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Newsletter of the Nigerian Branch of the South African Cochrane Centre

CALABAR INSTITUTE OF TROPICAL DISEASES RESEARCH AND PREVENTION, UNIVERSITY OF CALABAR TEACHING HOSPITAL

ORAL ZINC FOR CHILDHOOD DIARRHOEA

Diarrhoea is defined as a change in the usual stool frequency or consistency in young infants or the passage of three or more loose stools within 24 hours in older children. It is one of the leading causes of under-five morbidity and mortality with an estimated 1.5 billion episodes, 8 million hospitalizations and 1.2 million deaths annually.[1] In Nigeria, diarrhoea disease ranked second on the list of the top 10 priority childhood illnesses.[2] Of the estimated 1.2 million annual under-five diarrhoea deaths, over half occurred in just five countries of which Nigeria is one.[3]

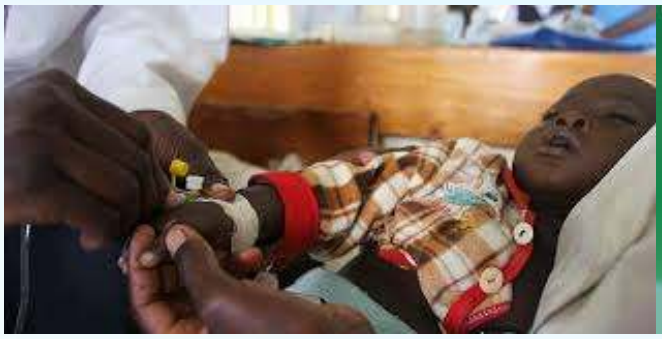
Most cases of childhood diarrhoea occur in developing countries of Africa and Asia with microbial contamination of food and drinks, poor personal and environmental hygiene as risk factors. The burden of the illness in these regions has escalated with the pandemicity of HIV and the high rate of mother-to-child-transmission of the virus in countries of these regions.

Diarrhoea can be classified based on its cause, duration of illness and the presence or absence of visible blood in the stool. Most cases of childhood diarrhoea are caused by viral and bacterial agents, with Rota virus and enterotoxigenic *Escherichia coli* being the most common viral and bacterial pathogens respectively. Diarrhoea without visible blood in the stool, lasting for less than14 days is known as acute watery diarrhoea; it is called persistent diarrhoea if it lasts for 14 days or more and dysentery if it is associated with visible blood.[4]

Diarrhoea deaths in children usually result from diarrhoea-related complications. The most common of which is severe dehydration with shock. Other life-threatening complications are acute renal failure, electrolyte imbalance, convulsions, hypoglycaemia (low blood glucose), septicaemia (bacterial multiplication in blood) and severe malnutrition. The severity of these complications are usually related to the cause of the diarrhoea, volume of fluid loss, age of the child, nature of treatment received at home and in the health facility.

In the bid to reduce the global diarrhoea deaths, the World Health Organization has recommended some cost-effective and sustainable preventive and therapeutic intervention strategies.[4] The preventive strategies include; exclusive breast feeding for the first six months of life, access to safe drinking water, hand washing with soap, improved environmental sanitation, personal and food hygiene, and rotavirus vaccination. The simple therapeutic measures include the use of oral rehydration salt solution, nutritious diet, and professional consultation for children with persistent diarrhoea, signs of dehydration or dysentery.

Recently, the World Health Organization has also recommended the use of oral



zinc for the treatment of diarrhoea disease. Oral zinc acts by modulating host resistance to infectious agents thereby reducing the risk, severity and duration of diarrhoea disease. Since diarrhoea morbidity and mortality depends largely on the volume of fluid and electrolyte loss, the use of oral zinc has a great potential for reducing diarrhoea-related deaths especially in developing countries where mild-to-moderate zinc deficiency in children is already an existing health problem.

Evidence exists from a recent Cochrane Systematic Review to support the use of oral zinc in the management of diarrhoea. The review, which was carried out to evaluate the efficacy of oral zinc supplementation for treating children with acute or persistent diarrhoea, included 24 trials involving 9128 children. It showed that in children six months and above with acute watery diarrhoea, zinc supplementation shortened the duration of diarrhoea by about 10 hours and reduced the number of children whose diarrhoea persisted up to seven days. In children with signs of moderate malnutrition, it was reported to have an even greater effect, reducing the duration of diarrhoea by about 27 hours. The use of zinc was however not encouraged for children below six months of age.[5]

Another Cochrane Systematic Review[6] carried out to assess the effectiveness of interventions to prevent diarrhoea in children with HIV infection or exposure, found that Zinc supplementation reduced the number of physician visits for watery diarrhoea.

