women (Primary Prevention); 2) Early Detection of PE/E (Secondary Prevention); 3) Managing and Treating PE/E (Tertiary Prevention).

- **Africa Regional Meeting Report: Interventions for Impact in Essential Obstetric and Newborn Care, 21-25 February 2011**

  This meeting report covers the content, discussions and recommendations from the regional meeting held in Addis Adaba in February 2011. The report includes: 1) interventions for impact in obstetric health; and 2) helping babies breathe (HBB) regional training of trainers (TOT) for Africa.

- **Prevention and Management of Postpartum Hemorrhage and Pre-Eclampsia/Eclampsia: Status Report on National Programs in Selected USAID Program-Supported Countries**

  A country-level landscape analysis was conducted from January to March 2011 in 31 countries across Africa, Asia and Latin America, including 23 MCHIP priority countries facing the highest disease burden. The purpose of this analysis was to document progress in national scale-up of PPH- and PE/E-reduction programs in all MCHIP and MCHIP-affiliated programs around the world. It is anticipated that the questionnaire used in this analysis will be repeated on a semi-annual to annual basis in an effort to maintain current information.

- **Respectful Maternity Care: The universal rights of childbearing women**
The White Ribbon Alliance for Safe Motherhood addresses disrespect and abuse during maternity care with advocacy documents and a charter for maternal human rights.

2. Create Enabling Policy Environment

To close the gaps in care for women with PE/E, an adequate enabling environment, including resources and policies, must be established.

**Conduct a situational analysis on PE/E prevention, detection and management.** A situational analysis reviews current data, policies and practices related to PE/E services and will provide the MOH and the PE/E TAG with an understanding of challenges and gaps in provision of these services. This analysis will inform development of national plans to address PE/E Learning from the postpartum hemorrhage prevention experience, focused national surveys can serve both as a powerful advocacy tool and as a tool for identifying gaps in policy, practice, logistics, and monitoring/evaluation.

**Develop a PE/E Plan of Action within national maternal and newborn health strategies.** A focused plan can help strengthen PE/E-relevant interventions and ensure integration into existing maternal and newborn health strategies. The Plan of Action must address any gaps identified in policy, pre- and in-service education programs, logistics (supplies, drugs and equipment), and monitoring and evaluation systems. Where possible, services for women and newborns should be integrated. Strategies should be comprehensive and address prevention, detection and management in a holistic way through the continuum of care from community up to the CEmONC level.

**Test innovations and approaches.** In situations where the MOH does not have enough country-specific information on emerging technologies, interventions or approaches—such as calcium supplementation, initiating community-based treatment before referral, or distributing pre-packaged eclampsia kits—they can decide to test or pilot them before making policy changes or creating strategies for scale-up. Based on the national situation and local epidemiology, governments will make decisions about the type of approach to promote at each point of care (from the home to tertiary care facilities. For example: 1) In areas where women infrequently attend ANC, or ANC clinics are not able to routinely offer PE/E screening, the MOH can test if mobilizing CHWs to offer community-based screening along with counseling on the importance of ANC visits and giving birth with a skilled birth attendant (SBA) increases the number of women properly screened for PE/E during pregnancy and the postpartum period; 2) In areas where CEmONC services are not easily accessible, the MOH can test the feasibility, safety and efficacy of introducing community-based treatment for severe PE/E before referral; or 3) In areas where coverage of and compliance with iron supplementation during pregnancy is low, the MOH can test the feasibility of integrating calcium and iron distribution.

**Create policies that ensure maximum access to PE/E services.** National policies that clearly define what PE/E-related care can be provided by each type of provider at all levels of the
continuum of care should increase access to care. The situational analysis will provide the background for development of a national policy on PE/E-related care. For example, if the situational analysis shows that a large percentage of women do not reach the CEmONC level before their initial convulsion, the MOH can advance policies that promote the administration of a first intramuscular (IM) dose of magnesium sulfate and the first stat dose of an anti-hypertensive medication in peripheral settings prior to transfer, thereby increasing the likelihood of the woman’s survival. Where necessary, policies that promote task-shifting of certain interventions will also increase access to PE care.

