Editorials

Influenza vaccine uptake:

the case for universal flu vaccination of young children

Summer has just started but it will not be long before the first older patients arrive in the surgery asking about their annual influenza vaccination. In UK general practice, the autumn seasonal flu vaccination for over 65s is a well-established routine, as widely-accepted as the free bus pass. In 2009/2010, uptake was 77% in Northern Ireland, 75% in Scotland, 72% in England, and 64% in Wales.[1] Although one of the three papers on influenza vaccination in this issue of the *BJGP* reports that some social inequality in vaccine uptake persists — despite introduction of the Quality and Outcomes Framework, which boosted overall uptake and reduced variation between practices — even in the most socioeconomically deprived category, two-thirds (67%) of older patients in Scotland were vaccinated in 2006/2007.[2]

In contrast, research by Sampson *et al* found that influenza vaccine was given to only one in four of the at-risk children for whom seasonal influenza vaccination is recommended by UK national guidelines.[3] For some parents, getting to the clinic for the offered appointment was an issue. Others intended to take their children but didn't get around to it, and a substantial number are unconvinced that their children would benefit from the vaccination.[3] Some of this scepticism may reflect media-amplified concern about vaccine side effects and a suspicion that multiple vaccinations are harmful. It also appears that many parents think either that influenza vaccine is not effective, or that their children are not at 'high risk'. The authors highlight that a number of parents had discussed the issue with GPs and nursing staff who had supported their negative views, expressing similar ambivalence about the benefits of vaccination.

This negative attitude to seasonal influenza vaccination may partly explain why vaccine uptake was also low when offered to children age 6 months to 5 years during the 2009 H1N1 pandemic: research by Varma and Murray in this issue of the *BJGP* showed an uptake of 34% in one Welsh general practice.[4] Uptake of the pandemic vaccine in this study was not related to social deprivation, and the parental reasons for non-acceptance echo those of parents of at-risk children offered the seasonal vaccine. The most common concerns were about safety (31.0%) and side effects (10.3%), again with many parents (15.5%) saying they thought vaccination was unnecessary for their child.[4] Negative parental views may have been reinforced by those clinicians who felt that the national response was an over-reaction and were concerned about the safety of the arrangements.[5]

EVIDENCE FOR VACCINATION

It is never helpful if those responsible for implementing a policy have little faith in it, so it may be useful to examine the evidence in support of influenza vaccination for children. First, influenza is the most common cause of a lower respiratory illness children presenting in general practice, even in non-epidemic years. One-third of children with a respiratory infection of sufficient severity for the GP to consider prescribing an antibiotic have influenza and, unlike the other common respiratory viruses, there is a significant risk of secondary bacterial infection including otitis media and pneumonia.[6] Second, the vaccine appears to be safe and effective even in young children; for example, a recent study of 631 children with a mean age of 2 years (range 9–40 months) showed a vaccine effectiveness of 66% with no adverse events.[7] Third, vaccinating young children appears to be very effective in preventing the spread of influenza to grandparents and other high-risk individuals within families and communities.

Vaccination of schoolchildren is reported to have achieved a threefold reduction in respiratory illness in adults in Michigan during an influenza outbreak[8] and the prevention of between 37 000 and 42 000 deaths of mainly older people per annum in Japan, resulting in the prevention of about 1 death for every 420 children vaccinated.[9] This is comparable with estimates of the benefit of vaccinating older people themselves, as data from the General Practice Research Database suggest that one respiratory death is avoided each year for every 313 older patients vaccinated in high-risk categories and 616 in low-risk groups.[10]

An argument against influenza vaccination is that natural infection confers better long-term immunity than vaccination. The experience in an English boarding school in the 1970s gave support for this idea,[11] but a re-analysis of the data found that influenza A and B vaccines protected children during their school years.[12]

Universal influenza vaccination for children aged over 6 months is now recommended in the US.[13] As the selective vaccination policy currently recommended in the UK has not been successfully implemented — certainly in comparison with the success of universal vaccination in older people — we should also give serious consideration to vaccinating all children. This could start at 6 months of age and continue for at least 5 years, initially linked to the preschool immunisation programme.

"This negative attitude to seasonal influenza vaccination may partly explain why vaccine uptake was also low when offered to children ... during the 2009 H1N1 pandemic."

"The additional work would be offset by the reduction in the number of children consulting with lower respiratory infections, probably around 20% ..."

PROMOTING FLU VACCINATION

Whether or not we move to universal influenza vaccination for children, we do need to deal with the ambivalence of parents and general practice teams. Parental anxiety about the safety and effectiveness of vaccines in general should be addressed by an enhanced public education programme, supported by the media. Parents need to understand that children are not being 'over-vaccinated' and that immunisation is the safest and most effective medical intervention provided by the NHS. We believe that parents would almost certainly support universal vaccination against influenza if they were better aware of the safety record of the vaccine and understood that influenza causes a third of chest infections in their children.