With sufficient scientific evidence on the usefulness of oral zinc in the treatment of childhood diarrhoea, effort should be made at country levels to implement its use as a strategy for diarrhoea disease control. Policy-makers and healthcare providers should be enlightened on the importance of this relatively new intervention so as to improve its procurement and prescription to children with diarrhoea disease.

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3. http://www.unicef.org/health/index_43834.html
4. http://www.who.int/mediacentre/factsheets/fs330/en/index.html
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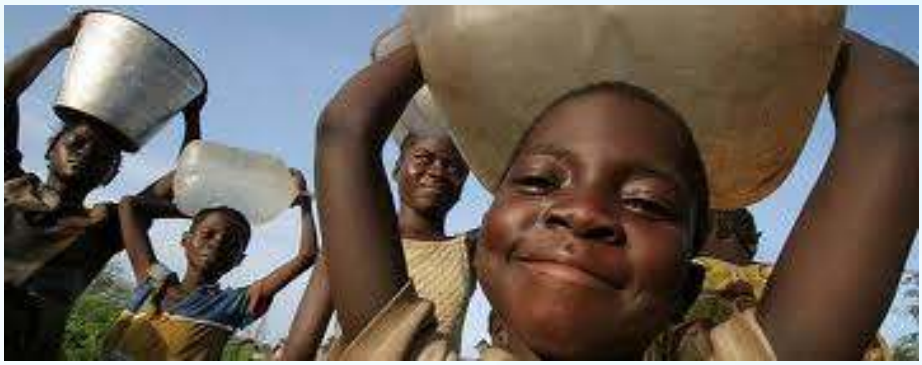
6. Humphreys EH, Smith NM, Azman H, McLeod D, Rutherford GW. Prevention of diarrhoea in children with HIV infection or exposure to maternal HIV infection. Cochrane Database of Systematic Reviews 2010, Issue 6. Art. No.: CD008563. DOI: 10.1002/14651858.CD008563.

EVIDENCE AT YOUR FINGERTIPS

(From the Cochrane Library)

TECHNICAL SUMMARY



Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children

Background

Water, sanitation and hygiene (WASH) interventions such as provision of clean piped drinking water, enhanced facilities for excreta disposal and the promotion of handwashing with soap are frequently implemented to improve health and reduce infectious disease incidence and may be linked to child development outcomes.

Insufficient intake of dietary energy, minerals and vitamins is estimated to be the underlying cause of 45% of all child deaths (approximately 3.1 million deaths per year). Globally, an estimated 26% of children under the age of five years (165 million) suffer from chronic undernutrition manifested as short height for their age (or stunting) and 8% (52 million) suffer from acute undernutrition manifested by extreme thinness or wasting (low weight-for-height); by far the largest numbers of undernourished children live in South Asia and Sub-Saharan Africa). The long-term consequences of chronic undernutrition include reduced school attendance and diminished health and economic potential

There are both direct and indirect causes of undernutrition in children. The two immediate causes of undernutrition are inadequate dietary intake and disease, which interact in a complex manner and manifest as either chronic under-nutrition (stunting) or in acute situations as extreme thinness (wasting). Underlying these immediate causes are a multitude of indirect factors that contribute to nutritional status, such as food security, child-care practices, maternal education, access to health services and water, hygiene and sanitation conditions.

Review Objectives

To evaluate the effect of interventions to improve water quality and supply (adequate quantity to maintain hygiene practices), provide adequate sanitation and promote handwashing with soap, on the nutritional status of children under the age of 18 years and to identify current research gaps.

Main Results

Description of Studies

- Fourteen studies conducted in low and middle income countries were included in the review.
- Participants were children up to 8 years of age (N=22,241 at baseline).
- Seven studies were conducted in rural settings, six in urban settings and one in both rural and urban settings.
- The studies included in the review covered a range of designs including cluster randomized controlled trials, longitudinal studies, cross sectional studies and controlled before and after study,
- Study durations ranged from 6-60 months.

