

Common tuberculosis vaccine can be used to prevent infection as well as disease

August 5 2014

The vaccine used to protect against tuberculosis disease (bacillus calmette-guerin or BCG) also protects against tuberculosis infection (mycobacterium) as well as protecting against progression from infection to disease, finds a paper published in the *BMJ* today.

The BCG vaccine has been subject to numerous trials and studies over several decades, which have shown that it has a 60-80% protective efficacy against severe forms of tuberculosis (TB) in children.

But there is a lack of evidence on whether the vaccine is effective against TB infection. The authors say if BCG is found to protect against infection it will have key implications for the use of BCG in current immunisation programmes, as well as in the future development of new improved TB vaccines.

Researchers from the UK assessed the evidence as to whether BCG protects against infection as well as disease.

Data from studies was taken from Embase, Medline and the Cochrane Library from 1950 – 2013. All patients were under 16 years of age and studies included both BCG vaccinated and unvaccinated children.

Primary analysis focused on whether the BCG vaccine administered prior to exposure was associated with no infection in children who had contact with infectious TB.

The analysis included studies of children who were screened as part of a TB outbreak investigation, referred to hospital as close contacts of those with TB, household contacts of an infectious adult or contacts in other settings. Four studies were from the UK, two each in The Gambia and Spain and one each in Greece, Italy, Indonesia, Turkey, South Africa and Cambodia. BCG vaccination was assessed by BCG scar, confirmed medical records or parental recall.

There were 3855 participants in total, with an overall risk ratio of 19% effectiveness of the BCG vaccine against [infection](#), among vaccinated children after exposure, compared with unvaccinated children.

Interestingly, studies conducted above 40° latitude (UK, Spain, Greece, Italy, Turkey) showed a 26% effectiveness while studies at lower latitudes 20-40° (The Gambia, Indonesia, South Africa and Cambodia) and 20-0° latitude showed no evidence of protective effect.

In conclusion, lead researcher Ibrahim Abubakar from University College London, says that the effect of the BCG vaccination would be different for high versus low tuberculosis incidence countries. They add that due to countries with a policy of vaccination at birth tending to have higher incidence of TB, the "use of BCG is sensible". They recommend that future trials need to investigate the efficacy of the new [vaccine](#) against [tuberculosis infection](#).

More information: Effect of BCG vaccination against *Mycobacterium tuberculosis* infection in children: systematic review and meta-analysis, *BMJ*, 2014.

Provided by British Medical Journal

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