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11

Pre-eclampsia in low and middle income countries

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Pre-eclampsia and eclampsia are leading causes of maternal and perinatal morbidity and mortality worldwide. The exact prevalence, however, is unknown. The majority of pre-eclampsia related deaths in LMIC occur in the community and therefore, interventions must be focused at this level. There are a number of unique challenges facing LMIC but the principles of care for women with pre-eclampsia remain the same as in well resourced settings.

Three primary delays lead to an increased incidence of maternal mortality from pre-eclampsia- delays in triage, transport and treatment. There are a number of other challenges facing LMIC and the health care worker shortage is particularly significant. Task shifting is a potential strategy to address this challenge. Community health care workers, specifically lady health care workers, are an integral part of the health care force in many LMIC and can be employed to provide timely care to women with pre-eclampsia.

Prevention strategies should be applied to every pregnant woman since we cannot predict who will develop pre-eclampsia given the limitation in resources. Aspirin and calcium are the only two recommended therapies at this time. Measuring blood pressure and proteinuria is challenging in LMIC due to financial cost and lack of training. A detection tool that is affordable and can be easily applied is needed. Magnesium sulfate is the drug of choice for the prevention and treatment of eclampsia but it is underutilized due to barriers on multiple levels.

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Pregnant women in low and middle income countries [LMIC] are amongst the most vulnerable populations in the world. Worldwide, hemorrhage is the leading cause of maternal death.[1] Pre-eclampsia and eclampsia follows second and cause significant maternal and perinatal morbidity and mortality.[1] Sepsis, obstructed labour and unsafe abortion round up the top five causes of direct maternal death in LMIC.[1] This is in contrast to high income countries where the top five causes are hypertensive disorders of pregnancy, pulmonary embolism, hemorrhage, abortion and ectopic pregnancy respectively.[1] 99% of maternal mortality occurs in LMIC and many of these deaths are preventable.[2] Most of the mortality occurs at the community level and effective community level interventions are lacking.

In 2001, the United Nations Millennium Declaration was translated into eight goals, one of which is to improve maternal health (Millennium Development Goal [MDG] 5).[3] The target for the MDG 5 is to reduce the maternal mortality ratio by three quarters from 1990 to 2015.[3] However, only 23 countries are on track to achieve the MDG 5 by 2015.[4] In light of this, unprecedented high-level attention has been given to maternal health in the last few years. Governments, donor agencies, the private sector, policy makers, international and national civil society organizations, and program managers from governmental and non-governmental organizations have collaborated to assess progress, revise existing strategies, and launch new, innovative approaches to achieving the MDG 5.[5]

One such initiative is PRE-EMPT (PRE-eclampsia-Eclampsia Monitoring, Prevention and Treatment), which has been recently funded by the Bill and Melinda Gates Foundation. PRE-EMPT consists of a number interrelated projects that will be conducted over a four year period in select LMIC in Africa and South Asia. The overarching theme of this initiative is to reduce the maternal and perinatal consequences of pre-eclampsia. The primary goal is to improve community level case ascertainment and interventions as most maternal mortality and morbidity occurs in this setting. The secondary goal is to develop multifaceted international research collaboration and LMIC-oriented pre-eclampsia knowledge translation activities.

The principles of care of women with pre-eclampsia in LMIC are the same as in high resource countries. However, there are special considerations and challenges unique to LMIC. This section will address the relevant issues with a focus on existing gaps and barriers for prevention, diagnosis and treatment of pre-eclampsia. It will emphasize task shifting particularly at the community level and it will highlight the contributions that PRE-EMPT will make in this area. It is worth highlighting that this chapter is intentionally unemotional while acknowledging that maternal health is a human right. The aim of the section is to list the facts relating to the care of women with pre-eclampsia in LMIC.

Background

Definition of LMIC

There are 144 LMIC according to the World Bank classification of countries.[6] Countries are categorized according to income based on the 2009 Gross National Income (GNI) per capita.[6] The groups are: low income, $995 or less; lower middle income, $996–$3,945; upper middle income, $3,946–$12,195; and high income, $12,196 or more.[6] There are 40 low income countries, 56 lower middle income countries and 48 upper middle income countries.

Epidemiology of pre-eclampsia in LMIC

Worldwide, pre-eclampsia is the second leading cause of direct maternal death. The exact prevalence of pre-eclampsia and associated mortality and morbidity in LMIC is unknown. Historically, most population level studies and surveys have focused on the prevalence of eclampsia rather pre-eclampsia. The reporting quality of these studies examining causes of maternal mortality has been generally poor; only 50% have included definitions for hypertensive disorders of pregnancy making it difficult to accurately estimate the prevalence of pre-eclampsia.[7]

The World Health Organization (WHO) estimates that at least 16% of maternal deaths in LMIC result from the hypertensive disorders of pregnancy, of which eclampsia is the primary contributor.[1] This global average, however, hides the significant variation in the prevalence between countries. Hypertensive disorders were reported as the cause of 9.1% in each of Africa and Asia, but 25.7% in each of Latin