Main Outcomes

- **Weight for age z-score –** No effect of WASH interventions on weight-for-age z-scores was identified in the three non-randomized studies or the meta analysis on data from 5 cluster randomized controlled trials (MD 0.05; 95% CI -0.01 TO 0.12 - 4626 children). Neither did meta-analysis of individual participant data (IPD) from 5386 children (MD 0.10 z-score; 95% CI -0.04 to 0.25) .
- **Weight-for-height z-score** – No effect on weight-for-height z score was reported by the two non -randomized controlled trials that assessed this outcome. Meta-analysis of data from five cluster randomized trials including 4622 children under five identified no evidence of effect of WASH interventions on weight-for-height z scores (MD 0.02; 95% CI -0.07 to 0.11). Neither did IPD meta-analysis including 5375 children (MD 0.10 z-score; 95% CI -0.09 to 0.23).
- **Height-for-age z-score**– Of four non-randomized studies which reported height-for-age z-score data, three reported no effect of WASH interventions while one reported an increase in height-for-age z-score (MD 0.22; 95% CI 0.11 to 0.33). Meta-analysis of data from five cluster randomized controlled trials, including 4627 children under five, which reported height-for-age z-score data, showed a borderline statistically significant effect of WASH interventions on

Evidence At Your Fingertips *(continued)*

height-for-age z-score (MD 0.08; 95% CI 0.00 to 0.16). A statistically significant effect of WASH interventions on height-for-age z-score (MD 0.11 z-score; 95% CI 0.03 to 0.18) was identified by meta-analysis of IPD including 5386 children.

- **Weight and height** were reported in three non randomized studies and five cluster-randomized controlled trials. There was no evidence of an effect of WASH interventions on weight(kg) (MD 0.12; 95% CI -0.03 to 0.27) or height(cm) (MD 0.50; 95% CI -0.10 to 1.10) when meta analysis was conducted on data from the five RCTs involving 4627 children. No statistically significant effect of WASH interventions on weight (MD (MD 0.23; 95% CI -0.02 to 0.49) was identified by meta-analysis of IPD including 5386 children. However there was a statistically significant effect on height (MD 0.53; 95% CI 0.20 to 0.86).
- **Mid Upper arm circumference:** Evidence from the randomized controlled trial (877 children under five) which reported this showed no effect of WASH interventions on mid-upper arm circumference (cm) (MD -0.01; 95% CI -0.17 to 0.15)

Conclusion

- **Implications for Practice:** The review provides evidence that solar disinfection of water, provision of soap, and improvement of water quality may slightly improve height growth, although quality of the evidence is poor and is based on studies of relatively short duration. These results cannot be generalized to other wash interventions.
- **Implications for Research:** The review highlights the need for high quality research on the effect of WASH interventions on the nutritional status of children as well as lack of evidence on long-term adherence to WASH interventions and issues relating to timing and duration of interventions for best outcomes with regard to childhood nutrition.

Dangour AD, Watson L, Cumming O, Boisson S, Che Y, Velleman Y, Cavill S, Allen E, Uauy R. Interventions to improve water quality and supply, sanitation and hygiene practices, and their effects on the nutritional status of children. Cochrane Database of Systematic Reviews 2013, Issue 8. Art. No.: CD009382. DOI: 10.1002/14651858.CD009382.pub2.

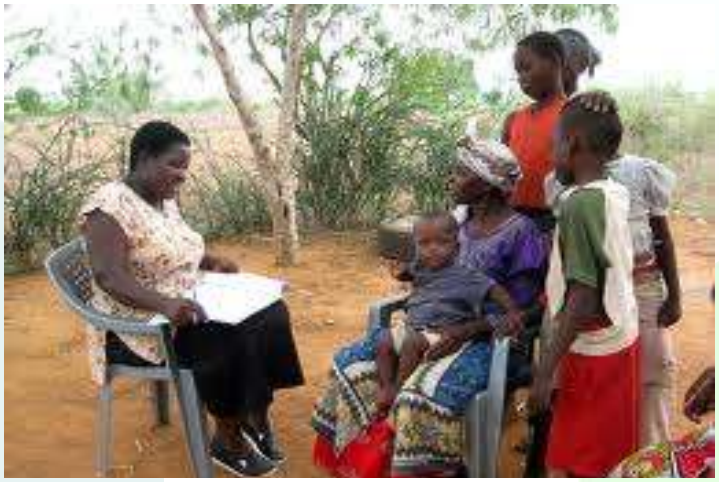
PLAIN LANGUAGE SUMMARIES

FACTORS THAT CAN INFLUENCE THE SUCCESS OF LAY HEALTH WORKER PROGRAMMES FOR MATERNAL AND CHILD HEALTH

This review was carried out by researchers in The Cochrane Collaboration. It summarises the findings of 53 studies that explore factors influencing the success of lay health worker (LHW) programmes for mothers and child health. This review was carried out alongside the Cochrane review assessing the effectiveness of LHW programmes on maternal and child health.

