A simple influenza campaign for young people with diabetes

Helen Thornton

ARTICLE POINTS

1 Influenza is a major cause of diabetic ketoacidosis.

2 Influenza is associated with high morbidity and mortality in people with diabetes.

3 All people with diabetes, including children and young people, should receive influenza immunisation.

4 Diabetes care teams can facilitate the influenza immunisation process.

5 People with diabetes on insulin and receiving influenza immunisation require specialist diabetes-specific advice.

KEY WORDS
- **Influenza vaccination**
- **Diabetic ketoacidosis**
- **Telephone audit**

Introduction

Diabetic ketoacidosis is the major cause of death in people with diabetes under 30 years of age (Laing et al, 1999). Influenza has been shown to increase morbidity and mortality in people with diabetes (Bouter et al, 1991). All people with diabetes over 6 months of age should receive annual influenza immunisation (DoH, 1996). This article describes an influenza immunisation campaign carried out by the paediatric diabetes care team at a trust in northwest England. Evaluation by a simple telephone audit revealed increased uptake and greater recognition of the importance of influenza immunisation.

There is little doubt about the value of influenza immunisation in people with diabetes. However, its importance may not be recognised by young people with diabetes and/or their families. The uptake rate for this group could be improved by raising awareness of the risks of non-immunisation and the benefits following immunisation. The recently published British Diabetic Association Cohort Study (Laing et al, 1999) looked at mortality in patients diagnosed with type 1 diabetes under the age of 30. Within the under-30 age group, diabetic ketoacidosis was responsible for 54% of male deaths and 76% of female deaths due solely to diabetes. The study concluded that 'to reduce these deaths attention must be paid to… the prevention of acute metabolic deaths'.

With these statistics in mind, any attempt by diabetes care teams to reduce mortality will be worthwhile. Bouter et al (1991) showed that in all people with diabetes, there is a very high morbidity and mortality associated with influenza. It was estimated that during the 1978 epidemic, one in every 260 people with type 1 diabetes required hospitalisation due to diabetic ketoacidosis. Mortality rates for diabetic ketoacidosis were 25% in epidemic years compared with 15% in non-epidemic years.

A study in Leicester (Colquhoun et al, 1997) evaluated the effect of influenza immunisation on hospital admissions in people with diabetes. It was found that immunisation resulted in a 79% reduction in hospital admissions during two influenza epidemics.

It can therefore be seen that influenza immunisation is effective in reducing morbidity and mortality in all people with diabetes.

Who should be vaccinated?

Influenza immunisation is recommended for anyone with diabetes over the age of 6 months (Department of Health (DoH), 1996). The introduction of the immunisation process to families and active facilitation of immunisation uptake by paediatric diabetes specialist nurses (DSNs) may enable all young people with diabetes to

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The importance of influenza immunisation may not be fully recognised by some patients and their families.

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realise the benefits of immunisation. In describing the health belief model, Becker and Maiman (1975) suggest that individuals require cues to trigger them to consider taking the proposed health action. The paediatric diabetes care team can facilitate these cues and help with the immunisation process.

Influenza immunisation campaign

As part of the education programme, the idea of annual influenza immunisation, every autumn, is introduced to the family of all people with newly diagnosed diabetes. This is discussed during education sessions on illness management and prevention of diabetic ketoacidosis.

During the annual educational review, every family is asked whether their child received influenza immunisation in the previous year, and illness management is revised.

Aim

The main aim of the campaign was to improve the uptake of influenza immunisation in the local population of children with diabetes (age range 2–16 years). It was hoped that by doing so:

- The effects of influenza on metabolic control would be minimised, i.e. diabetic ketoacidosis would be reduced.
- The benefits of immunisation would be recognised by the families, encouraging them to repeat the behaviour in subsequent years.

Method

In the summer of 1998, an influenza immunisation campaign was launched by the paediatric diabetes care team at St Helens and Knowsley Hospitals Trust.

The campaign targeted the paediatric and adolescent clinics. From August, each child's GP was sent a reminder letter from the consultant paediatrician, in addition to the normal clinic letter, after every clinic attendance. The reminder letter contained the following information:

- The need for immunisation
- The best time to administer the vaccine
- The dose of vaccine according to age range. Children under the age of 12 years and receiving the vaccine for the first time require a split dose 4–6 weeks apart (*Table 1*).
- Suggested site for administration (*Table 2*)
- Recommendation to remind families to avoid injecting insulin into this immunisation site and limb for one month after immunisation.

Several GPs telephoned the paediatric DSN to say that they were previously unaware that young children should receive immunisation and that the dose needed to be split.

In September, all families were sent a letter by the paediatric DSN reminding them to make an appointment to attend their GP practice for influenza immunisation, and detailing the need for extra monitoring and avoidance of injection in the immunisation site and limb. Each contact with the family was used as an opportunity to discuss the need for influenza immunisation.

Special considerations

The vaccine is an inactivated influenza virus. Extra blood glucose monitoring is therefore advised for the week after immunisation to monitor its effects. Immunisation, of any type, can cause swelling and redness at the vaccination site and regional lymphadenitis (DoH,

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1 All children and their families are introduced to the concept of annual influenza vaccination on diagnosis.

2 Every child's GP received written guidance about influenza vaccination.

3 All children and their families were reminded by letter to attend for influenza vaccination.

4 Children require diabetes-specific advice after vaccination.

Table 1. Recommended dose and administration by age range

Age range	Dose
Adults and children aged 13 years or more	A single 0.5 ml injection (intramuscular or deep subcutaneous)
Children aged 4–12 years	A 0.5 ml injection (intramuscular or deep subcutaneous) to be repeated 4–6 weeks later if receiving influenza vaccine for the first time
Children aged 6 months to 3 years	A 0.25 ml injection (intramuscular or deep subcutaneous) to be repeated 4–6 weeks later if receiving influenza vaccine for the first time

Source: Department of Health (1996)

Table 2. Recommended sites for administration of influenza vaccine

Adults and older children	Deltoid muscle
Infants and young children	Anterolateral aspect of thigh

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1 Influenza vaccine should not be given to those with known anaphylactic sensitivity to egg products.

