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XPERT® MTB/RIF DIAGNOSTIC TEST FOR PULMONARY TUBERCULOSIS AND RIFAMPICIN RESISTANCE

Tuberculosis (TB) is a leading cause of morbidity and mortality worldwide. There were an estimated 8.7 million newly diagnosed cases of TB in 2011 with global mortality of 1.4 million. Of the estimated mortality figure, one million were among HIV negative people while the rest were HIV positive. In addition, tuberculosis is one of the top killers of women worldwide (300 000 deaths among HIV negative women and 200,000 among women who were HIV positive in 2011).¹

Tuberculosis is an air-borne disease caused by the bacterium *Mycobacterium tuberculosis*. Although it most commonly affects the lungs (pulmonary TB), it may also affect other organs or tissue such as the brain or bones (extra-pulmonary TB). The common clinical features of active pulmonary TB are cough (with or without sputum or blood), chest pains, fever, weakness, weight loss and night sweats.²

Prompt diagnosis and effective treatment with anti-TB drugs result in a cure of the disease. Of

the various drugs used in the treatment of TB, isoniazid and rifampicin are the two most important. The major challenges in the fight against TB include the inability to make rapid/accurate diagnosis especially among HIV-positive people, and development of multi-drug resistant strains of the bacterium.

Xpert MTB/RIF is a rapid molecular test endorsed by the World health organization, that can be used to diagnose TB and rifampicin resistance within 100 minutes. A Cochrane systematic review of 18 randomized controlled trials was carried out by Karen R Steingart et al³ to assess the diagnostic accuracy of Xpert for pulmonary TB (as an initial test replacing microscopy or following a smear-negative microscopy result) and detection of rifampicin resistance in adults suspected of having pulmonary TB or multidrug-resistant TB (MDR-TB), with or without HIV infection. The majority of the studies were conducted in low- and middle-income countries. The results



showed that Xpert is sensitive and specific when used as an initial diagnostic test for TB and rifampicin resistance in patients suspected of having TB, MDR-TB, or HIV-associated TB. It is also useful as an additional test for patients with smear-negative microscopy results.

References

1. World Health Organization. Global Tuberculosis Report 2012. WHO/HTM/TB/2012.6. Geneva: World Health Organization, 2012.
2. www.who.int/topics/tuberculosis/en
3. Steingart KR, Sohn H, Schiller I, Kloda LA, Boehme CC, Pai M, Dendukuri N. Xpert® MTB/RIF assay for pulmonary tuberculosis and rifampicin resistance in adults. Cochrane Database of Systematic Reviews 2013, Issue 1. Art. No.: CD009593. DOI: 10.1002/14651858.CD009593.pub2.
4. Source of Image: <http://www.artsenzonderegrenzen.nl/over-ons/nieuwsarchief/epidemie-mdr-tb-nu-aanpakken.aspx>

Evidence At Your Fingertips

(From the Cochrane Library)

TECHNICAL SUMMARY

Background

Zinc deficiency is now regarded as a major public health problem with multiple health consequences, involving the epidermal, gastrointestinal, central nervous, immune, skeletal and reproductive systems.

Zinc deficiency may be particularly relevant to early development because it plays fundamental roles in cell division and maturation, and in the growth and function of many organ systems, including the neurological system. Deficiency of zinc may interfere with these processes and compromise subsequent development. Few studies have investigated zinc deficiency effects on behaviour or brain function of children.

Objective

To assess the effects of zinc supplementation on measures of psychomotor development or cognitive function in children.

Main Results

- Thirteen randomized controlled trials conducted in low, middle and high income countries were included in the study (seven studies in Asia, four in North America, and two in South America).
- Participants were children up to five years of age (at supplementation).
- The interventions

employed in the studies were Zinc supplementation given as zinc sulphate (9 trials), zinc acetate (two trials) and zinc gluconate (two trials).

