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## STRATEGIES TO INCREASE THE OWNERSHIP AND USE OF INSECTICIDE TREATED BEDNETS TO PREVENT MALARIA



Malaria is a life-threatening illness caused by parasites which are transmitted by female anopheles mosquitoes. In 2013, there were approximately 198 million cases of malaria and 584,000 deaths globally.<sup>1</sup> Most of these deaths occurred in Africa and in children under five years of age. In countries where malaria is

endemic, the burden of the disease is borne disproportionately by the poor and marginalized who lack the resources for effective prevention, diagnosis and treatment.

The World Health Organization recommends three major strategies for the control of malaria: effective diagnosis and treatment of malaria, indoor residual spraying and use of insecticide treated bednets.<sup>2</sup> 'An insecticide-treated net (ITN) is a mosquito net that repels, disables and/or kills mosquitoes coming into contact with insecticide on the netting material'.<sup>2</sup> There are two types of insecticide treated bednets: conventionally treated nets and long-lasting insecticidal nets. In sub-Saharan Africa, ITNs have been shown to reduce rates of malaria mortality in children under five years of age by up to 55%.

Data from surveys conducted between 1999 and 2004 reveal that only about 3% of children under five were sleeping under ITNs.<sup>1</sup> By 2013, however, through subsidization and free distribution of ITNs, ownership of at least one ITN had increased to 49 per cent of households and 44% of children were sleeping under an ITN. There is therefore a need to evaluate and develop strategies, to improve ownership and use of ITNs.



A Cochrane Review<sup>3</sup> was conducted to evaluate the effectiveness of strategies to increase the ownership and use of insecticide-treated bed nets. Ten studies conducted in Africa and India were included in the review. Five studies assessed the impact of distribution of free ITNs compared to subsidizing the cost of the nets or provision of nets at full market price. Overall, the studies found that provision of free ITNs probably increases number of people who own ITNs but has little or no effect on actual use of ITNs.

The impact of educational interventions such as malaria education (provided orally, through interactive sessions, printed materials, plays, demonstrations and delivered through house-to-house visits, microfinance associations and in communities), on the appropriate use of ITNs was assessed by five studies. The results of the review showed that educational interventions may increase use of ITNs by children and adults although most of the evidence from all the studies that assessed educational interventions was of low or moderate certainty.

In one study, in addition to provision of insecticide treated nets and education, participants in the intervention group were promised an undisclosed prize (incentive) if they complied with appropriate use of the ITNs. The results showed little or no difference in the use of ITNs in those who were promised incentives.

Overall, the incorporation of educational interventions into malaria control programmes to promote the use of ITNs may be useful. Provision of free ITNs alone may not lead to increase in appropriate use of ITNs even though it may lead to increased ownership. In addition to the provision of free or subsidized ITNs, other strategies such as educational interventions are probably needed, to promote the appropriate use of ITNs. However, the impact of different types or intensities of education is unknown.

#### References

1. World Health Organization. (2014). World Malaria Report 2014. Geneva, Switzerland: World Health Organization.
2. World Health Organization. (2011). Insecticide-treated mosquito nets: a WHO position statement. Global malaria programme.
3. Augustincic Polec L, Petkovic J, Welch V, Ueffing E, Tanjong Ghogomu E, Pardo Pardo J, Grabowsky M, Attaran A, Wells GA, Tugwell P. Strategies to increase the ownership and use of insecticide-treated bednets to prevent malaria. *Cochrane Database of Systematic Reviews* 2015, Issue 3. Art. No.: CD009186. DOI: 10.1002/14651858.CD009186.pub2.

# EVIDENCE AT YOUR FINGERTIPS

(From the Cochrane Library)

## TECHNICAL SUMMARY



## Vaccines for women for preventing neonatal tetanus

### Background

Neonatal tetanus is a form of generalised tetanus that occurs in newborn infants born to mothers who do not have sufficient circulating antibodies to protect the infant passively by transplacental transfer. It usually occurs through infection of the unhealed umbilical stump, particularly when the stump is cut with an unsterile instrument.

As of March 2015, neonatal tetanus remained a major public health problem (i.e. with an incidence rate of at least one neonatal tetanus case per 1000 live births at district level) in 23 countries.

