Opinions of Quebec parents and vaccinators on the usefulness of chickenpox vaccine

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In December 1998, a vaccine against chickenpox was licensed in Canada. The National Varicella Consensus Conference (1) recently recommended the initiation of universal immunization for young children by the year 2005 at the latest and the immunization of susceptible preadolescents until that time. The recommended systematic vaccination has caused some controversy in the medical community, engendering both scepticism (2-4) and enthusiasm (5). One of the possible obstacles to the wide acceptance of this vaccine is the perception among parents and health professionals that chickenpox is a disease without serious consequences for children, that it is even a normal part of childhood (6).

We made use of three different studies among vaccinators and Quebec parents to determine their perceptions of chickenpox and the usefulness of the vaccine.

DATA AND METHODS

Parents of preadolescents and two-year-old children: The first study group was parents of children aged eight to 10 years in the Quebec City region, who were already enrolled or were being recruited to a study on the long term immunogenicity of the hepatitis B vaccine (7). Approximately one-half (50.1%) of the parents were sent a self-administered questionnaire by mail and then were contacted by telephone. The other half of the parents completed the same questionnaire in the presence of a nurse at the time of recruitment for the hepatitis B study.

The second study group comprised parents of children aged 24 to 27 months from three regions in the province of Quebec (Trois-Rivières, Montreal and Quebec City). The study documented the parents’ knowledge, beliefs and attitudes concerning immunization according to the vaccination status of their child at 24 months. Two hundred seventy-nine parents of incompletely vaccinated children and 442 parents of completely vaccinated children were selected from the regional vaccination registers and were sent a self-administered questionnaire by mail.

Vaccinators: All paediatricians, general practitioners and nurses administering vaccines to young children in Quebec were sent a self-administered questionnaire by mail, which asked about their knowledge, beliefs and practices concerning immunization. A few questions dealt specifically with chickenpox.

The distribution and follow-up of the questionnaires for the parents of two-year-old children and vaccinators were carried out according to the Dillman method (8).

Variables and statistical analyses: The dependent variable in all analyses was the subject’s opinion on the usefulness of the chickenpox vaccination. This information was collected using a four-point Likert scale based on the subject’s agreement with statements concerning the usefulness of the chickenpox vaccination: ‘total disagreement’, ‘somewhat disagreement’, ‘somewhat agreement’ or ‘total agreement’.

For analyses, these answers were divided into either ‘agreement’ or ‘disagreement’.

The independent variables differed among studies. Among parents of preadolescents, the data collected were limited to the perception among parents and health professionals that chickenpox is a disease without serious consequences for children, that it is even a normal part of childhood (6).

The proportion of parents who agreed with statements concerning the usefulness of the chickenpox vaccination: ‘total disagreement’, ‘somewhat disagreement’, ‘somewhat agreement’ or ‘total agreement’.

Parents of preadolescents: Ninety-one per cent of the parents of preadolescent children were somewhat or completely in agreement with statements concerning the usefulness of the chickenpox vaccination: ‘total disagreement’, ‘somewhat disagreement’, ‘somewhat agreement’ or ‘total agreement’.

For analyses, these answers were divided into either ‘agreement’ or ‘disagreement’.

The independent variables differed among studies. Among parents of preadolescents, the data collected were limited to the history of chickenpox and the ensuing medical care. Among parents of two-year-old children and vaccinators, data collected included demographic information, the perception of vaccines in general, the fear of administering (vaccine providers) or receiving (parents) shots on the same day, the perception of the potential severity of chickenpox and the frequency of complications. Parents of two-year-old children were also asked about the history of chickenpox in their children, the presence of complications in their children and their satisfaction concerning the information received about vaccine preventable diseases or about possible reactions to vaccines.

Proportions were compared by the χ2 test or the Fisher exact test. Multivariate analyses were carried out with logistic regression.

RESULTS

Of the 2255 parents of eight- to 10-year-old children, 99% agreed to participate. The participation rate was 54% (722 of 1330) for the parents of two-year-old children and did not vary according to the vaccination status; one child was excluded because his vaccination status was unclear. The participation rate for the 3173 vaccinators was 74% (377 of 509) for paediatricians, 57% (820 of 1431) for general practitioners and 85% (1045 of 1233) for nurses.

More parents than vaccinators agreed about the usefulness of the vaccine (P<0.001) (Table 1). Among vaccinators, paediatricians clearly favoured the chickenpox vaccine more than general practitioners or nurses (P<0.001).

Parents of preadolescents: Ninety-one per cent of the parents of preadolescent children reported a history of chickenpox by age 10 years, with 47% reporting medical consultation. The vaccine was viewed as ‘useful’ more often by parents whose children had not yet acquired chickenpox than by those whose children had already suffered from chickenpox (75% compared with 57%, P<0.001). The vaccine was considered useful more often by parents whose children had to consult a physician than by those who did not (65% compared with 49%, P<0.001). These comparisons excluded parents who had ‘no opinion’ or who did not answer the question.

Parents of two-year-old children: Almost half (49%) of parents of two-year-olds were somewhat or completely in agreement with the statement: ‘Chickenpox is a disease that can
sometimes be serious”; 34% disagreed with this statement, and 17% did not know or did not answer. One-third of the respondents (33%) reported that their two-year-old children had already had chickenpox, and 2% said that their children had suffered a complication. In multivariate analysis, the perception of the potential severity of chickenpox was the variable most strongly associated with the opinion that the chickenpox vaccine was useful (Table 2). The fear of having two injections on the same day did not change these parents’ opinions of the vaccine’s usefulness.

