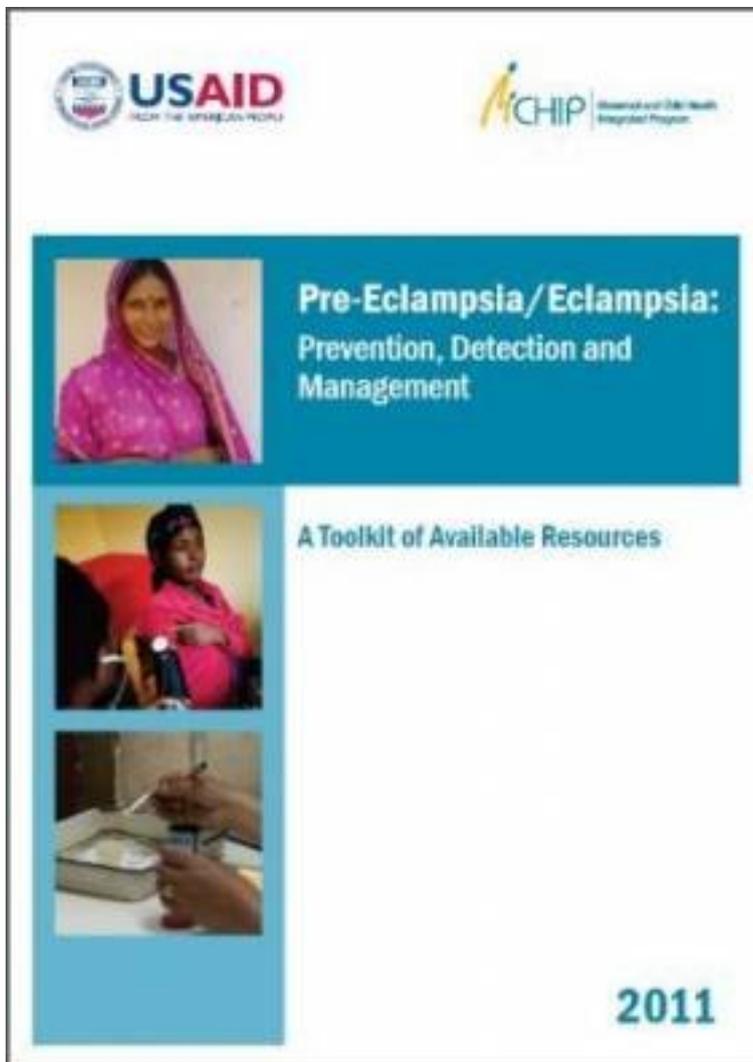


Pre-Eclampsia/ Eclampsia: Prevention, Detection and Management

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 \[1\]](#) was developed and provides the overall framework to the toolkit tabs/sections. Technical evidence was compiled in an [annotated bibliography \[2\]](#) from an extensive literature review and vetted by a small technical working group; a comprehensive [PE/E technical brief \[3\]](#) and [PE/E technical presentation \[4\]](#) are also available. This toolkit also contains a succinct 2-page [advocacy brief \[5\]](#) and [advocacy presentation \[6\]](#) 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 \[7\]](#)

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 [8] 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.



1. Advocate with Evidence

- [PDF version](#) [9]

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.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^s
 2. *Low-dose aspirin supplementation during pregnancy*—associated with a 17% reduction in PE^s
 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 (BEmONC and CEmONC, respectively).

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.

Reviews of clinical evidence

- [PDF version](#) [10]

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

Thursday, October 4, 2012 - 06:01

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

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

Presentations

- [PDF version](#) [11]

Other resources

- [PDF version](#) [12]

2. Create Enabling Policy Environment

- [PDF version](#) [13]

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.⁷ Where necessary, policies that promote task-shifting of certain interventions will also increase access to PE/E 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.

3. Train Providers

- [PDF version](#) [14]

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

- [PDF version](#) [15]

Online Training Courses

- [PDF version](#) [16]

Other Training Resources

- [PDF version](#) [17]

4. Improve Quality of Care

- [PDF version](#) [18]

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.

Job Aids

- [PDF version](#) [19]

Quality Improvement (QI) Approaches and Tools

- [PDF version](#) [20]

5. Increase Awareness

- [PDF version](#) [21]

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.

6. Monitor and Evaluate Results

- [PDF version](#) [22]

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.

Tools

- [PDF version](#) [23]

Other Resources

- [PDF version](#) [24]

7. Scale-up

- [PDF version](#) [25]

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.

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- [PDF version](#) [26]

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Source URL: <http://www.k4health.org/toolkits/preeclampsia-eclampsia>

Links:

- [1] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/program-implementation-guidance-preeclampsia-eclampsia-prevention-de>
- [2] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/annotated-bibliography-pee-prevention-detection-and-management>
- [3] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/pee-technical-brief-pee-prevention-detection-and-management>
- [4] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/technical-presentation-understanding-evidence-preventing-detecting-m>
- [5] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/program-brief-pee-prevention-detection-and-management>
- [6] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/pee-advocacy-presentation-preventing-maternal-deaths-due-pre-eclamps>
- [7] <http://www.k4health.org/toolkits/preeclampsia-eclampsia/useful-websites-online-courses-and-resources>
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- [9] <http://www.k4health.org/printpdf/10393>
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<http://www.engenderhealth.org/files/pubs/maternal-health/EngenderHealth-Eclampsia-Report.pdf>