**Update clinical care guidelines to ensure promotion of evidence-based, state-of-the art care.**

- Prevention, counseling and screening during ANC services
- First-line anti-convulsive and anti-hypertensive medications for treatment
- Management of mild and severe PE/E, including: timing and use of anti-convulsant and anti-hypertensive medications; frequency and point of care for monitoring the woman and fetus; protocols for induction of labor; and indications for caesarean delivery
- Management strategies at varied levels of the health system

**Address logistics needs for drugs, supplies, instruments and equipment.** If updated policies and clinical guidelines are to result in high-quality services, health care providers must have the essential drugs, supplies and equipment. Comprehensive PE/E programs need to ensure that all needed drugs are on the national List of Essential Medicines (possibly including calcium tablets, magnesium sulfate, calcium carbonate, anti-hypertensives and others). At the policy and planning level, the national logistics management information systems (LMIS) need to project, procure, distribute and track sufficient quantities of these drugs throughout appropriate channels and to all levels of the health care system. Providers need to have sufficient quantities of magnesium sulfate, other medications and supplies for PE/E prevention, screening and treatment. Often magnesium sulfate is available in sufficient amounts for the loading dose but not to complete full maintenance. In addition to medicines, proteinuria tests and functional, well-maintained blood pressure cuffs/machines must be available at all sites where ANC is provided. Social marketing schemes for some supplements and medicines that are not easily available should be considered.

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**Resources:**

- **WHO Recommendations for Prevention and Treatment of Pre-eclampsia and Eclampsia**
The WHO Technical Consultation made a total of 23 recommendations. For each recommendation, the quality of the supporting evidence was graded as very low, low, moderate or high. Experts then marked the recommendations as either weak or strong following the GRADE methodology. For additional details on the recommendation, the reader is referred to the remarks in the full version of the guidelines. The 23 recommendations are presented below in two sets: interventions that are recommended and interventions that are not recommended.

•  **Balancing the Scales: Expanding Treatment for Pregnant Women with Life-threatening Hypertensive Conditions in Developing Countries**

Global public health experts identified the primary barriers to expanding access to magnesium sulfate as treatment for PE/E in developing countries, including: lack of national priority and guidelines; lack of education and training; and lack of supply shortage. Based on these conclusions, EngenderHealth and the University of Oxford have developed a "Call to Action" that calls on policy makers and ministers of health to make pre-eclampsia and eclampsia a higher priority and to set national guidelines for treatment and care, based on WHO guidelines. It also urges decision makers and international and national health organizations and agencies to help make magnesium sulfate more available and affordable, in part by empowering local clinicians with education and training.

•  **Magnesium Sulfate**

The Caucus on New and Underused Reproductive Health Technologies is a community of practice established under the auspices of the Reproductive Health Supplies Coalition, for which PATH serves as Secretariat. Caucus members developed this series of peer-reviewed briefs on underused reproductive health technologies. This brief details efficacy, safety, benefits, current program use, manufacturers, and public sector price agreements for magnesium sulfate.

•  **Ensuring Access to PE/E Primary, Secondary and Tertiary Prevention Interventions**

This document is based on the POPPHI planning tool on AMTSL to guide countries to study the potential PE/E interventions (Primary, Secondary and Tertiary) and then decide on which interventions to adopt. It covers the following critical elements must be in place to ensure
access to the interventions: Policy; Provider: Logistics (drugs and supplies); and Monitoring and Evaluation.

- **PE/E Situation in Nepal and the Need for Protein Test in Urine during Pregnancy**

Because PE/E is the second leading direct cause of maternal mortality (21%) at the community level in Nepal after PPH, this situational analysis was conducted to better understand how PE/E is detected within the health system and current barriers to women accessing PE/E screening. Screening of pre-eclampsia is a component of the antenatal care in all national standards and guidelines in Nepal, yet urine testing is not usually a component of ANC at all levels. The training, supervision, monitoring, evaluation, supplies and recording related to urine testing for protein is weak.

- **Magnesium Sulphate Administration for the Prevention and Treatment of Eclampsia**

This 2-page brief describes spring-driven devices that can aid the administration of magnesium sulphate for the prevention and treatment of eclampsia.

