Simpler antibiotic treatments could help millions of infants who lack access to hospitals

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Giving fewer antibiotic injections to young infants in the developing world with severe infections such as pneumonia and sepsis is just as safe and effective as the standard course of twice daily injections over the course of a week, according to new Johns Hopkins School of Public Health research conducted in Bangladesh.

The findings, published April 2 in *Lancet Global Health*, show that outpatient treatments with fewer injections produce similar results to the more cumbersome standard treatment course. In the developing world, infants often lack access to hospitalization and there is often a dearth of health care workers trained to safely administer injections. Fewer injections has also been shown to make treatment more acceptable and accessible to parents, and also can reduce the number of unsupervised injections that can lead to the spread of viral diseases such as hepatitis and HIV.

"Almost all neonatal and young infant deaths occur in the developing world," says Abdullah Baqui, MBBS, DrPH, MPH, a professor in the Department of International Health and Director of the International Center for Maternal and Newborn Health at the Bloomberg School. "And about a quarter of the three million neonatal deaths annually are the result of infections. Access to hospital care is limited in resource poor countries of Sub-Saharan Africa and South Asia. Treating these babies closer to home with fewer injections will expand access to life

saving treatment for these infants, which is critical where hospital care in not always available. This would save many young lives."

Researchers recruited nearly 2,500 infants between 0 and 59 days of age who were suffering from clinically suspected severe infection - but who weren't yet critically ill - and whose parents or guardians could not afford or did not have access to a hospital. The babies were randomly assigned to one of three treatment groups: (1) the standard recommended course—twice daily injections for seven days; (2) one injection daily and an oral dose twice daily for seven days; or (3) two injections daily for two days, followed by an oral dose twice daily for five days. Study physicians visited the homes daily and administered the injections as prescribed.

Baqui says that all three arms of the study had similar outcomes, including the rate of treatment failure and risk of death. While no placebo group could be studied for ethical reasons, the study successfully demonstrated that simpler antibiotic regimens are as safe and effective as the current standard. These simpler treatment options could allow more infants with severe infection greater access to needed medication in areas of the world where the vast majority of infant deaths occur.

"This is an extremely important study," says Rajiv Bahl, MD, a medical officer at the World Health Organization. "It is a major achievement to conduct such a high-quality and complex trial in a challenging setting. The findings will contribute evidence to the development of guidelines to increase access to treatment for young infants with suspected sepsis where referral to a hospital is not possible."

A similar study published in the April 2 issue of *The Lancet* and conducted in Africa (AFRINEST, the African Neonatal Sepsis Trial) found similar results to the one conducted in Bangladesh.

More information: "Safety and Efficacy of alternate Antibiotic Regimens for Outpatient Treatment of Suspected Serious Infections in Neonates and Young Infants in Bangladesh: A Randomized Controlled Trial" *Lancet Global Health*, 2015.

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