

Immunogenicity and seroefficacy of pneumococcal conjugate vaccines: a systematic review and network meta-analysis

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Plain language summary

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Plain language summary

Pneumococcal disease is a serious illness caused by a bacterial infection that can result in death. Children in the United Kingdom receive a vaccine to prevent this disease that protects against 13 different types of pneumococcal diseases. It is very effective, but other vaccines are also available, such as one that contains 10 types of pneumococcal diseases. Vaccines in the United Kingdom are bought by the government and the choice of which vaccine to provide is based on the cost of the vaccine as well as the benefits to our health. However, there is very little information comparing different vaccines and it is often assumed they are the same.

We did a large analysis combining all studies of the two main licensed pneumococcal vaccines to determine which vaccine provides better protection against infection and how this affects costs. We used information from studies published in medical journals, and also data from studies done by the companies that own the vaccines.

Our results showed that pneumococcal conjugate vaccine-13 vaccine provided better protection than pneumococcal conjugate vaccine-10 for 5 of the 10 serotypes that are contained in both vaccines. When we used these results to model what might have happened had either of these vaccines been introduced into the United Kingdom vaccination programme in 2006, we found that both vaccines caused a rapid decrease in the amount of disease, but that the decrease in disease was faster with pneumococcal conjugate vaccine-13 than pneumococcal conjugate vaccine-10. This resulted in 2808 cases of diseases prevented over a 25-year time frame with pneumococcal conjugate vaccine-13 compared with pneumococcal conjugate vaccine-10.

Our methods can be used to compare other vaccines and we recommend this type of study be done in future when making decisions on vaccine product choice.

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