Down syndrome, the immune system and vaccination

Firstly, a huge thanks to all of you who participated in the survey. There was a fantastic response, with many knowledgeable and well-informed answers. This information will be of great use in raising awareness of the immune system and vaccination in Down syndrome.

1. Were you aware that Down syndrome is associated with deficits in the immune system?

   A. Yes, Down syndrome is associated with immune deficits. However, it is important to know there is a wide spectrum in this regard, with many children being healthy and infection free.

2. If you answered yes to Q1, what deficits in the immune system are you aware of?

   There are several immune deficits described; Children with Down syndrome tend to have lower white cell counts (important in fighting infection and in autoimmunity ((body attacking itself)), abnormal immunoglobulin levels (proteins that fight infection), and cytokines (signals in the blood that turn on or off the inflammatory response). Children with Down syndrome have a higher risk of infection and inflammatory conditions (e.g. thyroid, arthropathy (joints), coeliac disease). If you have concerns about any of these conditions, please consult your G.P. or Paediatrician.
3. Were you aware that children with Down syndrome are at increased risk of respiratory tract infections?
   A. Children with down syndrome are at increased risk of respiratory tract infections. Again, not every child will be in this category, and many will not get any more respiratory tract infections than others.

4. Were you aware that children with Down syndrome are at increased risk of admission to hospital with respiratory tract infections and often require longer hospital stays?
   A. Children with Down syndrome, if admitted with a respiratory tract infection are more likely to require a longer stay in hospital and require intensive care. (Those requiring intensive care still only account for a small fraction of the total numbers admitted to hospital)

5. Were you aware of any extra vaccinations recommended for children with Down syndrome? (In addition to the routine childhood immunisations)
   A. Children with Down syndrome are considered at increased risk (as outlined above), therefore the HSE has recommended that all children with Down syndrome (where applicable), should receive annual influenza vaccine (if over 6 months of age) and a pneumococcal booster vaccine (if immunisations are up to date, and over 2 years of age). Influenza and pneumococcus can cause respiratory tract infections. If your child is less than 6
months you other family members can get immunised to reduce the risk of transmission of the flu virus.

6. If you answered yes to Q5, which vaccinations?
   A. As per Q5.

7. Did you know it is recommended children with Down syndrome receive the influenza (flu) vaccine annually?
   A. As per Q5.

8. Did you know it is recommended that children with Down syndrome should receive a pneumococcal booster (PPV23) if over 2 years of age?
   A. Children with Down syndrome are considered at increased risk for invasive pneumococcal disease (IPD), therefore if fully immunised should receive the pneumococcal booster if over 2 years of age.

9. The pneumococcal vaccine protects against a bacteria called Streptococcus pneumoniae. Do you know what types of infections this bacteria can cause?
   - [ ] Pneumonia
   - [ ] Otitis media (ear infection)
   - [ ] Meningitis
   - [ ] Sepsis
   - [ ] All of the above
A. Apologies for this medicalised question. We were not interested in how many people got this question “right”, rather we wanted to highlight that pneumococcus is a potential cause of several serious infections, and thus children should be fully immunised against it, where possible.

10. Did you know that infants with Down syndrome are at increased risk of more severe bronchiolitis (lung infection) due to the RSV virus?

A. Infants with Down syndrome are at increased risk of more severe bronchiolitis (lung infection) due to the RSV virus. They are also more likely to require a longer hospital stay and require intensive care. Infections are more likely to occur from November to March annually when the virus is most active.

11. Were you aware of a vaccine; palivizumab (Synagis) which helps to reduce the burden of RSV bronchiolitis in infants?

A. Palivizumab (synagis) is different from other vaccines as described above. It is a form of passive immunisation, i.e. the body is given specific antibodies against RSV (proteins which help kill the virus) in an injection, compared with active immunisation, where the body makes its own antibodies against a virus or bacteria. Therefore, it is not as effective as other vaccines, but can help prevent and reduce the severity of RSV infection. It is usually administered monthly in 3-5 injections from October to February. As it is a disease primarily affecting infants, only children in this age-range are eligible.
12. Currently, all infants with Down syndrome are recommended to have the RSV vaccine palivizumab (Synagis)?
A. No.

Palivizumab is currently recommended only to certain high-risk groups; Ex-premature infants, congenital heart disease, chronic lung disease, neuromuscular disease. Infants with Down syndrome may avail of palivizumab if they have congenital heart disease or another risk factor.

13. Would you get your child immunised against influenza and receive the pneumococcal booster (PPV23) if advised by your child’s doctor?
A. Glad to see a very high number would advocate immunisation for their child!

Our main goal is to raise awareness of these extra vaccines, highlight the increased risk and rationale for immunising, and ultimately protect and improve outcomes for all children with Down syndrome.