2 The paediatric DSN conducted a simple telephone audit to assess the outcome of the campaign.

3 Almost two-thirds of families contacted had received influenza immunisation.

1996). In theory, if insulin is injected into a swollen site it may be absorbed irregularly because of the altered blood flow, causing erratic blood glucose control. To minimise this problem, it is standard practice for the diabetes care team to advise families to avoid the immunisation site and limb for one month. The vaccine should not be given to individuals with known anaphylactic hypersensitivity to egg products (DoH, 1996) because the vaccine is manufactured in fertilised hens' eggs and may contain residual egg protein.

The influenza vaccine cannot be administered at the same time as school Bacillus Calmette-Guérin (BCG) vaccine as a minimum of three weeks should be allowed between the administration of two 'live' vaccines (DoH, 1996). This presented an unanticipated problem in that it could be difficult to ensure the child receives the BCG vaccine after he/she misses it at school.

Audit

The effectiveness of the campaign was assessed by a simple telephone audit conducted by the paediatric DSN during the period 4–11 January 1999. The audit followed the peak influenza outbreak that occurred during the Christmas period of 1998. Each family with a child attending the paediatric clinic was contacted and asked whether the child had received the vaccine and whether the child had contracted influenza. It was felt that the families' perception of whether the child had contracted influenza would affect subsequent uptake of immunisation. A decision was therefore made not to perform any laboratory testing.

Results

The paediatric DSN was able to contact 94% of families. Of these, 63% had been immunised (Figure 1).

In Liverpool, a similar neighbouring district, the influenza immunisation uptake rate was 36% during the same winter in all people with diabetes under 64 years of age (Johnstone, 1999).

For the immunised children, families reported that 10% had had influenza symptoms of less than 3 days' duration (Table 3), i.e. their symptoms were mild and could have been due to other viral infections. One child, reported to have had influenza symptoms, had only received the

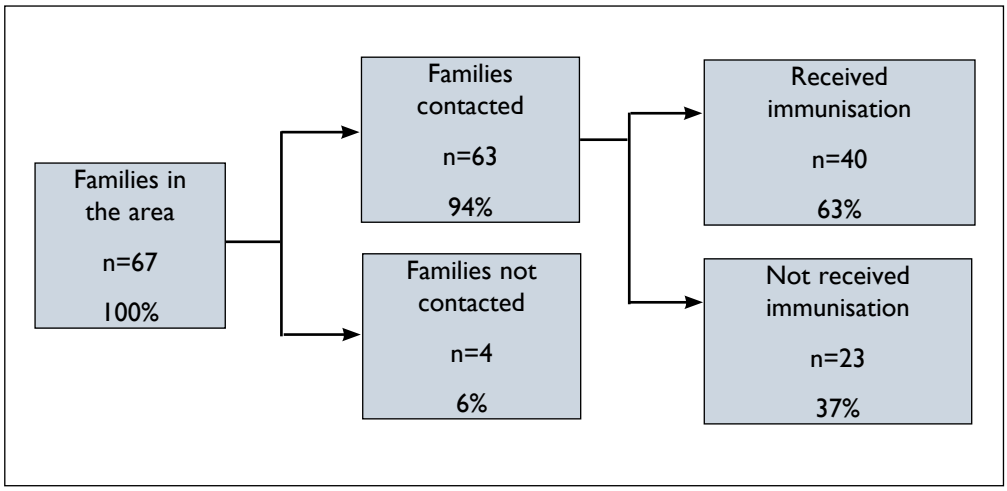

Figure 1. The study population.

Table 3. Reported duration of symptoms

Duration of flu symptoms	Immunised group		Non-immunised group	
1-3 days	n=4*	10%	n=0	0%
Over 3 days	n=0	0%	n=6	26%

* one child did not receive the second dose

first dose of vaccine because the GP had run out of supplies.

For the non-immunised children, families reported that 26% had had influenza symptoms of more than 3 days' duration. These families were not asked any specific questions about why they decided against vaccination.

Families reported that often the immunised child was the only member of the household not to contract influenza. Notably, there were no episodes of diabetic ketoacidosis within either group.

Findings were presented to the paediatric unit and the Local Diabetes Service Advisory Group at a multidisciplinary diabetes audit meeting. The findings were well received by both groups.

Conclusion

This simple-to-implement campaign enabled families to access influenza immunisation and supported the process.

It is important for diabetes care teams to promote influenza immunisation because it may reduce the high mortality associated with diabetic ketoacidosis in young people with diabetes. Although there were no episodes of diabetic ketoacidosis within the small population groups in the study, this should not detract from the effectiveness of the campaign in increasing the uptake of influenza immunisation.

It is hoped that young people with diabetes will opt for annual influenza vaccination after they and their families realise its benefits. The positive effects of the vaccine appear to have been recognised by those who took it during the campaign. It is hoped that this will be confirmed by uptake in the subsequent year.

A re-audit of vaccination uptake is planned (to follow the peak incidence of influenza during December 1999 to January 2000). This will provide information on the continuing effectiveness, or not, of the campaign. More specific questions will be asked in the audit in an attempt to find out why some families decide against immunisation. ■

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PAGE POINTS

1 Results of the audit were presented to the paediatric unit and the LDSAG.

2 It is important for all diabetes care teams to promote influenza vaccination.

3 A re-audit will provide further information on the effectiveness of the campaign.