What is a lay health worker?

A LHW is a lay person who has received some training to deliver healthcare services but is not a health professional. In most of the studies in this review, LHWs offered health care to people who were on low incomes living in wealthy countries or to people



living in poor countries. The LHWs in wealthy countries offered health promotion, counselling and support. The LHWs in poor countries offered similar services but they sometimes also distributed food supplements, contraceptives and other products, treated children with common childhood diseases, or managed women in uncomplicated labour.

What the research says

The studies described the experiences of LHWs, mothers, programme managers, and other health workers with LHW programmes. Many of our findings were based on studies from different settings and had some methodological problems. We judged these findings to have moderate certainty. Some findings were only based on one or two studies that had some methodological problems and were judged to be of low certainty.

Mothers were generally positive about the programmes. They appreciated the LHWs' skills and the similarities they saw between themselves and the LHWs. However, some mothers were concerned about confidentiality when receiving home visits. Others saw LHW services as not relevant or not sufficient, particularly when LHWs only offered promotional services. LHWs and mothers emphasised the importance of trust, respect, kindness and empathy. However, LHWs sometimes found it difficult to manage emotional relationships and boundaries with mothers. Some LHWs feared blame if health care was not successful. Others felt demotivated when their services were not appreciated. Support from health systems and community leaders could give LHWs credibility if these health systems and community leaders had authority and respect. Active support from family members was also important.

Health professionals often appreciated the LHWs' contributions to reducing their workload, and their communication skills and commitment. However, some health professionals thought that LHWs added to their own workloads and feared a loss of authority.

LHWs were motivated by altruism, social recognition, knowledge gain and career development. Some unsalaried LHWs wanted regular payment. Others were concerned that payment might threaten their social status or lead people to question their motives. Some salaried LHWs were dissatisfied with their pay levels. Others were frustrated when other LHWs had higher salaries. Some LHWs said that they had few opportunities to voice complaints.

Some LHWs described insufficient, poor quality and irrelevant training programmes. They called for more training in counselling and communication and in topics outside their current role, including common health problems and domestic problems. LHWs and supervisors complained about supervisors' lack of skills, time and transportation. Some LHWs appreciated the opportunity to share experiences with other LHWs.

Some LHWs were traditional birth attendants who had received additional training. Some health professionals were concerned that these LHWs were over-confident about their ability to manage danger signs. LHWs and mothers identified women's reluctance to be referred after bad experiences with health professionals, fear of caesarean sections, lack of transport, and costs. Some LHWs were also reluctant to refer women on because of poor co-operation with health professionals.

We organized these findings into chains of events where we have proposed how certain LHW programme elements might lead to greater programme success.

Authors' conclusions

Rather than being seen as a lesser trained health worker, LHWs represent a different and sometimes preferred type of health worker. The often close relationship between LHWs and their recipients is a strength of such programmes. However, programme planners must consider how to achieve the benefits of closeness while avoiding the problems. It may also be important to offer services that recipients perceive as relevant; to ensure regular and visible support from other health workers and community leaders; and to offer

appropriate training, supervision and incentives.

Glenton C, Colvin CJ, Carlsen B, Swartz A, Lewin S, Noyes J, Rashidian A. Barriers and facilitators to the implementation of lay health worker programmes to improve access to maternal and child health: qualitative evidence synthesis. Cochrane Database of Systematic Reviews 2013, Issue 10. Art. No.: CD010414. DOI: 10.1002/14651858.CD010414.pub2.

MOSQUITO LARVAL SOURCE MANAGEMENT FOR CONTROLLING MALARIA

What is larval source management and how might it work?

Malaria is an infectious disease transmitted from person to person by mosquitoes, and the main interventions insecticide treated bed-nets and indoor residual spraying reduce malaria infection by targeting adult mosquitoes. Larval source management (LSM) also aims to reduce malaria but instead targets immature mosquitoes, which are found in standing water, before they develop into flying adults. This is done by permanently removing standing water, for example by draining or filling land; making temporary changes to mosquito habitats to disrupt breeding, for example by clearing drains to make the water flow; or by adding chemicals, biological larvicides, or natural predators to standing water to kill larvae.