Vaccinators: Depending on their professional training, between 33% and 53% of vaccinators felt that the systematic vaccination of young children against chickenpox would be appropriate (Table 1). Most vaccinators agreed with the targeted use of the vaccine for children at greater risk of complications; 93%, 94% and 76% of paediatricians, general practitioners and nurses, respectively, were in favour of that policy. The vaccination of susceptible adolescents was favoured by 86%, 75% and 58% of these groups, respectively (Figure 1), while the vaccination of susceptible women of child-bearing age was favoured by 85%, 84% and 68%, respectively. For every group at risk, nurses were the least convinced of the vaccine’s usefulness.

Only 15% of paediatricians, 6% of general practitioners and 10% of nurses considered the complications of chickenpox to be frequent, but a much larger proportion of these professionals (83%, 78% and 55%, respectively) knew that these complications could occasionally be serious. These two variables were the most strongly associated with a favourable opinion toward the usefulness of the chickenpox vaccine (Table 3).

**DISCUSSION**

Although these results are derived from three studies carried out independently with different groups, they allow us to estimate the major trends.

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**TABLE 1**

<table>
<thead>
<tr>
<th>Overall opinion of parents and vaccinators regarding the usefulness of chickenpox vaccine</th>
</tr>
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<tbody>
<tr>
<td>Agreement (%)*</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td>Parents of two-year-old children</td>
</tr>
<tr>
<td>Completely vaccinated (n=446)</td>
</tr>
<tr>
<td>Incompletely vaccinated (n=276)</td>
</tr>
<tr>
<td>Parents of preadolescents (n=2227)</td>
</tr>
<tr>
<td>Vaccinators</td>
</tr>
<tr>
<td>Paediatricians (n=294)</td>
</tr>
<tr>
<td>General practitioners (n=772)</td>
</tr>
<tr>
<td>Nurses (n=993)</td>
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</tbody>
</table>

*Total agreement; somewhat agreement; *Somewhat disagreement; total disagreement

**TABLE 2**

<table>
<thead>
<tr>
<th>Variables associated with a perception* of the usefulness of a chickenpox vaccine among parents of two-year-old children (multivariate analysis, n=638)</th>
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<tbody>
<tr>
<td>Variables</td>
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<tr>
<td>----------------</td>
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<tr>
<td>In agreement with “chickenpox is a disease that can sometimes be serious”</td>
</tr>
<tr>
<td>In disagreement with “I believe that a hygienic lifestyle can eliminate the need for vaccination”</td>
</tr>
<tr>
<td>Mother’s schooling at secondary level or lower</td>
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<tr>
<td>Age under 30 years</td>
</tr>
<tr>
<td>Not aware of unfavourable opinions about vaccination in the media</td>
</tr>
<tr>
<td>Lack of childhood history of chickenpox</td>
</tr>
<tr>
<td>Parent of a child whose vaccination booklet was complete at the age of 24 months</td>
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</tbody>
</table>

*Parents answered that they were somewhat or completely in agreement with the statement: “If a vaccine against chickenpox were available in Quebec, I believe it would be useful to offer it to Quebec children in the context of a regular vaccination program”

Figure 1) Proportion of vaccinators totally in agreement and somewhat in agreement with the use of a vaccine against chickenpox, according to target population

More parents than vaccinators considered varicella vaccination to be useful. It is interesting to note that the same opinion was found among the three groups of parents; it was expected that the parents of incompletely vaccinated children would have a less favourable opinion and that the parents whose children were to participate in the hepatitis B study would have a more favourable opinion about the usefulness of the varicella vaccine. It is likely that this opinion adequately represents that of the general population. Moreover, these estimates are similar to those reported in another study carried out among parents of Quebec children (9).

There was not great enthusiasm for this vaccine among vaccinators. Barely half of the paediatricians considered the vaccine to be useful, while a clearly smaller proportion (35%) of nurses found it to be useful. These results are comparable with observations made in Canada at the beginning of 1999 by the Laboratory Centre for Disease Control, which found...
that 61% of the paediatricians surveyed were favourable toward a policy of universal childhood vaccination with the present vaccine, as were 36% of general practitioners and 28% of nurses (10).

Similar to previous studies (6,11), we found that there was a strong association between the perception of the potential seriousness of the disease and an opinion in favour of universal vaccination. This may explain why the vaccination of high risk populations was favoured by the majority of all groups of vaccinators in Quebec (although nurses were clearly the least convinced group). A vaccination strategy targeting susceptible preadolescents, as was recommended during the National Varicella Consensus Conference (1), was perceived more positively by vaccinators (58% to 86%) than infant vaccination (35% to 53%). Such a strategy would probably be well accepted by the public, because 75% of parents of eight- to 10-year-old children who had not contracted chickenpox believed that vaccination would be useful.

The fact that a large proportion of vaccinators, particularly nurses, are not convinced of the possible complications of varicella in young children suggests that there is a need for the wide dissemination of information among health professionals if we hope to promote the universal use of the vaccine among young children. It should be stressed that the present information was collected in the spring of 1998, before the approval of the vaccine in Canada and the publicity surrounding its introduction. Vaccinators' opinions may have evolved in favour of the vaccine since that time.

**CONCLUSIONS**

Only a relatively small proportion of Quebec vaccinators considered universal vaccination against chickenpox to be useful. If such a program is to be introduced without obstruction, it will be necessary to inform and convince many of these doubters. Vaccinators who are well informed on the justification for such new recommendations may more easily approve of them and eventually adopt them (12). Given the great influence that these professionals have on the choices parents make concerning vaccination (13,14), it will be necessary to provide them with information to respond to parents' questions. This structured, information-rich approach for health professionals will be a prerequisite for any successful chickenpox vaccination program in the province of Quebec.

**REFERENCES**