- Primary outcomes of interest were standardized scores of development in Children, Cognition scores, and Intelligence quotient (IQ) while secondary outcome was adverse effects.
- There was no significant evidence of a beneficial effect of zinc supplementation in infancy and childhood on Mental Development Index (MDI) measured by Bayley Scales of Infant Development (BSID). The MD was -0.50 (95% CI -2.06 to 1.06; $P=0.53$; $I^2=70\%$)
- There was no significant evidence of a beneficial effect of zinc supplementation in infancy and childhood on Psychomotor Development Index (PDI) measured by BSID II (MD 1.54; 95% CI -2.26 to 5.34; $P=0.43$; $I^2=93\%$)
- *Cognition Scores*: No included study used Cognition Scores or IQ as a tool to assess the effect of zinc supplementation on mental and motor development in children

- *Adverse Effects*: No study provided data on adverse effects of zinc supplementation
- In one randomized controlled trial in which 114 children were evaluated with Griffiths Mental Developmental Scale, zinc plus psychosocial stimulation benefited the developmental quotient of children as well as hand and eye coordination. Zinc supplementation alone improved hand and eye coordination.
- *Motor Milestone Attainment*: In two studies that compared motor milestone attainment between treatment and placebo groups, no differences in motor development were observed between the placebo group and treatment groups.

Implications for Practice

There is no convincing evidence that providing zinc supplementation to infants and children below five years of age has a significant benefit on mental or motor development in either developed or developing countries.

Implications for Research

More studies of zinc supplementation in infants and children, with cognitive outcomes

Evidence At Your Fingertips *continued*

(in children two to five years) and assessing IQ (for children more than five years) are needed. These studies should have long-term follow-up to ascertain whether gains from zinc supplementation on mental and motor development are sustainable or not. Studies that address

comorbidity and the interrelationships among micronutrients as well as studies of populations such as low birth weight or stunted children who are at high risk of zinc deficiency are also needed.

Gogia S, Sachdev HS. Zinc supplementation for mental and motor

development in children. Cochrane Database of Systematic Reviews 2012, Issue 12. Art. No.: CD007991. DOI: 10.1002/14651858.CD007991.pub2

PLAIN LANGUAGE SUMMARIES

Antibiotics for non-typhoidal *Salmonella* diarrhoea

Non-typhoidal *Salmonella* (NTS) can cause diarrhoea in people. In this review, we investigated the benefits and safety of antibiotics for treatment of NTS versus placebo or no antibiotic treatment. We found that in otherwise healthy people, treatment with antibiotics did not have any benefit over treatment with no antibiotics. Furthermore, treatment with antibiotics made it more likely that patients would continue to excrete the same organisms for up to one month after treatment. We are unable to comment on the use of antibiotics in very young people, very old people and people who are unable to fight off infection because the trials we identified did not include these patients.

Onwuezobe IA, Oshun PO, Odigwe CC. Antimicrobials for treating symptomatic non-typhoidal Salmonella infection.

Cochrane Database of Systematic Reviews 2012, Issue 11. Art. No.: CD001167. DOI: 10.1002/14651858.CD001167.pub2.

Industry sponsorship and research outcome

Results from clinical studies on drugs and medical devices affect how doctors practice medicine and thereby the treatments offered to patients. However, clinical research is increasingly sponsored by companies that make these products, either because the companies directly perform the studies, or fully or partially fund them. Previous research has found that pharmaceutical industry-sponsored studies tend to favor the sponsors' drugs much more than studies with any other sources of sponsorship. This suggests that industry sponsored studies are biased in favor of the sponsor's products.

This review is an update of a

previous review on this topic that looked only at drug studies. It uses more rigorous methodology and also investigates sponsorship of medical device studies. The primary aim of the review was to find out whether the published results and overall conclusions of industry sponsored drug and device studies were more likely to favor the sponsors' products, compared with studies with other sources of sponsorship. The secondary aim was to find out whether such industry sponsored studies used methods that increase the risk of bias, again compared with studies with other sources of sponsorship. We did a comprehensive search of all relevant papers published before September 2010 and included 48 papers in our review.

Industry sponsored drug and device studies more often had favorable efficacy results, (risk ratio (RR): 1.24, 95% confidence interval (CI): 1.14 to 1.35), harms

results (RR: 1.87, 95% CI: 1.54 to 2.27) and overall conclusions (RR: 1.31, 95% CI: 1.20 to 1.44), compared with non-industry sponsored drug and device studies. We did not find a difference between industry and non-industry sponsored studies with respect to standard factors that may increase the risk of bias, except for blinding: industry sponsored studies reported satisfactory blinding more often than non-industry sponsored studies. We did not find a difference between drug and device studies on the association between sponsorship and conclusions. In industry sponsored studies, there was less agreement between the results and the conclusions than in non-industry sponsored studies, RR: 0.84 (95% CI: 0.70 to 1.01). Our analysis suggests that industry sponsored drug and device studies are more often favorable to the sponsor's products than non-industry sponsored drug and device studies due to biases that cannot be explained by standard 'Risk of bias' assessment tools.