What does the research show?

We examined all the published and unpublished research up to 24 October 2012, and included 13 studies in this review.

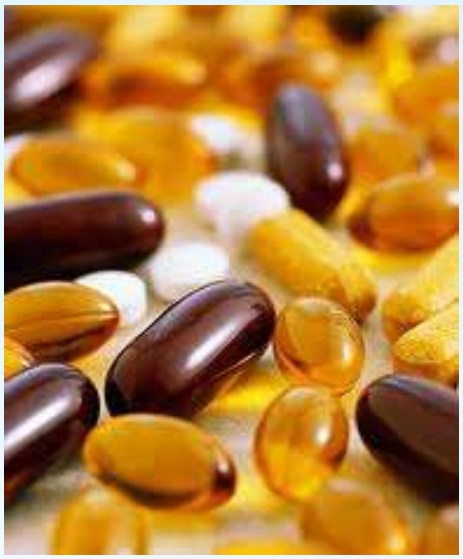
Where larval habitats are not too extensive and a sufficient proportion of these habitats can be targeted, LSM probably reduces the number of people that will develop malaria (moderate quality evidence), and probably reduces the proportion of the population infected with the malaria parasite at any one time (moderate quality evidence).

LSM was shown to be effective in Sri Lanka, India, the Philippines, Greece, Kenya, and Tanzania, where interventions included adding larvicide to abandoned mine pits, streams, irrigation ditches and rice paddies where mosquitos breed, and building dams, flushing streams, and removing water containers from around people's homes.

In one study from The Gambia where mosquitos were breeding in large swamps and rice paddies, spraying swamps with larvicide using ground teams did not show any benefit.

Tusting LS, Thwing J, Sinclair D, Fillinger U, Gimnig J, Bonner KE, Bottomley C, Lindsay SW. Mosquito larval source management for controlling malaria. Cochrane Database of Systematic Reviews 2013, Issue 8. Art. No.: CD008923. DOI: 10.1002/14651858.CD008923.pub2.

MICRONUTRIENT SUPPLEMENTATION FOR CHILDREN WITH HIV INFECTION



This review includes 11 trials that tested the effectiveness and safety of various micronutrient supplements in children with HIV infection in a diversity of settings. All except one trial were conducted in African children. The primary outcomes were mortality, morbidity, and HIV-related hospitalisations, and secondary outcomes were HIV disease progession, measures of growth, and adverse effects of supplementation.

The review found that vitamin A supplements are beneficial and safe, and halved mortality overall in an analysis of three trials in different African countries. Zinc appeared to be safe and reduced diarhoeal morbidity in one trial. Multiple micronutrient supplements reduced the duration of hospital admissions, and improved appetite and short-term growth in poorly nourished hospitalised children.

Further research is needed on single supplements other than vitamin A, and on the long-term effects, optimal composition and dosing of multiple supplements.

Irlam JH, Siegfried N, Visser ME, Rollins NC. Micronutrient supplementation for children with HIV infection. Cochrane Database of Systematic Reviews 2013, Issue 10. Art. No.: Cd010666. DOI: 10.1002/14651858.CD010666.

RECENT EVENTS

Cochrane Systematic Review Workshops

The Nigerian Branch of the South African Cochrane Centre recently held a series of short workshops for medical doctors and research scientists at the Calabar Institute of Tropical Diseases Research and Prevention, University of Calabar Teaching Hospital. A total of thirteen persons attended the workshops. These workshops were devised to enable doctors who have shown interest in doing systematic reviews and who find it easier to devote short chunks of time to systematic review training to attend the workshops. It also enables the trainers to address the topics in more detail.

The facilitators included Dr. Emmanuel Effa (Consultant Nephrologist, University of Calabar Teaching Hospital/Training Coordinator, NBofSACC), Mrs. Olabisi Oduwole (Research Officer, NBofSACC), Mr. Ekpereonne Esu (Lecturer, Department of Public Health, University of Calabar/Research Associate (NBofSACC).

Four mini workshops were organized, which took place on 21st and 28th August, 10th September and 2nd October.

