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Sustainable neonatal mortality reduction in a low-income setting is doomed if appropriate local technologies are neglected-A 22-years' lesson


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General management of immediate needs of newborn babies for survival is not foreign to any culture in the world. A low-income country can be likened to a low-income household that may not have enough money to buy-in quality food; hence, for sustainable supply of good quality food, the family must not neglect growing possible foods within the home garden. International technology market is full of expensive foreign ideas that have drawn away the attention of low-income setting dwellers (LISDs) from focusing on their improvable local technologies. LISDs are unable to buy sufficient number of these foreign technologies (FTs) to support their vast national requirements; they are unable to find sufficient funds to sustain the required expensive maintenance. Hence systems soon breakdown, neonatal mortality rate soars and they are back to the same old pressure. This is the vicious-cycle that has bedevilled some LISDs of the world and fairly responsible for their inability to achieve the MDG4 target in 25 years. Local-content inspired technologies (LCTs) are cheaper alternatives, locally available and maintainable by locals, easily produced in adequate quantities and can locally be improved upon as need demands. The 22-years' experience of our research group has allowed a comparative analyses of neonatal outcomes between unsustainable dependence on FTs and unattractive but sustainable application of LCTs in Nigeria. We used over ten neonatal centres covering all regions of Nigeria to study and devise LCTs for neonatal care. The LCTs were applied at our

few centres while the FTs were practiced at the rest of Nigeria's neonatal centres during the last ten years of MDG4. Our LCTs included, amongst others: (1) the recycled incubator technology to create affordable alternative for incubator intervention, (2) definition of climate-induced neonatal 'evening-fever syndrome' (EFS) and synthesis of a nursery-building pattern that lowers climatic harsh impact on neonates, (3) the Handy-approach and initial-setpoint-algorithm temperature protocols that enabled patient-specific interactive technique for neonatal normotherm, (4) a low-cost Politeheart bubble-CPAP machine for neonatal respiratory support, etc. Our innovative applications ensured consistent availability of up to 18 LCTs functional incubators on national average as compared to average of 3 FTs at the end of MDG4. Early neonatal mortality for ELBW reduced by 80% for LCTs centres as compared to <1% at FTs centres; overall average facility-based NNMR reduced to 31/1000 at LCTs centres as against 245/1000 at LTs centres. Nigeria was unable to score any significant reduction in neonatal mortality during MDG4 let alone sustaining any gains as these were based on locally hard-to-sustain technologies at the Nigerian centres. LCTs could have provided the much needed reduction at a national scale if these were embraced. The world must encourage every low-income country to creatively innovate and improve on own local technologies to boost sustainable high survival rates.

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