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Short communication

Factors influencing vaccine uptake in Germany

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Abstract

While vaccines have virtually eliminated many infectious diseases in Germany, vaccination coverage in children, adolescents and adults is still unsatisfying. This situation is mainly due to inadequate remuneration of vaccination services, structural deficits in the health care system and a lack of motivation. Political support and leadership would most likely be able to change this situation.

Keywords: Vaccination; Vaccine uptake; Germany

1. How vaccination is organized in Germany

In Germany physicians can choose vaccines for their patients from all products that are licensed and available in the country. As a general rule, all vaccines recommended by the "Ständige Impfkommission" (StIKo) at the Robert Koch Institut in Berlin are also "publicly recommended" by the public health authorities of the 16 German states. "Publicly recommended vaccines" are voluntarily paid for by all health insurance companies in the country with a few minor local and temporal exceptions. Since all Germans are covered by health insurance, according to the StIKo plan currently vaccination against diphtheria, tetanus, pertussis, polio (IPV), hepatitis B, invasive *Haemophilus influenzae* b (Hib) disease, measles, mumps and rubella for children as well as regular diphtheria and tetanus booster doses for adults and vaccination against pneumococci and influenza in subjects from age 60 years on are offered free of charge.

For persons with an underlying disease or with a possible exposure to microorganisms that pose an increased risk for a special vaccine preventable infectious diseases, additional vaccines are recommended and paid for. This includes, for example, vaccination against varicella in children with immunodeficiencies, or against tick borne encephalitis (Frühsommer-Meningo-Encephalitis; FSME) for persons living in endemic areas.

The local states pay compensation for all "possible side effects" of publicly recommended vaccines in case the adverse event observed is more severe than "usually expected". Somewhat less than 4.000 such cases were compensated over the last 40 years.

2. Success and problems of vaccination in Germany

Vaccination in Germany was successful in virtually eliminating indigenous cases of diseases like diphtheria, poliomyelitis and invasive Hib disease. Data from a recent population based representative evaluation show, however, that in children about 10% of coverage for the primary immunization series are lacking and that more than 50% of doses given are given too late [1]. Most of the less than 50 cases of invasive Hib disease still left annually in Germany and all related deaths occurred in unvaccinated or undervaccinated children [2]. With a coverage rate of about 70% there are still today regular outbreaks of measles in the country and the number of cases of congenital rubella is simply not known due to under-reporting. Clearly, although enough money for vaccination is available in the German health care system, barriers towards the use of vaccines prevent an appropriate status of health in children and in adults alike.

3. Reasons for the underuse of vaccines

3.1. Data from surveys

Data published 4 years ago (Table 1) from a representative survey indicate that more than 50% of parents feel that they

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Table 1
Reasons given by parents (top) and by pediatricians (below) why vaccinations are incomplete[a]

Parent's explanations	
Disease experience is important (%)	23
Side effects are frequent (%)	25
Risk for long term sequelae (%)	8
Not recommended by physician (%)	8
Insufficient information (%)	>50
Skepticism against vaccination (%)	10–26
Principle opposition against vaccination (%)	0.4–1.5
Paediatrician's explanations	
Appointments missed (%)	74.2
Illness at the appointment (%)	72.2
Social neglect (%)	54.3
Parental opposition (%)	37.5
Parental information deficit (%)	31.5
Language barriers (%)	20.5
Lack of societal support (%)	5.5
Religious reasons (%)	3.4

[a] From [4].

are insufficiently informed about vaccination. This fact may explain, why more than 20% of parents have misperceptions on the benefit of vaccination and also on the occurrence of side effects. Only 0.4% (East Germany) to 1.5% (West Germany) said that they refuse all vaccinations from a principle point of view. In contrast, 74% of pediatricians name "missed appointments" as the leading cause for incomplete vaccinations. Among pediatricians a deficit of parental information is only the fourth most common explanation for incomplete vaccinations.

3.2. Remuneration

The factors mentioned above could easily be dealt with if reimbursement for vaccination would be accomplished according to the societal value of vaccination or if the amount of money saved by the effect of vaccines would be considered. Currently, with the use of sixvalent combination vaccines (DTaP-IPV-HBV-Hib), a pediatrician in the state of Schleswig-Holstein for example receives 5–10 € for

1. explaining the nature of the respective six diseases and their complications,
2. treatment options,
3. prevention options,
4. effects and adverse events of the vaccine,
5. recommended precautions after vaccine administration,
6. explaining the need for booster doses,
7. taking the patient's history,
8. physical examination,
9. vaccination,
10. observing the patient for 30 min thereafter.

Inappropriate remuneration is clearly the leading direct cause for inappropriate vaccine use in Germany and it confirms and explains why parents feel not sufficiently informed about vaccination. Likewise, a lack of incentives for vaccination, e.g. in hospitals leads to missed opportunities, e.g. in the elderly or in women who just gave birth to a child: hospitals would have to pay for vaccines from their budget without receiving any benefit in return.

3.3. Structural deficits

Several structural deficits of the German health care system that prevent an appropriate use of vaccines in the country have been identified at two meetings of the Robert Koch Institute, Berlin and also by a recent health care report [3].

Among those structural deficits is the fact that a patient's written consent is needed to remind him of the necessity of a booster dose. This legal issue clearly prevents timely vaccination in many circumstances.

Likewise, more than 420 health insurance companies in Germany reimburse physicians through 24 local agencies, and that explains why there may be up to 420×24 different ways how a physician is reimbursed for vaccination. This lack of certainty on reimbursement has been repeatedly implicated as a factor leading to an inappropriate use of vaccines.

Vaccination coverage in adolescents is especially poor in Germany, approaching a figure of only around 30% for vaccination against hepatitis B. The main reason is that there is no incentive for a young person to see a physician and no official "efforts" are undertaken to inform adolescents about the importance of prevention.

Currently all vaccine doses given are documented in a private vaccination card as well as in the physician's chart. Data protection laws prohibit the use of an electronic way to document vaccine administration, e.g. on the patient's insurance card. Seeing another physician without carrying along the vaccination card is an important barrier to (timely) vaccinations.

Finally, not all medical schools do give courses in vaccination, and actually since there is no "infectious diseases speciality", the training of German physicians is incomplete with regard to vaccination. This may at least in part explain, why many physicians in the country oppose vaccination.

A lack of motivation — beyond an appropriate remuneration — is another factor that leads to an inadequate use of vaccines. There is only very limited data on the epidemiology of many vaccine preventable infectious diseases in Germany and funding for research on the epidemiology of infectious diseases by the German government is virtually non-existing. Furthermore, "official" vaccination coverage data are available only at the time of school entry, so this set of information is of extremely limited — if any — value. In the past, modern public relation methods were not used to promote the use of vaccines. As from 1 January 2001, the local public health authorities of the states are responsible for educating and informing the public about vaccination.

As far as visible to date, no additional funds were made available to accomplish this task.

All these factors mentioned before could be overcome. They are due to only two main factors: (1) in Germany there are too many different players in the field of vaccination; (2) prevention is not a priority of the German health care system.

Adequate political support and leadership would most likely be able to make vaccination in Germany a success story and achieve a better state of health of the general population.

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