Topics addressed included: Introduction to the Cochrane Collaboration, Defining a review question, Defining search strategy, Selecting Studies, Use of Revman, introduction to Meta analysis among others.

New and Updated Reviews from the Cochrane Library

The following reviews published recently published in the Cochrane Library were authored or co-authored by Nigerians.

Updated Reviews

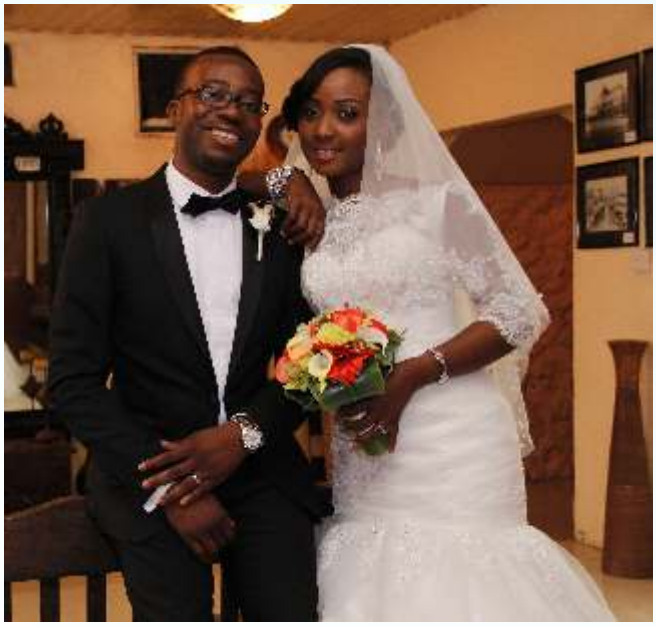
- Hematopoietic stem cell transplantation for people with sickle cell disease *by Chioma Oringanje, Eneida Nemecek, Oluseyi Oniyangi. Issue 3, 2013.*

Other Recent Reviews

- Interventions for the prevention of mycobacterium avium complex in adults and children with HIV by *Muhammed Mubashir B Uthman, Olalekan A Uthman and Ismail Yahaya. Issue 4, 2013*
- Surgical versus non-surgical management of abdominal injury by *Angela Oyo-Ita, Udey G Ugare, Ikpeme A Ikpeme. Issue 11, 2012.*
- Home or community-based programmes for treating Malaria by *Charles I Okwundu, Sukrti Nagpal, Alfred Musekiwa, David Sinclair. Issue 5, 2013.*
- Interventions for HIV-associated nephropathy by *Ismail Yahaya, Olalekan A Uthman, Muhammed Mubashir B Uthman. Issue 1, 2013.*
- Intramuscular versus intravenous anti-D for preventing Rhesus alloimmunization during pregnancy by *Charles I Okwundu, Bosede B Afolabi. Issue 1, 2013.*
- Antipyretic measures for treating fever in malaria by *Martin Meremikwu, Chibuzo C Odigwe, Bridget Akudo Nwagbara, Ekong E Udoh. Issue 9, 2012.*
- Treatments for suppression of lactation by *Olufemi T Oladapo, Bukola Fawole. Issue 9, 2012.*
- Regional versus general anaesthesia for caesarean section by *Bosede B Afolabi, Foluso EA Lesi. Issue 10, 2012.*

ANNOUNCEMENTS

- Issue 10, 2013 is online – The complete issue of Issue 10, 2013 is now online. Please visit www.thecochranelibrary.com
- Wedding Bells: Ekpereonne Esu recently tied the knot with Idara Akpan on 7th September 2013 in a beautiful wedding ceremony. Ekpereonne is a lecturer in the Department of Public Health, University of Calabar and a Research Associate at the Nigerian Branch of the South African Cochrane Centre. We wish them a happy married life!



- New Cochrane Branch: The Malaysian Cochrane Network has recently been approved as a branch of the Australasian Cochrane Centre. The Network, which will have its base at Penang Medical College with several sites around Malaysia, will be overseen by Prof Jackie Ho.
- Online MSc in Research for Public Policy and Practice – The EPPI Centre, Uk is offering an online MSc Research course in Research for Public Policy and Practice. For full details of the course please visit: http://eppi.ioe.ac.uk/MSc
- How can we serve you better - Please feel free to contact us and let us know how we can tailor the *Info Sheet* to better meet your needs. Send your emails to cochranenigeria@yahoo.co.uk

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