

Clean delivery kits linked to substantial reduction in neonatal deaths in South Asia, study shows

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Providing clean delivery kits and improving birthing practices could halve the number of neonatal deaths following home births in South Asia, according to research funded by the Wellcome Trust.

Around half a million babies die in the first month of life from [sepsis](#) and around a third of these infections are transmitted at the time of birth. In [South Asia](#), more than half of deliveries occur at home, most without skilled birth attendance. Maintaining clean delivery practices at home can be challenging for mothers and their birthing companions.

One way to potentially improve delivery practices is the use of locally-made kits, including soap for washing the birth attendant's hands and mother's perineum, a plastic sheet to provide a clean delivery surface, a clean string for tying the [umbilical cord](#), a new razor blade for cutting the cord, and pictorial instructions to illustrate the sequence of events during a delivery. The cost of such kits is low, ranging from US\$0.27 in Bangladesh to US\$0.44 in India. Kits can also be made at home.

The benefits of clean delivery practices and clean delivery kit use are well known, but until now the impact of these kits on [neonatal mortality](#) has not been quantified. Previous estimates were drawn from an expert consultation rather than from [empirical data](#).

To assess the impact of these kits and clean delivery practices on

neonatal mortality, researchers funded through a Wellcome Trust Strategic Award examined data for almost 20,000 home births from previous studies conducted between 2000 and 2008 in India, Bangladesh and Nepal. The findings of their study are published today in the journal [PLoS Medicine](#).

The researchers found that kits were used for just under one in five home births in India and Bangladesh, and just over one in twenty home births in Nepal. On average, kit use was associated with a 48% relative reduction in neonatal mortality. The difference was largest in India, which saw a 57% relative reduction in neonatal mortality with kit usage; in Bangladesh, the fall was 32% and in Nepal, 49%.

The results also reinforce the importance of each clean delivery practice; hand washing and use of a sterilised blade, boiled thread, and plastic sheet were all independently associated with a reduction in [neonatal deaths](#). The researchers found a 16% relative reduction in mortality with each additional clean delivery practice used.

Dr Audrey Prost from the Centre for International Health and Development at the Institute of Child Health, UCL (University College London) says: "The number of newborn infants that die from preventable infections is shocking and needs to be tackled as a matter of urgency. The ideal is for every mother to have access to a skilled birth attendant, whether at home or in a health facility. However, since many births in low-resource settings still occur at home without a skilled birth attendant, appropriate use of a clean delivery kit and clean delivery practices offer a simple, cost-effective way to make a big impact."

However, the researchers found that just providing the kits, even with instructions, was not enough to guarantee that life-saving clean delivery practices would be used. Previous research from Nepal has shown that the instructions that come with kits are not always used or understood. In

addition, delivery and postnatal practices differ according to culture, and understanding the context in which kits are used is key to developing appropriate promotion activities. Programmes have employed several approaches to this, including dissemination of kits through health facilities, community health workers, and private providers such as pharmacists.

Dr Prost's colleagues in Nepal and India found that engaging local women's groups through participatory methods, games and stories to discuss prevention and care for typical problems in mothers and new-borns improved clean delivery practices and care-seeking.

One of the study authors, Dr Nirmala Nair from the Indian non-governmental organisation Ekjut, says: "We need to think carefully about how we try to improve delivery practices. Each cultural context brings its own challenges and offers its own opportunities. In India we have worked with women's groups who have helped change practices and saved the lives of many new-born infants."

Combating infectious disease is one of the Wellcome Trust's strategic aims. Dr Jimmy Whitworth, Head of International Activities at the Wellcome Trust, says: "Reducing mortality in children is one of the Millennium Development Goals, yet still too many new-born babies are dying of potentially preventable diseases. This study has shown that clean delivery kits offer a cheap and very effective way of reducing the number of deaths, particularly when used in tandem with participatory women's groups. We hope it makes a significant contribution towards achieving the Millennium Goal."

More information: Seward N, Osrin D, Li L, Costello A, Pulkki-Brännström A-M, et al. (2012) Association between Clean Delivery Kit Use, Clean Delivery Practices, and Neonatal Survival: Pooled Analysis of Data from Three Sites in South Asia. *PLoS Med* 9(2): e1001180.

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