The disease causing organism responsible for tetanus, *Clostridium tetani*, cannot be eradicated because it is ubiquitous

in the environment. Control of the disease, therefore, is mainly by prevention of infection. Current strategies for elimination of neonatal tetanus include:

1. Strengthening routine immunisation of pregnant women with tetanus toxoid vaccine.
2. Supplementary immunisation activities in selected high-risk areas.
3. Promotion of clean deliveries and clean cord care practices.
4. Reliable neonatal tetanus surveillance including case investigation and response.

Tetanus toxoid has been regarded as safe and useful. Immunization of mothers with tetanus toxoid causes transfer of antibodies transplacentally to the fetus.

### Objectives

1. To assess the effectiveness of

vaccination administered to women of reproductive age, or pregnant women, in preventing cases of neonatal tetanus.

2. To assess the effectiveness of vaccines in avoiding deaths from neonatal tetanus.
3. To estimate the frequency of adverse effects associated with tetanus toxoid vaccination in pregnancy or in women of reproductive age.

### Main Results

- The review included three studies: Two effectiveness studies and one safety trial. One of the studies was a randomized controlled trial conducted in Columbia, one was a quasi randomized controlled trial carried out in Bangladesh and the third was a randomized cross over trial which was conducted in USA.
- A total of 9871 births were considered in the three studies.
- The interventions were aluminium phosphate adsorbed tetanus toxoid (10LF) against polyvalent influenza vaccine in one study; adsorbed tetanus-diphtheria toxoid against cholera toxoid in the second study and Tetanus Diphtheria acellular Pertussis vaccine (Tdap) versus saline placebo in the third study (safely trial).
- The primary outcomes of interest were: Neonatal tetanus cases, neonatal mortality (deaths from neonatal tetanus; all causes) and serious harms. Secondary outcomes were systemic adverse effects and local adverse effects.



- **Tetanus toxoid versus influenza vaccine:**

*Neonatal tetanus deaths:* The effectiveness of tetanus toxoid in preventing neonatal tetanus deaths after a single-dose of vaccination or after two to three doses were considered; the risk ratio (RR) of neonatal tetanus deaths after a single dose vaccination was 0.57 (95% confidence interval (CI) 0.26 to 1.24; 494 births; *low-quality evidence*). After a two- or three-dose the RR of death was 0.02 (95% CI 0.00 to 0.30; 688 births; *moderate quality evidence*). For the total of 1182 births, independent of number of doses received, average RR was 0.12 (95% CI 0.00 to 7.88; *moderate quality evidence*).

*All causes of death:* No significant effect was observed on deaths from all causes after one dose of vaccine (RR 1.08 (95% CI 0.65 to 1.79; 494 infants). However, with two or three doses of tetanus toxoid a significant effect was observed (RR 0.31; 95% CI 0.17 to 0.55; 688 infants). No significant effect was observed for the entire study population (average RR 0.58; 95% CI 0.17 to 1.99; 1182 infants).

*Tetanus cases:* When the effects of at least a single dose of tetanus toxoid on cases of neonatal tetanus for the total of 1182 births was assessed, the RR was 0.20 (95% CI 0.10 to 0.40).

*Non pre-specified outcomes:* Death from non-neonatal tetanus causes.

No effects was detected on causes of death other than tetanus after one dose of tetanus toxoid (RR 2.14, 95% CI 0.97 to 4.76; 494 infants), or after two or three doses (RR 0.75, 95% CI 0.38 to 1.47; 688 infants), The average RR for the total population was 1.24 (95% CI 0.44 to 3.47; 1182 infants),

- **Tetanus diphtheria toxoid versus cholera toxoid:**

*Neonatal Mortality:* The effectiveness of tetanus-diphtheria toxoid in comparison with cholera toxoid in preventing neonatal mortality was assessed. One or two doses of tetanus diphtheria toxoid reduced neonatal mortality (RR 0.68, 95% CI 0.56 to 0.82, 8641 children). At four to 14 days neonatal mortality was also reduced in the tetanus-diphtheria toxoid group (RR 0.38, 95% CI 0.27 to 0.55, 8641 children) low quality evidence.

- **Tetanus diphtheria acellular pertussis vaccine versus placebo**

The serious adverse events observed in mothers and children were not attributable to the effect of the vaccination. However women immunized with Tetanus diphtheria acellular pertussis vaccine reported pain at injection site more frequently than those who received placebo (RR 5.68, 95% CI 1.54 to 20.94).

## Conclusion

### Implications for practice

The available evidence supports immunisation with tetanus toxoid in communities with similar, or higher levels of risk of neonatal tetanus.