- **Prevention and Treatment of Eclampsia: The Role of Magnesium Sulfate**

This 2-page brief from WHO describes the strong evidence from systematic reviews of randomized trials to support the use of magnesium sulfate for the prevention and treatment of eclampsia. Based on the evidence, WHO recommends magnesium sulfate as the drug of choice for treating pre-eclampsia and eclampsia. Magnesium sulfate is a low-cost medication that can be administered as intramuscular and intravenous injections. The recommended dosage schedule for magnesium sulfate for prevention and treatment of eclampsia is provided in WHO’s Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines.

3. Train Providers
Ensuring a steady supply of health care providers with updated knowledge improves the quality of the entire health care system.

**Develop clinical champions and model service delivery sites for PE/E interventions.** To change clinical practices and attitudes, it is helpful to have clinical leaders at both the national and facility levels who are convinced of the evidence and can persuasively convince their peers during the implementation process. Physicians in particular can influence and empower other health care providers to improve care and make timely decisions. For example, in Nepal, the National Society of Obstetricians and Gynecologists implemented a project in 2009 at 22 facilities to improve diagnosis and treatment of severe PE/E. Through job aids, technical updates and on-site performance improvement coaching, quality of PE/E management was improved.

**Conduct a training needs assessment.** A training needs assessment focused on PE/E can help identify gaps and inform the development of a training strategy.

**Strengthen in-service training and pre-service education systems to teach evidence-based practices for PE/E care.** If updated policies and clinical guidelines are to result in high-quality services, pre- and in-service training materials and methodologies for all cadres need to be reviewed and updated. Courses and curricula may need to be updated to ensure all aspects of PE/E are addressed.

**Develop a training strategy and strengthen training sites.** Based on the training needs assessment findings, any existing pre-service and/or in-service training strategy for birth attendants, BEmONC and CEmONC should be updated.

Training sites may need to be assessed and strengthened to ensure classroom teaching and clinical practices appropriately teach PE/E prevention and management.

Where appropriate and possible, develop alternate training approaches, such as on-site coaching and blended learning approaches, to reduce cost, increase effectiveness, increase access to training activities, and reinforce quality of care initiatives at facilities.

**Link managers, pharmacists and clinicians to ensure that supplies, drugs, instruments and equipment are available to provide PE/E-related care** to increase the likelihood that training is transferred to the work site.

**Develop innovative approaches to help providers maintain PE/E management skills.** Management of severe PE or eclampsia can be rare. Supervision systems should be strengthened to enable providers to periodically practice and maintain the skills and strategies learned in focused PE/E or EmONC courses. Clinical drills to practice emergency readiness and emergency procedures can be adapted to the local context and implemented during clinical supervision visits.
Training Materials

Resources:

- **EmONC Seminar Series: Managing Pre-Eclampsia/Eclampsia Module**

  As part of the Emergency Obstetric and Newborn Care (EmONC) Seminar Series, this module will help use performance standards to guide work on learning, strengthening, and continually assessing skills in diagnosing and managing pre-eclampsia and eclampsia.

- **Prevention and Management of Pre-eclampsia and Eclampsia Training Package**

  This 3-day training package teaches evidence-based care to prevent and management PE/E. It contains a trainers/facilitators guide, participant guide, reference manual and presentation graphics. These materials are still in draft, awaiting fieldtesting. Finalized versions will be uploaded when available.

- **Educational Material for Teachers of Midwifery: Managing Eclampsia**

  To support the upgrading of midwifery skills so that countries can respond to this situation by strengthening maternal and newborn health services, a set of midwifery training modules was developed by the World Health Organization (WHO). This module addresses how to manage eclampsia and includes 6 teaching sessions. Clinical skills, case studies and assessments/questionnaires are included.

- **Best Practices in Maternal and Newborn Care: Learning Resource Package for Essential and Basic Obstetric and Newborn Care**
This learning resource package was developed to train health care providers to deliver evidence-based essential and basic EmONC. Components include: participant guide, a trainers notebook and presentations. It also includes a model 2-week and 3-week training schedule.