Lundh A, Sismondo S, Lexchin J, Busuioc OA, Bero L. Industry sponsorship and research outcome. Cochrane Database of Systematic Reviews 2012, Issue 12. Art. No.: MR000033. DOI: 10.1002/14651858.MR000033.pub2.

Green tea for weight loss and weight maintenance in overweight or obese adults

Green tea has a long history of many uses, one of which is helping overweight people to lose weight and to maintain weight loss. Believed to be able to increase a person's energy output, green tea weight loss preparations are extracts of green tea that contain a higher concentration of ingredients (catechins and caffeine) than the typical green tea beverage prepared from a tea bag and boiling water. This review looked at 15 weight loss studies and three studies measuring weight maintenance where some form of a green tea preparation was given to one group and results compared to a group receiving a control. Neither group knew whether they were receiving the green tea preparation or the control. A total of 1945 participants completed the studies, ranging in length from 12 to 13 weeks. In summary, the loss in weight in adults who had taken a green tea preparation was statistically not significant, was very small and is not likely to be clinically important. Similar results were found in studies that used other ways to measure loss in weight (body mass index, waist circumference). Studies examining the effect of green tea

preparations on weight maintenance did not show any benefit compared to the use of a control preparation.

Most adverse effects, such as nausea, constipation, abdominal discomfort and increased blood pressure, were judged to be mild to moderate and to be unrelated to the green tea or control intervention. No deaths were reported, although adverse events required hospitalisation. One study attempted to look at health-related quality of life by asking participants about their attitudes towards eating. Nine studies tracked participants' compliance with green tea preparations. Studies did not include any information about the effects of green tea preparations on morbidity, costs or patient satisfaction.

Jurgens TM, Whelan AM, Killian L, Doucette S, Kirk S, Foy E. Green tea for weight loss and weight maintenance in overweight or obese adults. Cochrane Database of Systematic Reviews 2012, Issue 12. Art. No.: CD008650. DOI: 10.1002/14651858.CD008650.pub2.

Medical Library Association of Nigeria Workshop on Evidence Based Medicine for the Millennium Development Goals

Members of the Medical Library Association of Nigeria (MLA-NG) recently convened in Calabar, Cross River State Nigeria for a week long of activities from 25-30th November 2012. These activities included a two-day workshop on Evidence Based Medicine (EBM) for the Millennium Development Goals and their annual General Meeting. The workshop was organized by the Medical Library Association of Nigeria in collaboration with Medical Library Association of USA (MLA), College of Medical Sciences, University of Calabar, University of Calabar Teaching Hospital (UCTH) and Elsevier ScienceDirect Publishers. The theme of the workshop was 'Evidence-Based Medicine for the Millennium Development Goals' and it took place on 27-28 November 2012 at the Conference Hall of UCTH. The workshop began with an opening ceremony which was attended by Dr. Thomas Agan, (Chief Medical Director, UCTH), Dr. Queeneth Kalu (Chairman Medical Advisory Committee, UCTH), Professor Saturday Etuk (Provost, College of Medical Sciences, University of Calabar) and other dignitaries of the UCTH. Professor Martin Meremikwu (Director, Nigerian Branch of the South African Cochrane Centre) presented the keynote address, which was titled 'Evidence-Based Medicine for the Millennium

Development Goals'.

Following the opening ceremony and on the second day of the workshop, lectures and presentations relating to the theme of the workshop were made by a number of speakers. Prof. Meremikwu was a key speaker and took two sessions on 'Evidence Based Databases' and 'Internet-Based EBM Resources'. The sessions included hands-on practice in developing a research question and searching evidence-based databases such as HINARI and Pubmed.

