In recent years, four new vaccines have been licensed in Canada that are now recommended by the National Advisory Committee on Immunization (Health Canada), and the Canadian Pediatric Society. These vaccines are:

- chickenpox,\textsuperscript{1-3}
- group C meningococcus,\textsuperscript{4,5}
- pneumococcal vaccines,\textsuperscript{6,7} and
- an acellular pertussis vaccine for adolescents.\textsuperscript{8,9}

Although these vaccines are licensed and recommended for universal immunization, not all provinces have added them to their funded vaccine programs.\textsuperscript{10} Some private health-care insurers, however, do fund these immunizations.

When are the new vaccines supposed to be given?

The chickenpox vaccine is a live attenuated vaccine that is given after a child’s first birthday. Both meningococcal and pneumococcal vaccines are given at two, four, and six months of age in separate sites, but at the same time as the diptheria-pertussis-tetanus-polio (DPTP) vaccine. A 12- to

Mrs. Young’s query

Mrs. Young, a mother of a 14-month-old and a three-year-old, calls to ask about the chickenpox vaccine. Her sister’s child, in another province, received the vaccine last week. It was at the same time as his measles, mumps, and rubella shot. Her sister’s child is 12-months-old.

Should Mrs. Young’s 14-month-old also be immunized against chickenpox? Alternatively, should she send the 14-month-old to a “chickenpox party” being held by a neighbour down the street?

She recalls when her three-year-old had chickenpox. The child was ill for about four days with fever, sleeplessness, and an itchy rash, and had to take antibiotics for a cellulitis that developed at the site of some of the chickenpox lesions.

"Is chickenpox really a serious enough illness that children should be vaccinated against it?" she asks.

For discussion, see page 140.
15-month pneumococcal booster is also given. The acellular pertussis-tetanus-diptheria vaccine is given, instead of the tetanus-diptheria vaccine, at the time of the adolescent booster (Table 1).

### Table 1

**New pediatric vaccines supposed to be given in Canada**

<table>
<thead>
<tr>
<th>Infection prevented</th>
<th>Chickenpox (varicella)</th>
<th>Streptococcus pneumoniae</th>
<th>Neisseria meningitidis</th>
<th>Adolescent pertussis, diptheria, tetanus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td>Varivax ii™</td>
<td>Prevnar™</td>
<td>Menjugate™</td>
<td>Adacel™</td>
</tr>
<tr>
<td></td>
<td>Varilrix™</td>
<td>Pneumococcal 7-valent conjugate vaccine</td>
<td>NeisVac-C™ Meningococcal Group C-CRM protein vaccine powder and diluent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varicella virus vaccine live, attenuated; lyophilized powder and diluent</td>
<td>(Diptheria CRM protein), liquid suspension</td>
<td></td>
<td>Td toxoids combined with purified pertussis antigens</td>
</tr>
<tr>
<td><strong>Infant schedule</strong></td>
<td>1 dose at 12 to 18 months (separate needle/injection site than MMR)</td>
<td>2, 4, 6 months, Booster, 12-15 months</td>
<td>2, 4, 6 months</td>
<td>None</td>
</tr>
<tr>
<td><strong>Other schedule</strong></td>
<td>1 dose to 12 years; 2 doses, 4-8 weeks apart at ≥ 13 years</td>
<td>2-6 months old, 3 doses 8 weeks apart plus booster at 12-15 months; 7-11 months, 2 doses 8 weeks apart plus booster at 12-15 months; 12-23 months old, 2 doses 8 weeks apart; &gt; 24-months-old, one dose</td>
<td>2 doses 4 weeks apart if 4-11 months of age; &gt;12 months, 1 dose</td>
<td>Substitute for Td booster (can offer every 10 years in adulthood)</td>
</tr>
<tr>
<td><strong>Route and volume/dose</strong></td>
<td>Subcutaneous, 0.5 ml</td>
<td>Intramuscular, 0.5 ml/L</td>
<td>Intramuscular, 0.5 ml/L</td>
<td>Intramuscular, 0.5 ml/L</td>
</tr>
<tr>
<td><strong>Efficacy</strong></td>
<td>96-100%</td>
<td>94% against invasive disease caused by 7 vaccine stereotypes</td>
<td>92-97% against Group C disease</td>
<td>97-100%</td>
</tr>
<tr>
<td><strong>Contraindications</strong></td>
<td>Hypersensitivity neomycin, immunodeficiency, pregnancy</td>
<td>Hypersensitivity to vaccine component thrombocytopenia</td>
<td>Hypersensitivity to vaccine component</td>
<td>Hypersensitivity to vaccine component</td>
</tr>
</tbody>
</table>

MMR: Measles, mumps, rubella

Td: Tetanus, diptheria

Dr. Langley is an associate professor, faculty of medicine, departments of pediatrics and community health and epidemiology, Dalhousie University, and a practising pediatric infectious disease specialist. She is also medical director of infection control services at the IWK Health Centre.
How are these vaccines an improvement?

The currently available varicella vaccine is stable at refrigerator temperatures (2 to 8 degrees C), whereas earlier vaccines had to be kept frozen at -15 degrees C. Once reconstituted, varicella vaccine should be kept refrigerated and used within 90 days.

Both of the new pneumococcal and meningococcal infant vaccines are protein-conjugate vaccines that are immunogenic in infancy. The polysaccharide vaccines against *Streptococcus pneumoniae* and *Neisseria meningitidis* could only be used in children over two years of age. Because the highest attack rates and age-specific mortality rates for invasive disease with these infections are in infants, many cases of meningitis, bacteremia, and sepsis (with their associated morbidity, mortality, and parent anxiety) will now be prevented.

The adolescent booster vaccine (diphtheria-tetanus toxoid combined with pertussis) has not previously been available. Pertussis is an often undiagnosed cause of cough illness after childhood and a resurgence of disease in adolescents has been seen in Canada.

What are the side-effects?

Short-lived injection-site pain is common for all vaccines, including the new ones. Pain and redness at the injection site are seen in about 25% of children in the first 48 hours after immunization. Fever, less than 39 degrees C, can occur. The frequency of fever and local injection site pain is about the same, or less than, for DPTP-Hib injections. There is no evidence that serious adverse events are associated with these four vaccines. They have been part of the universal immunization schedule in the U.S. for several years.
Immunizations

References

Net Readings