- **Basic Maternal and Newborn Care (BMNC): A Guide for Skilled Providers**

This manual was developed based on the premise that the provision of quality care to women experiencing normal pregnancies, births and postpartum periods can not only improve the health of the mother and baby, but also save lives. It is intended for use in in-service and pre-service training systems for skilled providers (doctors, nurses and midwives) who care for women and newborns in low-resource settings.

**Online Training Courses**

**Resources:**

- **The Evidence-Based Management of PE/E, University of Oxford**

  This online course is found at [https://www.gfmer.ch/SRH-Course-2010/pre-eclampsia-University-of-Oxford/](https://www.gfmer.ch/SRH-Course-2010/pre-eclampsia-University-of-Oxford/). The course has two versions: 1. Basic - for healthcare professionals who want to know/revise the fundamentals, and 2. Advanced - for doctors, midwives and nurses who want to know the evidence behind the recommendations.

- **Maternal Survival?Programming Issues, Global Health eLearning Center**
This e-learning course is offered by the Global Health e-Learning Center and is free to take. It includes important but succinct information for program managers working to develop interventions for reducing maternal mortality. You can find this course at https://www.globalhealthlearning.org/course/maternal-survival-programming-issues-update or by browsing the Center’s catalog at http://www.globalhealthlearning.org/courses.

Other Training Resources

Resources:

- **Detecting PE: A Practical Guide: Using and Maintaining Blood Pressure Equipment**

These guidelines, prepared by the Maternal Health and Safe Motherhood program of the World Health Organization, are intended to help improve health workers’ knowledge and clinical skills necessary for the early detection of high blood pressure, protein-urea and edema which are hallmarks of this condition. The chief aim of this booklet is to provide instructions for health workers which will help identify the early signs and symptoms of preeclampsia, and permit early treatment and prevention of severe forms of the disease.

Blood pressure is often wrongly measured and recorded (in both developing and developed countries), though important clinical decisions depend on accurate measurement. Therefore, a large part of these guidelines is devoted to describing how blood pressure should be taken, and how to avoid making mistakes. The importance of the EARLY detection of PE by taking accurate blood pressure measurements, testing for protein in the urine, and detecting meaningful edema is stressed.

- **Guidelines for Assessment of Skilled Providers after Training in Maternal and Newborn Healthcare**

This is a collection of assessment tools that can be used for post-training followup and support, after MNC clinical training. It provides guidelines for planning a performance-oriented followup visit as well as the assessment tools (experience and confidence in MNC; knowledge questionnaire; case studies; skills checklists; and interview guides).
4. Improve Quality of Care

A practical management approach for improving the performance and quality of health services leads to meaningful, sustainable improvements in health care. The process engages a country’s key stakeholders, decision-makers and other leaders to ensure responsiveness to the country’s needs and to foster the broad acceptance necessary for implementation by health care providers.

Set standards for quality of care (QoC) and use them to improve PE/E-related prevention, detection and management. Within many countries, efforts are already underway to improve the quality of maternal and newborn care at all levels of the health care system. Standards can be set using international reference materials, such as the WHO’s Managing Complications in Pregnancy and Childbirth (2003), and adapted for the local context. As policies and service delivery guidelines are updated to promote PE/E-related evidence-based practices, performance improvement processes can help translate them into clinical practice. For example, a number of countries have QoC tools to improve the management of obstetric and complications that address PE/E management with magnesium sulfate within larger BEmONC and CEmONC quality improvement processes. Approaches such as Standards-Based Management and Recognition (SBM-R), Client-Oriented, Provider-Efficient (COPE®) Services, and Improvement Collaborative can be used to set and achieve a standard of care for ANC, delivery and management of complications, and also to tackle challenges in supervision, infection prevention, laboratory services and logistics systems.