The Nigerian Branch of the South African Cochrane Centre, mounted a conference stand/help desk at the workshop which was visited by 42 of the participants. The participants included a



Professor Martin Meremikwu making a presentation at the Medical Librarian's Conference



Officials of the UCTH, College of Medical Sciences and the MLA-NG at the high table



Participants during a practical group session

diverse mix of people from various states of Nigeria. Most of the participants were medical librarians. The workshop was timely as EBM and e-resources are emerging as topical issues amongst medical professionals in Nigeria.

The following new and updated reviews, published in the Cochrane Library between November 2012 and January 2013 were authored or co-authored by Nigerians.

New Reviews

- Surgical versus non-surgical management of abdominal injury by *Angela Oyo-Ita, Udey G Ugare, Ikpeme A Ikpeme*. Issue 11, 2012.
- Interventions for HIV-associated nephropathy by *Ismail Yahaya, Olalekan A Uthman, Muhammed Mubashir B Uthman*. Issue 1, 2013.

Updated Reviews

- Antimicrobials for treating symptomatic non-typhoidal *Salmonella* infection by *Ifeanyi A Onwuezobe, Philip O Oshun, Chibuzo C Odigwe*. Issue 11, 2012.
- Gene therapy for sickle cell disease by *Abiola Olowoyeye, Charles I Okwundu*. Issue 11, 2012.

Other Recent Reviews

- 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 *Bosedede B Afolabi, Foluso EA Lesi*. Issue 10, 2012.

ANNOUNCEMENTS

- Follow us on Facebook and Twitter – The Nigerian Branch of the South African Cochrane Centre is now on Facebook and Twitter. Follow us on Facebook: CochraneNigeria Branch Sacc
Twitter: @cochranenigeria
 - 21st Annual Cochrane Colloquium - The 21st Annual Cochrane Colloquium will be coming up from 19-23 September 2013 in Quebec, Canada. For more information, please visit the Colloquium website: <http://colloquium.cochrane.org/>
 - 2013 Cochrane Colloquium - Call for Abstracts
- Abstracts for poster and oral presentations are invited for the 21st Cochrane Colloquium in areas relevant to the work of The Cochrane Collaboration, systematic review methods, evidence-based health care and knowledge translation.
- Deadline for Abstract Submission: Thursday 4 April 2013.
- Note: Abstracts must be submitted using the online submission form.
- For more information on submission process please visit:* <http://colloquium.cochrane.org/call-abstracts>
- African Cochrane Indaba - The South African Cochrane Centre will be holding an African Cochrane Indaba to mark its 15th Anniversary.
Theme: Global Evidence Local Application
Date: 6-8 May 2013
Website: <http://www.mrc.ac.za/conference/aci/index.htm>
 - 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

ABOUT THE NIGERIAN BRANCH OF THE SOUTH AFRICAN COCHRANE CENTRE

The Cochrane Collaboration is an international not-for-profit organization which is dedicated to making up-to-date information about the effects of health care interventions readily available worldwide by preparing, maintaining and disseminating systematic reviews of health care interventions. The Collaboration carries out its regional activities through 14 Centres and 15 Branches strategically located in different countries all over the World. The Nigerian Branch of the South African Cochrane Centre oversees the activities of the Cochrane Collaboration in Nigeria and West Africa.

Our Mission:

To promote evidence based health care practice and policy in Nigeria and the work of the Cochrane Collaboration.

Our Objectives

- ◆ Providing support to Cochrane Review Authors
- ◆ Promoting access to Cochrane Reviews and derivative products
- ◆ Promoting evidence-based practice and policy in the African Region
- ◆ Promoting the science of research synthesis
- ◆ Promoting optimal functioning and sustainable growth of the Cochrane Collaboration

Our Work

The Core functions of the Nigerian Branch of the South African Cochrane Centre are the provision of training and support, conducting Systematic Reviews, promoting the use of the Cochrane Library.

Getting Involved

You can become involved in the work of the Cochrane Collaboration as a **Review Author, Editor, Consumer representative, Methodology expert** and a number of other ways.

Cochrane Systematic Reviews are internationally recognized publications and are the gold standard for Reviews all over the World. The 2010 impact factor for the Cochrane Database of Systematic Reviews was as high as 6.186

Contact Us

Are you interested in being involved as a Review Author or finding out more about us?

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