



Folkhälsomyndigheten

Barriers and motivating factors to MMR vaccination in communities with low coverage in Sweden

Implementation of the WHO's Tailoring Immunization Programmes (TIP)
method



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Preface

The Public Health Agency of Sweden is a national expert agency with the overall responsibility for public health issues. The Agency's mission is to promote good health, prevent diseases, and protect against health threats, and the childhood immunization programme is an important part of preventive health work in Sweden. The Public Health Agency of Sweden is responsible for surveillance of the vaccination programme, which requires continuous assessment of the attitudes and behaviours towards vaccination among both the public and health care professionals. The Agency works with dissemination of knowledge about vaccines and vaccine-preventable diseases directed primarily towards health professionals. The work is done in close collaboration with the National Board of Health and Welfare and the Medical Products Agency as well as with other stakeholders responsible for implementing the vaccination programme.

As part of efforts to eliminate measles and rubella, the World Health Organisation Regional Office for Europe (WHO/Europe) developed the *Tailoring Immunization Programmes* (TIP) method to raise awareness and overcome barriers to vaccinations in groups that are difficult to reach.

In 2013, the Swedish Institute for Communicable Disease Control (currently called the Public Health Agency of Sweden) carried out a pilot study with the TIP method among three identified groups at risk for outbreaks of measles and rubella: 1) the anthroposophic community in Järna located south of Stockholm, 2) the Somali community in Rinkeby and Tensta, northern Stockholm and 3) undocumented migrants in Stockholm and Gothenburg.

This report presents the results from the three sub-studies and describes experiences and lessons learned from the work with the TIP method. The report also suggests targeted communication and education interventions that were identified based on the study results and with the aim of increasing vaccination coverage in the studied communities.

The English version of this report is mainly intended for non-governmental organisations and public health authorities in Europe who are interested in using TIP.

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The Public Health Agency of Sweden

Johan Carlsson
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Abbreviations

| | |
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| CWC | Child Welfare Centre |
| ECDC | European Centre for Disease Prevention and Control |
| CRS | Congenital Rubella Syndrome |
| LMA | Government Act concerning the reception of asylum seekers |
| MI | Motivational Interviewing |
| MMR | Measles, mumps, and rubella |
| NGO | Non-governmental organization |
| NIP | National immunization programme |
| SMI | The Swedish Institute for Communicable Disease Control (currently the Public Health Agency of Sweden) |
| SWOT | Strengths, Weaknesses, Opportunities, and Threats |
| TIP | Tailoring Immunization Programmes |
| TAP | Tailoring Antimicrobial Resistance Programmes |
| VPD | Vaccine preventable disease |
| WHO | World Health Organization |
| WHO/Europe | The WHO Regional Office for Europe |

Terminology

| | |
|-----------------------------|--|
| Anthroposophic | People who are interested in or follow the anthroposophic lifestyle. In Järna, a suburb in Stockholm County, different proportions of the population in follow this lifestyle to different degrees, but for simplicity the term "anthroposophic" is used in this report to refer to all of the study participants who reside in Järna. |
| Eliminate | Decrease the incidence of a disease in a country or region to the extent that endemic circulation ceases. |
| Herd immunity | When a large proportion of a population is vaccinated so the spread of a disease decreases or ceases. Non-vaccinated individuals receive indirect protection because they are not exposed to the disease. |
| Import case | Persons who contract the disease after being infected abroad. |
| Undocumented migrants | Persons staying in Sweden without necessary legal documents. |
| Vaccine-preventable disease | Diseases that can be prevented with vaccination. |
| LMA card | The card certifies that the card owner is an asylum seeker and enrolled in the Swedish Migration Board's reception system and has the right to be in the country during the waiting/processing time. The card entitles the holder to a reduced patient fee when seeking medical attention. |

Summary

The WHO Regional Office for Europe (WHO/Europe) has developed a method called *Tailoring Immunizations Programmes* (TIP) to identify which factors are important for parental decision-making about vaccination in groups with low vaccination coverage. The method is also designed to identify potential targeted interventions to improve vaccination coverage.

This report presents the results of studies performed using the TIP method focusing on three identified populations with low or suspected low vaccination coverage:

- the anthroposophic community in Järna, southern Stockholm
- the Somali community in Rinkeby and Tensta, northern Stockholm
- the undocumented migrant communities in Stockholm and Gothenburg

The aim was to better understand the populations, identify barriers and motivating factors for receiving the MMR (measles, mumps and rubella) vaccination, and to identify targeted interventions in order to limit the spread of measles and rubella in Sweden.