Integrate PE/E-related QoC monitoring across sites/facilities. While supervisors may initially focus on monitoring the implementation of PE/E interventions, key elements must be standardized and integrated into existing supervisory and monitoring systems to ensure the sustainability of the interventions. National QoC monitoring systems need to reflect key elements of PE/E prevention, detection and management. ANC monitoring can ensure all pregnant women are tested for high blood pressure and proteinuria at every visit. In addition, targeted QoC initiatives can focus on severe PE/E management in a number of facilities to measure improvements in care over several points in time. In a QoC project in Nepal in 2009, some findings that were identified and addressed included: frequent stock-outs of magnesium sulfate; nurses who were hesitant to diagnose severe PE and begin treatment; and monitoring for toxicity not routinely being done.

Develop job aids to address providers’ barriers to providing timely PE/E prevention, detection and management. Job aids can greatly assist providers in transferring learning to their work site and maintaining standards of care. The national situational analysis, training needs assessment, and QoC activities job aids can greatly assist providers in transferring their learning to their work site and maintaining standards of care. Job aids can be developed to specifically address barriers and could include those for educating women about prevention, diagnosing PE, counseling women with PE and their families on options, and managing severe PE/E cases (including toxicity).

Ensure relevant PE/E-related data are collected and analyzed for decision-making by facilities and within the national Health Management Information System (HMIS).
Data on selected PE/E indicators must be included in the national HMIS and logistics management information system (LMIS) to enable stakeholders to track PE/E-related data and make informed programmatic decisions. Data are needed at the facility as well as aggregated up to the district/provincial/regional level on key indicators such as: stock-outs of essential drugs needed for PE/E management; the number of women receiving ANC whose blood pressure was evaluated and urine was tested for protein; and the number of cases of severe PE identified and treated at the appropriate level of care.

Resources:

- **Pregnancy, Childbirth, Postpartum and Newborn Care? A Guide for Essential Practice**

  The aim of this WHO PCPNC guide for essential practice is to provide evidence-based recommendations to guide health care professionals in the management of women during pregnancy, childbirth and postpartum, and post abortion, and newborns during their first week of life, including management of endemic diseases like malaria, HIV/AIDS, TB and anemia. The PCPNC is a guide for clinical decision-making. It facilitates the collection, analysis, classification and use of relevant information by suggesting key questions, essential observations and/or examinations, and recommending appropriate research-based interventions. It promotes the early detection of complications and the initiation of early and appropriate treatment, including timely referral, if necessary. Correct use of this guide should help reduce the high maternal and perinatal mortality and morbidity rates prevalent in many parts of the developing world, thereby making pregnancy and childbirth safer. The guide is not designed for immediate use. It is a generic guide and should first be adapted to local needs and resources.

- **Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (Tanzania)**

  This document is the Tanzania adaptation of the WHO PCPNC guide, tailored to the local context. First draft.

- **Managing Complications in Pregnancy and Childbirth? A Guide for Midwives and Doctors**
As part of the WHO Integrated Management of Pregnancy and Childbirth series, the MCPC is a reference manual intended for use by midwives and doctors at the district hospital iwho are responsible for the care of women with complications of pregnancy, childbirth or the immediate postpartum period, including immediate problems of the newborn. While most pregnancies and births are uneventful, all pregnancies are at risk. Around 15% of all pregnant women develop a potentially life-threatening complication that calls for skilled care and some will require a major obstetrical intervention to survive. The interventions described in these manuals are based on the latest available scientific evidence. It is hoped that this manual will be used at the side of the patient, and be readily available whenever a midwife or doctor is confronted with an obstetric emergency. In addition to the care midwives and doctors provide women in facilities.

- **Obstetric Safety Protocols**

Selected from the WHO manual, "WHO Surgical Care at the District Hospital", these protocols include: diagnosis of labor; diagnosis of vaginal bleeding in early pregnancy; diagnosis of vaginal bleeding in late pregnancy; management of bleeding in late pregnancy, labor and postpartum hemorrhage; diagnosis and management of abortion complications; severe PE and eclampsia; eclampsia management; caesarean section; and aftercare of obstetric emergencies.

**Job Aids**

**Resources:**

- **Differential Diagnosis of Hypertensive Disorders in Pregnancy (PE/E Job Aid 1)**

  The first of a series of PE/E job aids, this table defines various clinical diagnoses, including degrees of pre-eclampsia and eclampsia.

