

**Table 1** Vaccines recommended to children in Denmark, Finland, Norway and Sweden in 2018

Disease (vaccine)	Denmark	Finland	Norway	Sweden
Tuberculosis (BCG)	Not within programme	Before 7 years of age, risk groups only*	6 weeks of age, risk groups only*	After 6 months of age, risk groups only*†
Hepatitis A	Not within programme	From 1 year of age, risk groups only‡	Not within programme	Not within programme†
Hepatitis B	From birth, risk groups only§	From birth, risk groups only§¶	3 doses: 3, 5, 12 months of age	Not within programme but recommended to all children. 3 doses: 3, 5, 12 months of age**
Rotavirus	Not within programme	3 doses: 2, 3, 5 months of age	2 doses: 6 weeks, 3 months of age	2 or 3 doses: 6 weeks, 3 and 5 months of age†,‡‡
Diphtheria, tetanus and pertussis (DTaP)	4 doses: 3, 5, 12 months, booster at 5 years of age	5 doses: 3, 5, 12 months of age, booster at 4 and 14 years of age	5 doses: 3, 5, 12 months of age, booster in 2nd and 10th school years	5 doses: 3, 5, 12 months of age, booster at 5 years of age and in 8th or 9th school year
Polio (IPV)	4 doses: 3, 5, 12 months, booster at 5 years of age	4 doses: 3, 5, 12 months of age, booster at 4 years of age	5 doses: 3, 5, 12 months of age, booster in 2nd and 10th school years	4 doses: 3, 5 and 12 months of age, booster at 5 years of age
<i>Haemophilus influenzae</i> type B	3 doses: 3, 5, 12 months of age	3 doses: 3, 5, 12 months of age	3 doses: 3, 5, 12 months of age	3 doses: 3, 5 and 12 months of age
Pneumococcal disease (PCV)	13-valent; 3 doses: 3, 5, 12 months of age	10-valent; 3 doses: 3, 5, 12 months of age	13-valent; 3 doses: 3, 5, 12 months of age	10 or 13-valent; 3 doses: 3, 5 and 12 months of age
Influenza (live or non-live influenza vaccine)	From 6 months of age, risk groups only‡‡	Yearly, from 6 months to 6 years of age and for risk groups after 6 years of age‡‡	From 6 months of age, risk groups only, through the influenza immunisation programme‡‡	Yearly, from 6 months of age, risk groups only†‡‡
Measles, mumps and rubella	2 doses: 15 months of age and 4 years of age	2 doses: 12 months of age, 6 years of age	2 doses: 15 months of age, and 6th school year	2 doses: 18 months of age and 1st or 2nd school year
Varicella	Not recommended	1.5–11 years of age	Not recommended	Not recommended
Pneumococcal disease (PPV)	Not within programme	Before 5 years of age, after PCV, risk groups only§§	Not within programme, but recommended from 2 years of age, to specified risk groups§§	Not within programme, but recommended from 2 years of age, to specified risk groups†§§
Tickborne encephalitis	Not within programme	From 3 years of age, risk groups only¶¶¶	Not within programme	Not within programme
Human papillomavirus	2 doses: 12 years of age, girls only	2 doses: 6th school year, girls only	2 doses in 7th school year	2 doses in 5th or 6th school year, girls only

The vaccines are included in the childhood immunisation programmes and registered in the vaccination registers, unless otherwise specified. Information obtained from: Danish Health Authority,<sup>15</sup> Finnish Institute for Health and Welfare,<sup>16</sup> Norwegian Institute of Public Health<sup>16</sup> and Public Health Agency of Sweden.<sup>17</sup>

\*Children with a parent from a country with a high incidence of tuberculosis.

†Not included in the vaccination registry.

‡Children of intravenous drug users.

§(1) Children of mothers or another member of the household who are hepatitis B positive, or (2) attend day care with a child who has hepatitis B.<sup>19,45</sup>

¶(1) Children of parents from countries with high incidence of hepatitis B, or (2) children of mothers with hepatitis C infection.<sup>45</sup>

\*\*Only offered to children in the risk group before 2016, not included in the vaccination registry before 2016.<sup>46</sup>

‡‡Rotavirus vaccine was offered by some Swedish regions as part of regional vaccination schemes.

‡‡‡Children with increased risk of severe influenza illness or members of households with high-risk individuals.<sup>17,47–49</sup>

§§Children with increased risk of severe pneumococcal disease, for example, children with chronic diseases.<sup>17,50,51</sup>

¶¶¶Children of families with a permanent home or holiday house in areas within Finland with high tick prevalence.<sup>52</sup>

BCG, Bacillus Calmette-Guérin vaccine; DTaP, diphtheria, tetanus and acellular pertussis vaccine; IPV, inactivated polio vaccine; PCV, pneumococcal conjugated vaccine; PPV, pneumococcal polysaccharide vaccine.

### Source and content of data

Using the personal ID, we linked information from the nationwide registers and obtained individual-level information on gestation and birth, hospital contacts, redeemed prescriptions and receipt of childhood vaccines. Furthermore, each child was linked to their parents through the population registers in order to extract information on household income, family composition and highest

attained parental education (figure 2). The included data reflect necessary information to identify the vaccination status of the child, relevant outcomes, potential confounding factors and information to be included as negative control outcomes.

Information on administered vaccines including type of vaccine and date of vaccination was obtained from the Danish Vaccination Register in Denmark,<sup>25</sup> the Finnish