

Evidence Update

Summary of a Cochrane Review

Sickle Cell and Child Health Series

In children with sickle cell disease, does penicillin prevent pneumococcal infection?

Penicillin prophylaxis can prevent pneumococcal infections in children under the age of five years with sickle cell disease.

Background

Young children with sickle cell disease are particularly susceptible to respiratory infections and septicaemia.

Inclusion criteria

Studies:

Randomized controlled trials.

Participants:

Children with sickle cell disease, sickle cell beta thalassaemia, and sickle cell haemoglobin C disease.

Intervention:

Intervention: antibiotics given to prevent infection.
Control: placebo, no treatment, or a different treatment

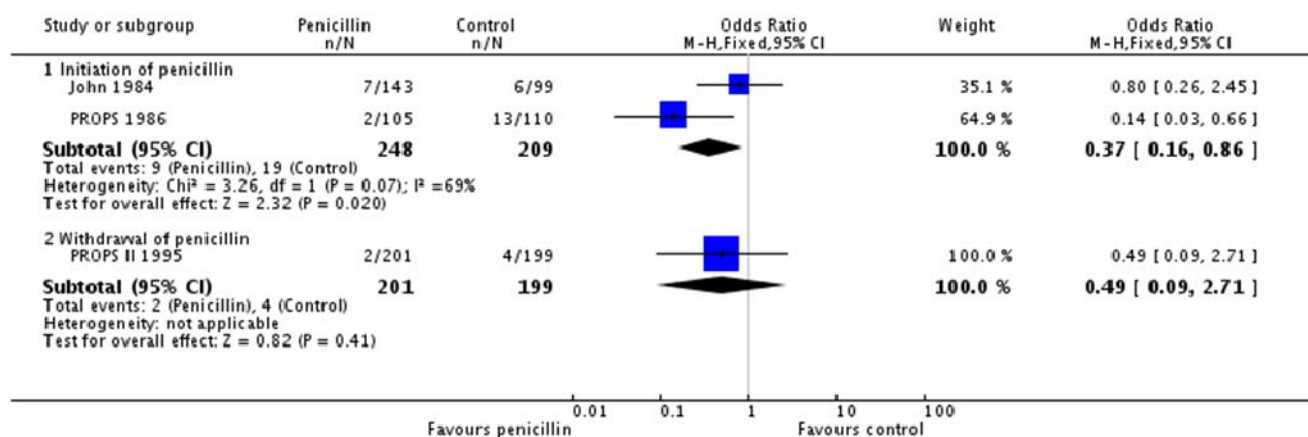
Outcomes:

Streptococcus pneumonia infection, antibiotic drug resistant organisms isolated, adverse effects.

Results

- Three trials involving 857 children were included; one conducted in Jamaica and two in the USA. One trial had adequate allocation concealment.
- Twice daily oral penicillin resulted in less pneumococcal infections compared to no treatment in children aged three months to three years on one small trial (odds ratio 0.14, 95% confidence interval 0.03 to 0.66; 215 participants).
- With monthly penicillin, intention-to-treat analysis showed no significant difference in pneumococcal infections compared to a control in one small trial (242 children); however, all infections in the intervention groups occurred after injections were stopped at the age of three years.
- After stopping treatment at five years, there was no difference detected in pneumococcal infections between those allocated to penicillin or placebo groups in one trial (400 children). Penicillin resistant bacteria were detected in both penicillin and placebo groups.
- Adverse drug effects for oral and injected penicillin were rare and minor.

Penicillin prophylaxis vs standard care: cases of pneumococcal infection



Authors' conclusions

Implications for practice:

Penicillin prophylaxis can prevent pneumococcal infections in children under the age of five years with sickle cell disease. It appears safe and well tolerated.

Implications for research:

Further research into the prevalence and clinical importance of resistant organisms is needed.