- **Differential Diagnosis of Convulsions/Fits in Pregnancy (PE/E Job Aid 2)**
The second of a series of PE/E job aids, this table defines various clinical diagnoses for convulsions, including eclampsia.

- **Administering Magnesium Sulphate (PE/E Job Aid 3)**

  The third of a series of PE/E job aids, this algorithm guides a provider through the loading dose, clinical monitoring for toxicity and maintenance dose.

- **Flow chart for Conducting Birth for Women with Severe Pre-eclampsia or Eclampsia (PE/E Job Aid 4)**

  The fourth of a series of PE/E job aids, this flow chart guides a provider through clinical management of delivery options for women with PE/E.

- **Managing Severe PE/E with Magnesium Sulphate (MgSO4)**

  This flowchart job aid pictorially guides the provider through the loading dose, maintenance dose and monitoring for toxicity.

- **The ABCCCD of Eclampsia Management**

  This 2-page job aid describes the 4 steps to eclampsia management as ABC (ABCs of resuscitation)-C (control seizures)-C (control hypertension)-D (deliver if not postpartum)

- **Management of Severe Pre-eclampsia and Eclampsia**

  These clinical guidelines help midwives and junior staff initiate immediate management of severe PE and eclampsia in labor wards of Northern Ireland. Contains simple guides, an algorithm, and details for stocking an emergency box of medicine and supplies.

**Quality Improvement (QI) Approaches and**
Tools

Resources:

- **Performance Standards for Maternal and Neonatal Health: Normal Labor and Delivery (NLD)**

  This set of 20 performance standards can be used in QI processes such as SBM-R to quantitatively assess the quality of normal labor and delivery care. In addition to the standards, it contains "reminder" boxes on key aspects of clinical care.

- **Performance Standards for Management of Complications during Labor and Delivery (Area 3)**

  As part of the Malawi Ministry of Health Performance Standards for Reproductive Health, this set of 10 performance standards defines the quality of care for managing complications in labor and delivery.

- **Standard-Based Management and Recognition: A Field Guide**

  This guide presents a practical approach for performance and quality improvement, here called Standards-Based Management and Recognition (SBM-R). It is designed for managers, frontline providers of service delivery organizations in both the public and private sectors. Other potential users of this material include advocacy groups that represent the health interests of clients and communities and organization that provide technical assistance for performance and quality improvement.

- **Site Assessment and Strengthening for MNH Programs**

  An essential aspect of introducing new Essential Maternal and Newborn Care interventions is the establishment of an enabling environment and a process to continually monitor and maintain quality of services. This toolkit presents a process and tools that can be used to conduct facility-level site assessment and strengthening (SA/S) with the goal of improving
essential maternal and newborn care services. The SA/S activity is based on the performance and quality improvement process defined and adapted as a performance and quality improvement (PQI) approach.

- Quality Improvement for Emergency Obstetric Care: Leadership Manual

This manual is written for clinical staff or administrators working in EmOC facilities and playing a leadership role among staff. Regardless of roles or titles, it helps function as a leader of EmOC staff to improve services. It has 5 chapters and is intended to be used with the accompanying toolkit.

- Quality Improvement for Emergency Obstetric Care, Toolbook

This toolbook contains a set of tools and instructions for use in gathering and analyzing information to assess the quality of care in EmOC facilities. It will help to a) Introduce, demonstrate and maintain a QI process b) Use facilitative leadership and communication skills, c) Problem solve with EmOC staff at all levels through leading by example, mentoring, coaching, and other capacity-building skills, d) Coordinate input from external supervisors and technical specialists so that their input contributes to improving the quality of care at the facility. It includes: 1). EmOC Assessment 2) Client/family interview 3) Registers and record review 4) Client flow analysis and 5) Brief case review guidelines.

- Using Performance and Quality Improvement to Strengthen Skilled Attendance

This report documents how the use of the PQI process has helped to improve skilled attendance in MNH Program countries, and shares some lessons the Program has learned about how best to use PQI in safe motherhood programs. The PQI process has guided MNH Program-led efforts to improve the quality of care, strengthen links between the community and health facilities, and empower individuals and communities to seek and advocate for high-quality healthcare services.
5. Increase Awareness

Mobilizing families and communities increases demand for services, a vital step in improving care for mothers and newborns.