Parents who postpone MMR vaccinations in Järna do so either because they believe children are too young to be vaccinated at the recommended 18 months or because they believe in prioritizing natural immunity. Somali parents who decline MMR vaccination generally have a notion that the MMR vaccine can cause side effects such as autism. The undocumented migrant parents consistently expressed that they want to vaccinate their children to keep them healthy, but that lack of access to health care is a key barrier.

The study showed that there are different needs for targeted communication efforts and interventions in these three hard-to-reach populations. The importance of health care professionals' attitudes towards vaccinations was highlighted in all populations. Parents from the anthroposophic and Somali communities requested balanced information about vaccines and an objective dialogue with health care professionals using evidence-based information. The Somali parents do not use the traditional channels offered through the Child Welfare Centre (CWC) and School Healthcare, so innovative methods are needed for dissemination of knowledge, preferably through existing local networks and in the Somali language. Health professionals also need assistance with targeted information, methods, and support to reach out to this population with information about immunizations. Newly arrived migrants need to be better informed about their legal entitlements to health care and health screening services. The health professionals at the CWC and primary health care services need to receive additional information about the new law on health care for undocumented persons as well as education, training, and support on how to approach the undocumented migrants in a health care context.

As a result of this study, the Public Health Agency of Sweden proposes several targeted communication and education initiatives, including a “peer-to-peer” project, in-depth educational interventions in vaccinology for health care professionals, and targeted information about the importance of being vaccinated with MMR before travelling abroad. A common feature of the studied populations is the need for interventions to strengthen the trust between parents and health care professionals. Additional efforts are needed in the anthroposophic and Somali communities to address the hesitancy against the MMR vaccine by providing objective and evidence-based targeted information.

Targeted initiatives spanning diverse areas require the participation and involvement of a variety of stakeholders. Efforts should be performed in close collaboration between the Public Health Agency of Sweden and the Department of Communicable Disease Control and Prevention and Child Health services at the County Councils as well as non-governmental and community organizations.

Background

Introduction

The World Health Organization (WHO) has estimated that approximately 145 700 people died from measles in 2013 – mostly children under the age of 5 (1). The WHO estimates that each year approximately 110,000 children are born with congenital rubella syndrome (CRS) (2). There are effective vaccines and thus the conditions exist to eradicate the diseases through vaccination. Vaccination against measles is used throughout the world and as a result the child mortality has dramatically reduced. Nevertheless, vaccination programmes are still far from reaching all children. In WHO's European region, there were an estimated 5 million children in the age group of 2–12 years who were not immunized against measles and rubella in the period 2000–2010 (3).

WHO/Europe remains committed to eliminating measles and rubella in Europe by 2015. Intensive work is currently going on in Member States to achieve this, but Europe is still far from the goal, and close to 100,000 cases of measles (4) and over 80,000 cases of rubella (5) have been reported in EU countries in the last four years.

Sweden supports the WHO's efforts to stop the circulation of these two diseases. A Scandinavian verification committee has been established, and The National Board of Health and Welfare has developed a national action plan (6) to prevent the spread of measles and rubella. As a supportive effort for the health care system, The National Board of Health and Welfare has also developed a strategy for communication about the national immunization programme (7), which includes, among other things, targeted interventions to hard-to-reach groups.

Diseases and MMR vaccine in Sweden

Measles - risk for complications

Measles (morbilli) is a highly contagious viral disease that can cause serious complications. In a non-vaccinated population, it is estimated that about 90 per cent become infected before the age of 10 years (8) and almost all will have been infected before they reach adulthood (9). The disease is characterised by high fever, conjunctivitis, rhinitis, cough, and rash, and about 15–20 per cent of those affected suffer from complications such as otitis, pneumonia, and diarrhoea (10). In more rare cases, measles leads to encephalitis (approximately 1 case per 1,000) and can also cause a fatal form known as subacute sclerosing panencephalitis (about 1 case per 100,000). In Europe, estimated mortality from measles is 1 case per 1,000–5,000 who become ill. The deaths occur primarily among children under 5 years and adults over 20 years (11).

Sweden introduced universal vaccination against measles in 1971, and in 1982 a combined vaccine against measles, mumps, and rubella (MMR vaccine) was introduced with two doses. This has helped to greatly reduce the incidence of measles in

Sweden to the point that, since the late 1980s, there is no longer endemic circulation of the disease.