More research is needed on factors that may have a negative impact on the immunisation practice and on the effectiveness of interventions implemented in order to improve the performance of the campaign.

Demicheli V, Barale A, Rivetti A. Vaccines for women for preventing neonatal tetanus. *Cochrane Database of Systematic Reviews* 2015, Issue 7. Art. No.: CD002959. DOI: 10.1002/14651858.CD002959.pub4.

# PLAIN LANGUAGE SUMMARIES

## Hand washing promotion for preventing diarrhoea

### Review question

This Cochrane Review summarises trials evaluating the effects of promoting hand washing on the incidence of diarrhoea among children and adults in day-care centres, schools, communities, or hospitals. After searching for relevant trials up to 27 May 2015, we included 22 randomized controlled trials conducted in both high-income countries (HICs) and low- and middle-income countries (LMICs). These trials enrolled 69,309 children and 148 adults.

### How does hand washing prevent diarrhoea and how might hand washing be promoted

Diarrhoea causes many deaths in children below five years of age, mostly in LMICs. The organisms causing diarrhoea are transmitted from person to person through food and water contaminated with faeces, or through person-to-person contact. Hand washing after defecation, or after cleaning a baby's bottom, and before preparing and eating food, can therefore reduce the risk of diarrhoea. Hand washing can be promoted through group or individual training on hygiene education, germ-health awareness, use of posters, leaflets, comic books, songs, and drama.

### What this review says

Hand washing promotion at child day-care facilities or schools in HICs probably prevents around

30% of diarrhoea episodes (*high quality evidence*), and may prevent a similar proportion in schools in LMICs (*low quality evidence*). Among communities in LMICs hand washing promotion prevents around 28% of diarrhoea episodes (*moderate quality evidence*). In the only hospital-based trial included in this review, hand washing promotion also had important reduction in the mean episodes of diarrhoea (*moderate quality evidence*). This is based on only a single trial with few participants and thus there is need for more trials to confirm this. Effects of hand washing promotion on related hand hygiene behaviour changes improved more in the intervention groups than in the control in all the settings (*low to high quality evidence*). None of the included trials assessed the effect of handwashing promotion on diarrhoeal-related deaths, all-cause under-five mortality, or the cost-effectiveness of hand washing promotions.

### Conclusion

Hand washing promotion in HICs and LMICs settings may reduce incidence of diarrhoea by about 30%. However, less is known about how to help people maintain hand washing habits in the longer term.

Ejemot-Nwadiaro RI, Ehiri JE, Arikpo D, Meremikwu MM, Critchley JA. Hand washing promotion for preventing diarrhoea. *Cochrane Database of Systematic Reviews* 2015, Issue 9. Art. No.: CD004265. DOI: 10.1002/14651858.CD004265.pub3.

## Use of Corticosteroids for treatment of the Newborn with Bacterial Meningitis

**Review question:** Does use of adjuvant corticosteroids in neonates with bacterial meningitis reduce the risk of death and the possibility of neurodevelopmental sequelae?

**Background:** Neonatal meningitis is a common cause of death and long-term disability among children everywhere, particularly in developing countries. In this review, we investigated the benefits and safety of adjunctive corticosteroids in the treatment of neonatal meningitis.

**Study characteristics:** We identified two studies for inclusion.

**Results:** We found that giving steroids to babies affected with meningitis may reduce the number of children who would die or become deaf from the disease. However, most of this benefit was observed in only one trial. As of now, it appears as though steroids are not helpful with regard to preventing developmental delay. We are not able to make far reaching conclusions at this time, as the evidence that we found is limited and of low quality and could change if more results from larger and better designed studies become available.

Ogunlesi TA, Odigwe CC, Oladapo OT. Adjuvant corticosteroids for reducing death in neonatal bacterial meningitis. *Cochrane Database of Systematic Reviews* 2015, Issue 11. Art. No.: CD010435. DOI: 10.1002/14651858.CD010435.pub2.

## RECENT EVENTS

### Cochrane Review Completion and Update Course

Cochrane Nigeria recently held a Review completion and Update Course for Nigerian Authors. The primary aim of the course was to assist authors who are trying to complete their reviews or who are updating their reviews by providing them with dedicated time and technical support.