Identify barriers among women, their families and their communities to recognizing PE/E danger signs, attending ANC for screening, and seeking timely care for severe PE/E. For women, their families and communities to prevent PE/E-related complications and deaths, they need to have accurate information about prevention, detection, danger signs and care. National behavior change communication (BCC) or community mobilization strategies will likely address most barriers to recognizing, seeking and accessing care, but specific behaviors related to PE/E need to be explored and integrated.

Mobilize community health workers (CHWs) and communities for PE/E. CHWs or other community health agents are the front-line health care providers who are the closest to women in communities, and are thus well suited to participate in community-based PE/E interventions. They are often involved in raising awareness about birth preparedness and complication readiness, which is essential for recognizing danger signs, planning for SBA-attended deliveries, and seeking care for complications if they occur. Depending on the PE/E activities planned for the community level, CHWs could, for example, distribute calcium and/or aspirin supplements or encourage multiple ANC visits for screening. For detection in areas where ANC visits are limited, CHWs can be trained to screen women at home or in the community. Community-oriented BCC messages, materials and activities can be developed and integrated into existing campaigns to reach pregnant women and their families.

Link communities and facilities to improve access and demand for care. It is critical to ensure the continuum of care for PE/E, as women diagnosed with PE need to be monitored and referred depending on the severity of the illness and the gestational age of the pregnancy. Referral systems need to be in place to ensure that women and newborns can get to life-saving care when needed. Linking communities to nearby providers and facilities helps to improve communication, care-seeking and referrals. For example, if national policies support the administration of a first IM dose of magnesium sulfate and the first stat dose of anti-hypertensive medications in peripheral health care facilities prior to transfer, communities need to be mobilized to know where to seek this care.

Resources:

- Literature Review Summary: Educational Materials for PE/E Recognition
This 1-page guidance summarizes a comprehensive review of current literature on preeclampsia patient education studies and makes recommendations for the creation of an IEC product. Study results indicate that the pictorial cards served an important function of increasing pregnant women’s awareness of symptoms that could lead to pre-eclampsia and taking appropriate action ahead of time. Women who had the pictures and information explained to them by a health care provider had a higher success rate of retaining the information provided, particularly those who subsequently shared it with a husband or mother. In one such study, some pictures of symptoms in the cards were not well-understood (fever, water discharge, prolonged labor, abnormal presentation), theoretically because these concepts are more abstract for a pictorial representation.

- **Use Calcium During Pregnancy to Protect the Health of Mother and Baby: BCC Materials for Calcium Supplementation (Tablets and Powder)**

To support routine calcium supplementation during pregnancy to reduce the risk of PE, MCHIP in Nepal developed BCC materials for community health workers, women and their families to explain the importance of taking calcium daily and how to take it. Materials were developed for promotion of calcium tablets and calcium powder for an acceptability study in Nepal.

6. **Monitor and Evaluate Results**

A plan should be put in place to inform the design of program interventions and evaluate their effectiveness.

**Conduct national surveys on PE/E-related care, with a focus on management.** National surveys help document current practice, raise awareness and generate support for PE/E focused programs. For example, Demographic and Health Surveys (DHS) are conducted every five years and collect data on ANC, including blood pressure and urine testing. More frequent surveys on PE/E detection and management can highlight the challenges to improved care and also capture improvements over time.

**Strengthen the national monitoring and evaluation (M&E) plan to measure PE/E-related indicators.** Depending on the range and scale of interventions, the national M&E plan for maternal and newborn health programs can be reviewed to ensure it will measure changes in PE/E outcomes. For example, the plan should: assess the PE/E program baseline; determine key indicators to measure progress (outputs, outcomes and impact); and review existing data collection systems. Any additional M&E requirements should be integrated into the existing
government HMIS. Complementing the M&E plan, a documentation plan needs to be developed to ensure that the PE/E program will capture sufficient information from activities to answer all key programmatic questions and capture lessons learned.