The current ambivalence of primary healthcare professionals to influenza vaccination of children reflects, in part, disagreement with the at-risk categorisation. For example, many children carrying a label of asthma in general practice have mild symptoms with minimally increased risk of a serious lower respiratory infection. If we continue with selective vaccination, it might be better to share responsibility with hospital paediatric clinics where the vast majority of the children truly at high-risk are seen regularly and could receive opportunistic vaccination. Not only could this increase vaccination uptake, the consequent need to establish good communication between hospital and general practice might in itself promote better paediatric care.

If we move from a selective to universal policy of annual influenza vaccination for children, the additional logistic task is not trivial. And to maximise vaccine uptake, clinics would have to be provided at times that were convenient for parents. The additional work would be offset by the reduction in the number of children consulting with lower respiratory infections, probably around 20% depending on the vaccination uptake and efficiency achieved. Such children are often a source of anxiety to the GP as well as the parent, with consequent antibiotic prescribing, repeat consultations, and sometimes acute hospital referrals. Universal vaccination will therefore be an effective mechanism for reducing inappropriate antibiotic prescribing to children, and thereby antibiotic resistance in the community. A formal clinical trial is probably needed to assess whether it would also reduce acute hospital referrals and the associated health care costs.

David Mant,
Emeritus Professor of General Practice, Department of Primary Health Care, University of Oxford, Oxford, UK.

Richard Mayon-White,
Consultant Epidemiologist, Department of Primary Health Care, University of Oxford, Oxford, UK.

Provenance
Commissioned; not externally peer reviewed.

DOI: 10.3399/bjgp11X582976

ADDRESS FOR CORRESPONDENCE

David Mant
Department of Primary Health Care, University of Oxford, 23-38 Hythe Bridge Street, Oxford OX1 2ET, UK.

E-mail: david.mant@phc.ox.ac.uk

REFERENCES

1. Department of Health. *The Green Book Chapter 19: Influenza.* http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_123590.pdf (accessed 1 Jun 2011)
2. Norbury M, Fawkes N, Guthrie B. The impact of the GP contract on inequalities associated with influenza immunisation: a retrospective population-database analysis. *Br J Gen Pract* 2011; doi: 10.3399/bjgp11X583146.
3. Sampson R, Wong L, MacVicar R. Parental reasons for non-uptake of influenza vaccination in young at-risk groups: a qualitative study. *Br J Gen Pract* 2011; doi: 10.3399/bjgp11X583155.
4. Varma P, Murray JK. Childhood swine flu vaccination uptake in a Welsh general practice: a prospective study. *Br J Gen Pract* 2011; doi: 10.3399/bjgp11X583164
5. Caley M, Sidhu K, Shukla R. GPs' opinions on the NHS and HPA response to the first wave of the influenza A/H1N1v pandemic. *Br J Gen Pract* 2010; **60(573):** 283–285. 10.3399/bjgp10X483968.
6. Harnden A, Perera R, Brueggemann A, *et al.* Respiratory infections for which general practitioners consider prescribing an antibiotic. *Arch Dis Child* 2007; **92:** 594–597.
7. Heinonen S, Silvennoinen H, Lehtinen P, *et al.* Effectiveness of inactivated influenza vaccine in children aged 9 months to 3 years. *Lancet Infect Dis* 2011; **11:** 23–29.
8. Monto A, Ullman B. Acute respiratory illness in an American community: the Tecumseh study. *JAMA* 1974; **227:** 164–169.
9. Reichert TA, Sugaya N, Fedson DS, *et al.* The Japanese experience with vaccinating schoolchildren against influenza. *N Engl J Med* 2001; **344:** 889–896.
10. Mangtani P, Cumberland P, Hodgson C, *et al.* A cohort study of the effectiveness of influenza vaccine in older people performed using the UK General Practice Research Database. *J Infect Dis* 2004; **190(1):** 1–10.
11. Hoskins TW, Davies JR, Smith AJ, *et al.* Influenza at Christ's Hospital, 1974. *Lancet* 1976; **1(7951):** 105–108.
12. Beyer WE, de Bruijn IA, Palache AM, *et al.* The plea against annual influenza vaccination? 'The Hoskins' Paradox' revisited. *Vaccine* 1998; **16:** 1929–1932.
13. Centers for Disease Control and Prevention. Flu information for parents. http://www.cdc.gov/flu/parents/ (accessed 1 Jun 2011).