Despite high vaccination coverage at a national level, there are still local import-related measles outbreaks. During the last 10 years (2004–2013), a total of 179 cases of measles were reported in Sweden, of which 75 cases (42 per cent) were acquired abroad and 104 cases (58 per cent) were related to imported cases.

Rubella - risk for severe birth defects

Rubella is caused by the rubella virus and usually results in a mild illness with fever and rash that primarily affects children. Infection during pregnancy, however, can cause congenital rubella syndrome (CRS) that involves a high risk of severe birth defects such as heart malformation, deafness, blindness, brain damage, and foetal death.

In 1974, a universal vaccination against rubella for 12-year-old girls was introduced, and since 1982 both boys and girls have been offered the combined MMR vaccine. The last endemic case of CRS due to rubella occurred in Sweden in 1985. Since then, two import-associated cases of CRS have occurred. In 2011, an unvaccinated woman—who immigrated to Sweden in her teens—was infected with rubella during a trip abroad during her early pregnancy. The second case occurred in 2014 when a woman who had recently immigrated to Sweden gave birth to a child with severe birth defects.

In Sweden, 0–5 cases of rubella were reported annually during the period 1998–2007. In 2012, 50 individuals were infected by rubella, which was the highest number since 1989. All cases in the outbreak were linked to Järna, an area where many residents follow an anthroposophic lifestyle and where vaccination coverage is low.

The MMR vaccine

The combined MMR vaccine protects up to 98 per cent of those who receive the vaccine against all three diseases (measles, mumps and rubella) with a two dose regimen. The vaccinations are offered to all children at 18 months and again at 6–8 years of age.

Sweden has a high vaccination coverage for MMR at more than 95 per cent for both dose 1 and dose 2. Sweden has thus achieved one of the goals of eliminating measles according to WHO's criteria, and no endemic circulation of measles has been reported since the late 1980s. The population also has a good immunity level according to regular seroimmunity studies that have explored antibody levels in randomly selected people from a population-based sample. (12, 13).

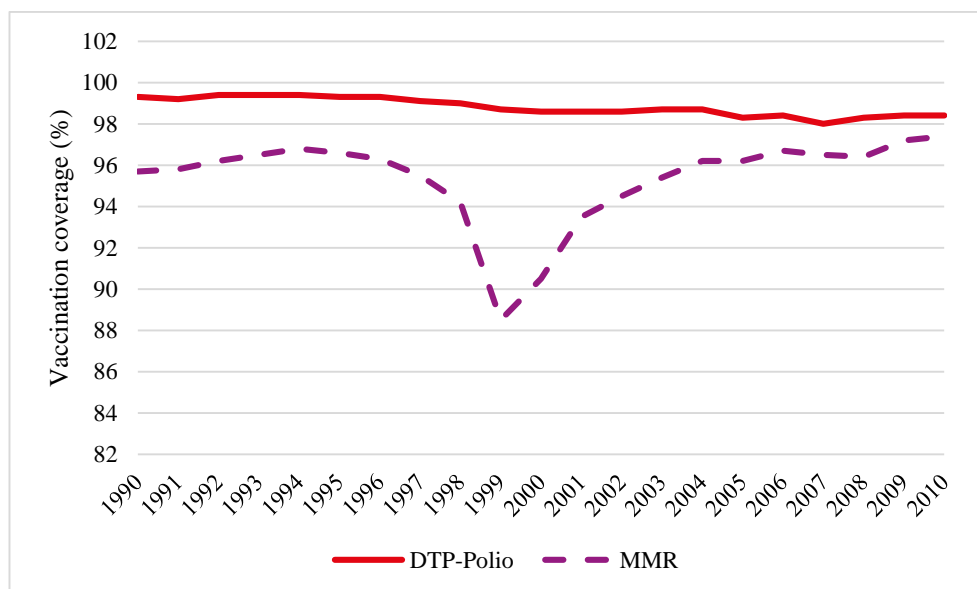
In the late 1990s, the coverage level for the MMR vaccine declined considerably in Sweden (Figure 1). A major reason for this was an article by Wakefield et al., published in 1998 in the medical journal *The Lancet*, which suggested a link between MMR vaccine and autism (14). The study, however, was withdrawn by the journal

in 2010 due to fraud. The causal link between measles vaccination and autism has been rejected in several large epidemiological studies (15-17) as well as in a recently published meta-analysis (18), but nevertheless there remains a vaccination scepticism in some groups.