Resources:

- **Suggested Indicators for Monitoring and Evaluation of Programs to Detect and Treat Severe Pre-Eclampsia/Eclampsia during Pregnancy**

  This menu of output, outcome and impact indicators that can be used to monitor and evaluate programs that are intended to improve screening and treatment of PE/E. Indicators measure service readiness and service delivery. It also identifies data sources.

- **Monitoring Emergency Obstetric Care: A Handbook**

  This WHO handbook lists and defines key indicators for emergency obstetric care (EmOC) and gives guidance for collecting data. These indicators have been used by ministries of health, international agencies and programme managers in over 50 countries around the world. It includes a list of life-saving services, or "signal functions", that define a health facility with regard to its capacity to treat obstetric and newborn emergencies. The EmOC indicators described in this handbook can be used to measure progress in a programmatic continuum: from the availability of and access to EmOC to the use and quality of those services.

Tools

Resources:

- **Needs Assessments for Emergency Obstetric and Newborn Care**
This fact sheet from AMDD describes EmONC Needs Assessments that produce evidence needed to strengthen health systems, improve access to EmONC, and save the lives of mothers and newborns worldwide. These Needs Assessments provide details about gaps or problems in availability of EmONC services. These data are a first and critical step to improving equitable access to EmONC and to strengthening the overall health system, as they are the foundation of a rigorous planning process. The Needs Assessment is an extremely practical planning and monitoring tool that helps governments understand what is really happening inside health facilities: it looks beyond official policies and norms, and focuses on actual facility functioning. It also directs readers to the AMDD website for needs assessment resources (www.amddprogram.org).

- **Services Availability and Readiness Assessment (SARA) Core Questionnaire**

  This questionnaire (version 1.0) covers 1) infrastructure and management; 2) basic equipment and infection control; 3) human resources; 4) training and guidelines; 5) available services; 6) drugs and commodities; and 7) laboratory.

- **Profiles of Health Facility Assessment Methods**

  This synopsis of health facility assessment methods was prepared on behalf of the international Health Facility Assessment Network (IHFAN). It covers the following methods: service provision assessment (SPA); facility audit of service quality (FASQ); health facility census (HFC); WHO service availability mapping (SAM); prevention service availability mapping (PSAM); health facility based survey of human resources for health in HIV/AIDS, TB, malaria and MCH services (HRHS); ACQUIRE’s Evaluation of LAPM Services (ELMS) Suite; Population Council Health Facility Assessment (HFA); and Rapid Health Facility Assessment (R-HFA).

**Other Resources**

Resources:

- **Bangladesh Maternal Health Services and Maternal**
Mortality Survey (final report)

The 2001 Bangladesh Maternal Health Services and Maternal Mortality Survey (BMMS) is the first nationally representative sample survey designed to provide information on the level of maternal mortality, causes of maternal and nonmaternal deaths, and perception, experience, and utilization of maternal health care in Bangladesh. It provides a comprehensive look at levels of and differentials in maternal health parameters for policymakers and program managers. The survey estimates the maternal mortality ratio (MMR) in Bangladesh during the period 1998-2001 as in the range of 320 to 400 per 100,000 live births. The direct estimates show a 20 percent decline over a decade, from 514 in 1986-1991 to 400 in 1998-2001.

7. Scale-up

Scaling up capacity building, community outreach and demand generation for maternal and newborn health interventions is critical for sustaining program improvements. However, as programs move from initial introduction to having a national reach, certain challenges may arise, such as: insufficient equipment in ANC to take blood pressure and test urine; lack of provider knowledge/skills; low community awareness of danger signs and need for referral; facilities without evidence-based protocols and medications.

Plan for scale-up and sustainability considering national priorities, areas of highest need and capacity. Depending on the national strategy, expansion of PE/E initiatives may be phased but should be developed with a long-term vision of routine delivery of these services through existing systems nationwide. Eclampsia management using magnesium sulfate or urine testing for proteinuria are frequently in policies but not in practice; therefore, scale-up through the health care system remains a necessity. New innovations in particular need to consider sustainability in the initial design and implementation.

References

2 ibid


4 ibid


Source URL: https://www.k4health.org/toolkits/preeclampsia-eclampsia