Five participants attended the workshop: Mrs. Dachi Arikpo, Dr. Daniel Odebiyi, Dr. Atim Udoh, Mr. Nuria Nwachukwu and Miss Obiamaka Okafo. The workshops comprised of a few presentations, but mostly dedicated time to work on the reviews with assistance from trained facilitators. The facilitators were Dr. Emmanuel Effa (Consultant Nephrologist, University of Calabar), Dr. Ekong

Udoh (Consultant Paediatrician, University of Uyo), Dr. Friday Odey (Consultant Paediatrician, University of Calabar), Mr. Esu (Lecturer, Department of Public Health, University of Calabar) and Mrs. Olabisi Oduwole (Research Officer, Cochrane Nigeria). The participants found the workshop useful.



Group Photo of participants and resource persons  
L-R- Front Row: Dr. Ekong Udoh, Dr. Emmanuel Effa, Dr. Atim Udoh, Dr. Daniel Odebiyi.  
Back Row: Mr. Ekpereonne Esu, Mrs. Olabisi Oduwole, Mrs. Dachi Arikpo, Mr. Nuria Nwachukwu



One of the participants (Dr. Odebiyi) expressing how useful the workshop was



Dr. Effa facilitating a session



### New and Updated Reviews from the Cochrane Library

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

#### NEW REVIEWS

- Palliative interventions for controlling vaginal bleeding in advanced cervical cancer **by** George U Eleje , Ahizechukwu C Eke , Gabriel O Igberase , Anthony O Igwegbe and Lydia I Eleje. Issue 5, 2015.
- Methods for assessing pre-induction cervical

ripening **by** Ifeanyichukwu U Ezebialu, Ahizechukwu C Eke, George U Eleje and Chukwuemeka E Nwachukwu. Issue 6, 2015.

- A d j u v a n t corticosteroids for reducing death in neonatal bacterial meningitis **by** Tinuade A

Ogunlesi , Chibuzo C Odigwe and Olufemi T Oladapo. Issue 11, 2015.

- Topical antifungals for seborrhoeic dermatitis **by** Enembe O Okokon , Jos H Verbeek , Jani H Ruotsalainen , Olumuyiwa A Ojo and Victor Nyange Bakhoya Issue 5, 2015.

### Updated Reviews

- Surgical versus non-surgical management of abdominal injury **by Angela Oyo-Ita, Paul Chinnock and Ikpeme A Ikpeme**. Issue 11, 2015.
- Hand washing promotion for preventing diarrhoea **by Regina I Ejemot-Nwadiaro, John E Ehiri, Dachi Arikpo, Martin M Meremikwu and Julia A Critchley**. Issue 9, 2015.
- Peribulbar versus retrobulbar anaesthesia for cataract surgery **by Mahmoud B Alhassan, Fatima Kyari and Henry ODEjere**. Issue 7, 2015.
- Vaccines for preventing invasive salmonella infections in people with sickle cell disease **by Friday Odey, Uduak Okomo and Angela Oyo-**

*Ita*. Issue 6, 2015.

- Phyto medicines (medicines derived from plants) for sickle cell disease **by Oluseyi Oniyangi and Damian H Cohall**. Issue 4, 2015.

### Other Recent Reviews

- Antibiotic prophylaxis during the second and third trimester to reduce adverse pregnancy outcomes and morbidity **by Jadsada Thinkhamrop, G Justus Hofmeyr, Olalekan Adetoro, Pisake Lumbiganon and Erika Ota**. Issue 1, 2015.
- **Honey for acute cough in children** **by Olabisi Oduwole, Martin M Meremikwu, Angela Oyo-Ita, and Ekong E Udoh**. Issue 12, 2014.
- Artemether for severe malaria **by Ekpereonne**

*Esu, Emmanuel E Effa, Oko N Opie, Amirahobu Uwaoma and Martin M Meremikwu*. Issue 9, 2014.

- Immediate postabortal insertion of intrauterine devices. *Babasola O Okusanya, Olabisi Oduwole and Emmanuel E Effa*. Issue 7, 2014.
- Extra fluids for breastfeeding mothers for increasing milk production **by Chizoma M Ndikom, Bukola Fawole and Roslyn E llesanmi**. Issue 6, 2014.
- Anticoagulation therapy versus placebo for pulmonary hypertension **by Ifeanyi R Ezedunukwe, Hilary Enuh, Jay Nfonoyim**

## ANNOUNCEMENTS

**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](mailto:cochranenigeria@yahoo.co.uk)

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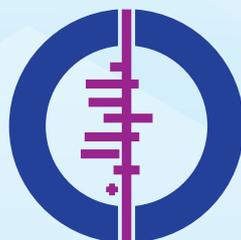
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