Position statement on the use of paracetamol around the time of immunisation

The Immunisation Advisory Centre

Position

The use of paracetamol around the time of immunisation is not contraindicated but is not routinely recommended for the National Immunisation Schedule vaccines.

- When administering the meningococcal B vaccine Bexsero®, either alone or with other vaccines, in children aged under 2 years prophylactic paracetamol is recommended to reduce the risk of high fever and injection site pain that occurs more commonly with this vaccine than other childhood vaccines.
- We do not recommend the routine use of paracetamol for management of fever, discomfort or pain associated with other childhood vaccines. However, when there is a clinical indication such as the child is miserable or distressed by fever, discomfort or pain following immunisation, paracetamol use is recommended.
- Ibuprofen may be given as an alternative to paracetamol.

Health professionals are encouraged to discuss possible immunisation responses and non-pharmaceutical management of fever or discomfort with parents.

Background

The practice of administering paracetamol around the time of immunisation was to prevent/relieve child discomfort associated with immunisation. Studies by Ipp and colleagues (1987); Uhari, Hietala, and Viljanen (1988); and Lewis and colleagues (1988), had found that paracetamol administered prior to and regularly after immunisation decreased immunisation related fever, pain and irritability experienced by children. Further to this, Uhari and colleagues had not found any significant differences in the immune responses to immunisation between the children who received paracetamol and the children who did not.

Twenty years on within one of the cycles of continuous quality improvement in healthcare, Manley and Taddio (2007) conducted an extensive review of studies on preventing/relieving child discomfort associated with immunisation. They found that vaccine technology had changed since the 1980s and new research was needed to confirm the ongoing role of paracetamol, and to identify any possible role for ibuprofen in preventing/relieving child discomfort associated with immunisation.

In 2009, Prymula and colleagues published work about a possible influence of paracetamol on laboratory-measured immune system responses. Prymula and colleagues compared immunisation related fever and immune responses in modern day vaccines for infants who received paracetamol during the 24 hour period immediately after each of their first three immunisation visits compared with infants who did not receive paracetamol. They found that paracetamol did decrease the likelihood of fever over 38°C, but also that the laboratory measured immune response to some vaccine components was lower in infants who received paracetamol. However, there was no evidence from Prymula and colleagues or others that the measured lower immune system responses actually caused the infants/children to have less protection against disease. Their findings did however identify a need for further research on the effect of using paracetamol around the time of immunisation and when individuals are suffering infectious diseases generally.

A subsequent study by Prymula and colleagues published in 2013 showed that, although paracetamol use around the time of vaccination was associated with a lower initial immune response in infants vaccinated with a pneumococcal conjugate vaccine, paracetamol had no effect on the development of immunological memory or nasopharyngeal carriage. Other studies since 2013 have also confirmed the relationship between paracetamol and lower laboratory measured immune system responses. However, there is still no evidence of a clinically negative consequence from these reduced immune system responses.

The work of Prymula and colleagues challenged a long-standing, almost automatic recommendation for the use of paracetamol in anticipation of immunisation-related fever, as have later studies by others.

Fever is part of a robust immune system response to the meningococcal B vaccine Bexsero, usually peaking around 6 hours after vaccination and settling over 24–48 hours. A fever over 38°C is more likely to occur in infants and children aged under 2 years after vaccination with Bexsero compared with other routinely used infant vaccines. When Bexsero is administered at the same visit as other Immunisation Schedule vaccines, a fever over 38°C or 39°C is almost twice as likely as when the Immunisation Schedule vaccines are given alone. Similarly, redness, swelling and/or mild–moderate pain around the injection site are also common expected immune responses to Bexsero.

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