The lowest vaccination rate was reported in 2001 when the coverage among two year olds was 88.5 per cent, but since then the vaccination rates have gradually increased to the previously high levels of more than 95 per cent. There are exceptions, however, and the coverage is still low in some specific areas and specific populations (Table 1). This is worrying because it might mean that immunity is low and major outbreaks might occur in the future. It is important to maintain the vaccination coverage at more than 95 per cent in order to achieve herd immunity against measles in the population, which means that so few individuals are susceptible to the disease that it can no longer spread. Even unvaccinated people are then protected.

Limited outbreaks have occurred in areas with low vaccination coverage after spreading from people infected abroad (so-called imported cases). This indicates that the immunization programme either does not reach all individuals or that some individuals choose to not follow the programme. The outbreaks have, however, been limited, suggesting that immunity in some of these areas is good, probably due to the fact that many individuals have already had the disease or been vaccinated according to the programme.

Figure 1. Proportion (%) vaccinated against diphtheria, tetanus, pertussis, and polio (DTP-Polio) as well as measles, mumps, and rubella (MMR) among 2 year olds.



Source: Public Health Agency of Sweden.

Groups with low vaccination coverage

Reasons for not becoming vaccinated are often complex and varying in nature. Among them there are factors such as lack of knowledge, poor education, lack of opportunities, marginalisation, past experiences, concerns about vaccine safety issues, priorities, culture, lifestyle, and faith.

The European Disease Control Authority (ECDC) has defined categories of populations with low vaccination coverage (19):

Hard-to-Reach. At the present time there is no universal definition of hard-to-reach populations (19). Hard-to-reach groups, however, have generally been defined within the context of the health care system. The term refers to people who do not seek or are not reached by the vaccination services because they have limited or no access to public health care. Hard-to-reach groups include individuals from different minority groups in terms of religion, ethnicity, and origin, and these can be difficult to reach or unknown to local vaccinators and public health agencies. Individuals in these groups are often less integrated in society, and the size of the hard-to-reach groups is, therefore, difficult to estimate.

Hard-to-Convince. Vaccine-sceptical groups include people who are generally very similar to the general population in terms of socio-economic status, culture, language, and literacy. Group members also often have the same access to health care and social services as the general population, yet they have a cautious attitude to vaccinations. They might, for various reasons, either wait to vaccinate their children or refrain from vaccinating their children (19).

More recently, the concept has been reformulated from *hard-to-reach* to *underserved* or *poorly served* regarding groups that are hard to reach because of socio-economic factors or marginalisation. Therefore, vaccination programmes need to be viewed in a larger context and need to include aspects of education, transportation, registration, and health care policy for vulnerable groups (20).

Reasons for low vaccination coverage

Scepticism and critical voices against vaccinations have always existed, but the uncertainty about vaccination and vaccines might increase as we see less of the serious and contagious diseases we vaccinate against. Lately there have been several publications that highlight vaccination resistance or scepticism (21, 22), the reasons that parents decline vaccination (23), and the barriers they face in accessing vaccines (24).

Several studies have highlighted the issue of the determinants of individuals' attitudes and final decisions regarding vaccinations (21-25). There are also several models of vaccine acceptance and vaccine hesitancy, most of which focus on parents' decision-making processes (23). Common for these models is that attitudes to vaccination are seen as a continuum ranging from an active demand for vaccines to a complete refraining from all vaccines.

During measles outbreaks in Europe, Muscat et al. have identified three main reasons for low vaccination coverage against measles (26):

- *Lack of access to health care.* This is one of the main reasons for low vaccination coverage among vulnerable groups. Such groups include individuals belonging to the populations of Roma, Sinti, Traveller and migrants who have been hit disproportionately hard by measles during outbreaks in several countries in Europe. Unequal access to regular health care has been documented in these groups and might partially explain the low vaccination coverage.
- *Vaccination hesitancy.* Such an attitude can be based on the group's religion or way of life. The decision to forgo vaccination can be interpreted as an expression of the group's own definition of health where individuals assert their right to their own decisions based on religious, philosophical, or medical beliefs.
- *Lack of or insufficient information.* In these cases, inaccurate or misleading information, fear, distrust, competing priorities, etc. lead to hesitancy and parents to postponing vaccination or complete refraining from vaccination.

Within Europe, there is a growing need to address vaccination resistance or scepticism combined with a better understanding of areas with low vaccination coverage. This has led to the development of different strategies and tools designed to increase vaccine acceptability and to ultimately increase coverage. One of these tools is the TIP methodology, which is the basis of this report.

