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## Perfect recipes for obstetric anesthesia: Need of caution in the resource constraint environment

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## Perfect Recipes for Obstetric Anesthesia: Need of Caution in the Resource Constraint Environment

Obstetric anesthesia in a low resource setting is a global problem as evident by the World Health Organization report over trends in maternal mortality over 25 years.<sup>[1]</sup> This report states that developing nation accounts for 99% of all global maternal deaths and calculated lifetime risk for maternal mortality in developing regions is 1 in 3,700 in contrast to developed regions where the lifetime risk is 1 in 160.<sup>[1]</sup>

The reasons for this disparity between developed and developing nation are socio-economic factors and poor health care infrastructure. The majority of health care sectors are under-equipped in terms of drugs and proper equipment. Their operating room and obstetric units are not only understaffed, but there is a major lack adequate training of health care professional.<sup>[2]</sup> The situation is made worse by poorly prepared patients coming mostly in emergency situations.

Because of shortage of staff, one person is fulfilling more than one duty as providing anesthesia to the mother and resuscitating the newborn at the same time. In developing countries, the estimated ratio of physician anesthetist is one per million women.<sup>[3]</sup> A meta-analysis shows that the risk of death from anesthesia in women undergoing obstetric procedures in low and middle-income countries is about 1.2 per 1000 women undergoing obstetric procedures. General anesthesia exposure and administration of anesthesia by untrained non-physicians were the main risk factors for maternal deaths.<sup>[4]</sup>

### What management strategies are required in low resource setting?

It is evident that the provision of obstetric anesthesia is a major challenge for an anesthesiologist in low resource setting. Therefore, management strategies must be tailored to meet the erratic and inconsistent supply of drugs and equipment especially in the presence of inexperienced anesthesiologists and other untrained health care providers.

There is a dire need to bring additional resources coupled with interventions to improve patient outcome. These interventions should include introduction of guidelines that focus on the anesthetic management of pregnant patients during labor, non-operative delivery, operative delivery, and selected aspects of postpartum care and analgesia.

### High-quality research for the development of guidelines and state-of-the-art recipes

Obstetric anesthesia in developed nation has become a highly sophisticated subspecialty. Anesthesiologist can play an important role in providing safe anesthesia by translating high-quality research into action; a process

called translation research.<sup>[5]</sup> With high-quality research in obstetric anesthesia, guidelines have been developed that focus on the anesthetic and pain management of parturient.

The state-of-the-art recipe as a result of high quality research has helped to assist the practitioner in making decisions about health care of obstetric patients. The purpose of these guidelines is to enhance the quality of anesthetic care for obstetric patients by improving patient safety by reducing the incidence and severity of anesthesia related complications and increase patient satisfaction. Unfortunately, there is hardly any research or data available to see that these guidelines work in the context of resource limited environment.<sup>[6,7]</sup>

### Can we apply these state-of-the-art recipes to the resource limited countries?

The evidence that is drawn to develop treatment guidelines for both middle and low income countries is taken from the context of developed countries but can we apply this evidence to the resource-poor environment?

It is important to distinguish between differing clinical environments, as there is a huge difference in the availability of resources in terms of availability of trained staff, equipment, drugs, and infrastructure across different levels of the health sector. As a result, there is reluctance from resource poor health sector to adapt the guidelines from research findings of resource-rich environments.

Research mainly conducted in developed countries have proved that regional anesthesia is safer than general anesthesia, however, sixth report of the national committee for confidential enquiries into maternal deaths in South Africa stated that three out of every four obstetric patients who died as a result of direct anesthetic causes received spinal anesthesia.<sup>[8]</sup> These spinal deaths were mainly because of severe uncorrected hypotension. For prevention and treatment of spinal induced hypotension, recent literature suggests that low dose prophylactic phenylephrine infusion in range of 25–50 ug/min gives the greatest advantage with fewer side effects.<sup>[9]</sup> However, there is a need to test this evidence in resource poor setting. Prophylactic vasopressors in low resource setting can prove to be effective; as reactive measure would rely on an experienced anesthesiologist who can pick up subtle signs of hypotension, which cannot be relied on an inexperienced person giving anesthesia that has more than one role to play.

Therefore, guidelines outlining clinical strategies need to match available clinical skill, drug availability, monitoring capabilities and patient profile.

## How to bridge this gap?

Sophisticated state of art recipes based on best-practice evidence research in resource-rich environments requires to be validated in the clinical context in which they are to be introduced.

There is a need to do well constructed, multi-centered studies which should clearly define their context in terms of resources and man power. In order to construct and conduct these studies, close cooperation is required between highly resourced research centers and clinicians operating in the low and middle resource clinical settings. These researches can be translated into pragmatic guidelines and instead of implementing these guidelines; these should be made widely available, allowing peer review of current practice. This would enable clinicians in similar contexts to apply these guidelines to their setting without the need for repeating the research. There is need for a local special interest group or professional societies of countries to apply these guidelines by tailoring to the local environment.

In conclusion, there still exist a gap between research context and its implementation in resource limited areas. There is a need for testing the application of practical study results in resource poor areas and its implications. There is a need of collaboration and support from resource rich countries.

Recommendation is to enhance cooperation and teamwork between obstetrician and obstetric anesthesia provider to improve maternal and fetal outcome. Continuous audits are valuable in ascertaining the risk factors which are increasing maternal mortality. Consideration to safe anesthesia practices along with provision of trained staff, essential equipment, drugs and infrastructure are of significance. Protocols should be developed for safe anesthesia practices and their implementation should be audited.

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