

measurements. But measuring boards are large and cumbersome to use in the field and children may be restless or afraid to use them. Alternative strategies that light, portable and provide accurate measurement under field conditions should be explored. Advances in laser measuring technology make the use of lasers one promising method. We tested the Leica Disto D2 Laser Distance Meter 763495 as a tool to quantify children's height/length. The aim of the study was to determine and evaluate the instrument's accuracy and reliability within anthropometric field studies. To determine the acceptability of this method, a qualitative investigation of the proposed technology and measuring boards was assessed among field researchers.

Methods: This study was conducted in Western Kenya in primary schools and clinical settings. The production laser model was modified to suit anthropometric requirements and was tested against a Shorr Board[®]. Two experiments were carried out to systematically pilot the Leica Disto D2 Laser tool. Experiment 1 focused on the assessment of tool accuracy tested by measuring the laser tool compared the Shorr board differences. Study researcher measured (N=62) children between the ages of 0 months – 8 years old. Experiment 2 assessed reproducibility of results within trained field staff. Reproducibility was tested by field assistant (n=6) measurements of children (n=15) over 3 days between the laser and measurement board tools. 77 study participants were recruited from schools and clinics within the ages of 0 months to 8 years old. Experiment 1 differences in measurements between tools were calculated and statistically analyzed for significance. Experiment 2 variance components, reliability coefficients (R) and coefficients of variation (CV) were estimated and systematic differences of measurements between field staff and study day were assessed.

Findings: Preliminary statistical evaluations suggest that the Leica Disto D2 Laser Distance Meter 763495 represents an adequate technical alternative to the standard methods currently used.

Interpretation: This study demonstrates the importance of innovation within the field of anthropometrics. Current methods are outdated, while technological advances are available and affordable. Leica Disto D2 Laser Distance Meter 763495 could be a viable alternative that can adequately measure height/length accurately and reliably, while being an affordable and portable alternative to current measuring methods ideal for fieldwork in low-resourced countries.

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Abstract #: 02ITIS003

Adaptation of new sterilization technology to facilitate sterile surgical care in low-resource settings

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Background: A significant and growing portion of the global burden of disease is attributable to conditions that can be treated with basic surgical procedures. Poor infrastructure and resource limitations in healthcare settings around the world present obstacles to the delivery of this cost-effective care. To date, one of these obstacles has been the sterilization of surgical instruments where availability of electricity and water is unreliable. Without sterilization capabilities, surgical care presents a high risk of infection, causing further morbidity and mortality. Innovation in sterilization technology has been static, and established methods have not been successfully adapted for use in low-resource settings on a large scale. The development of reliable, durable, affordable sterilization equipment that can operate independently of infrastructure would facilitate safe surgical care for the two billion people who currently lack access. This study was done to determine the appropriateness of a new sterilization

technology to meet this need. The authors believe that nitrogen dioxide technology can be adapted for reliable sterilization in low-resource settings.

Methods: Recently commercialized nitrogen dioxide sterilization technology was adapted into a form suitable for use in low-resource environments, which was then analyzed for sterilization efficacy, operator safety, and preservation of medical instrument functionality. Stainless steel surgical instruments were exposed to NO₂ within a rugged enclosure. Lab testing was conducted in microbiological testing facilities simulating low-resource environments and in accordance with the requirements of the international sterilization standard ANSI/AAMI/ISO. The hinges of the instruments, determined to be the most challenging location for sterilization, and biological indicators (BIs) were evaluated for successful sterilization.

Findings: Results of cycle efficacy testing showed that all hinges were sterile at the conclusion of the cycle. Cycle length depended on the amount of time needed for the sterilant gas to be absorbed by the scrubber medium to a safe level. This took between three to eight hours depending on cycle exposure requirements. A few of the cycles with exposure to lower concentrations of NO₂ had surviving BIs, which was attributed to the high density of spores on the BI.

Interpretation: When deployed, NO₂ sterilization technology will have the twin benefits of reducing healthcare acquired infections and limiting a major constraint for access to surgical care on a global scale. Additional benefits are achieved in reducing costs and bio-hazard waste generated by current health care initiatives that rely primarily on disposable kits, increasing the effectiveness and outreach of these initiatives. Next steps will involve testing of the adapted NO₂ form factor for ease of use in the field.

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Abstract #: 02ITIS004

Food fortification as a strategy for alleviating micronutrient deficiencies in low- and middle-income countries: A systematic review

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Background: Currently, the World Health Organization (WHO) estimates that over 2 billion people are deficient in key vitamins and minerals. The majority of these individuals live in low and middle-income countries (LMICs), where resources are scarce and diets are not diversified. Mass food fortification refers to the process whereby one or more essential micronutrients are added during production to a staple food or condiment in order to improve its nutritional quality. This is a safe and effective strategy that has been used to prevent micronutrient deficiencies in developed countries for more than a century. The objectives of the systematic review as a whole are to evaluate the effectiveness of mass food fortification efforts with key micronutrients (iron, folic acid, iodine, vitamin A, calcium, vitamin D or multiple micronutrients) in LMICs, and to describe the various contextual and design factors that contribute towards effective implementation of food fortification programs. This abstract will pertain specifically to the effects of folic acid fortification on neural tube defects.

Methods: Study Design A comprehensive search strategy was formulated and publications systematically retrieved from a total of 15