The current situation

Two groups have previously been identified as hard-to-reach based on documented low vaccination coverage of MMR: the anthroposophic community in Järna and the Somali community in Rinkeby and Tensta in northern Stockholm.

A third group, with suspected low vaccination coverage is migrants who have not received complementary vaccination in Sweden. Undocumented migrants are an especially vulnerable group among migrants because they have limited access to health care.

Statistics for local vaccination coverage in 2012 reveal a low vaccination coverage for MMR in the studied areas (Table 1).

Table 1. Vaccination coverage (%) among 2 year olds, 2012 (children born in 2009).

| Child Welfare Centre | Number of registered children | MMR | Diphtheria | Tetanus | Per-tussis | Polio | Hib ¹ | Pneumo-cocci |
|---|-------------------------------|------|------------|---------|------------|-------|------------------|--------------|
| Järna, Anthroposophic community | | | | | | | | |
| Järna | 126 | 93,7 | 94,4 | 94,4 | 94,4 | 94,4 | 93,7 | 92,1 |
| Familjehälsa ² | 41 | 4,9 | 26,8 | 26,8 | 26,8 | 26,8 | 14,6 | 4,9 |
| Rinkeby and Tensta, Somali community | | | | | | | | |
| Rinkeby | 323 | 71,5 | 87,9 | 87,9 | 87,9 | 87,9 | 87,9 | 76,2 |
| Tensta | 343 | 69,7 | 92,7 | 92,7 | 92,7 | 92,7 | 92,7 | 92,1 |
| Stockholm and Gothenburg, Migrant community | | | | | | | | |
| Vantör (Stockholm) | 413 | 95,9 | 98,3 | 98,3 | 98,3 | 98,1 | 97,8 | 97,1 |
| Flemingsberg (Stockholm) | 197 | 88,8 | 93,4 | 93,4 | 93,4 | 93,4 | 93,4 | 89,3 |
| Angered (Gothenburg) | 53 | 90,6 | 98,1 | 98,1 | 98,1 | 98,1 | 98,1 | 96,2 |
| Bergsjön (Gothenburg) | 267 | 94,8 | 97,0 | 97,0 | 97,0 | 97,0 | 95,5 | 94,0 |
| Average national vaccination coverage | | | | | | | | |
| | 113 739 | 97,2 | 98,4 | 98,4 | 98,4 | 98,3 | 98,2 | 97,5 |

¹Hib - Haemophilus Influenzae Type b

² Kirstens familjehälsa – Anthroposophic CWC in Järna, closed during fall 2014.

Anthroposophic community in Järna

Järna is a suburb in Södertälje municipality in Stockholm County with a population of about 7,000 people and about 140–150 births per year. A portion of the population follows a so-called anthroposophic lifestyle with particular views regarding food, health, and education. The lifestyle involves following the philosophies of

founder Rudolf Steiner who advocates a holistic view of health (27, 28). It is already known that some people who follow the anthroposophic way of life are hesitant towards MMR vaccinations because they believe that a measles infection is good for the child's physical and mental health development. The population, however, is heterogeneous and cannot be judged as a unified group. A report from the ECDC estimated that vaccination coverage for MMR in anthroposophic areas in Europe was 0.6 per cent to 65.4 per cent (19).

Vaccination coverage for MMR among two-year-old children in Järna is lower than in the rest of Sweden and varies from 4.9 per cent at the anthroposophic CWC to 93.7 per cent at the regular, county-driven CWC. Vaccination data from the Public Health Agency of Sweden shows that it is not just the MMR vaccine that some parents in Järna decline. Other childhood vaccines have as well lower coverage levels compared to the rest of the country (Table 1). For instance, vaccination coverage for tetanus, diphtheria, and pertussis (DTP) and polio is 26.8 per cent, which means that only one in four children are fully-protected against polio.

Several outbreaks of measles and rubella have occurred in Järna and in nearby areas in recent years. In 2012, 23 cases of measles and 50 cases of rubella were reported as originating from Järna.

Somali community in Rinkeby and Tensta

Rinkeby and Tensta are districts located in the northwest part of Stockholm with a high percentage of residents with foreign backgrounds. In 2013, the population in the Rinkeby district was 16,047 people, including 1,638 children under five years (8.9 per cent), and in Tensta the population was 18,866 people, including 1,673 children under five years (10.2 per cent). The population with Somali origin is estimated at 30 per cent (29).

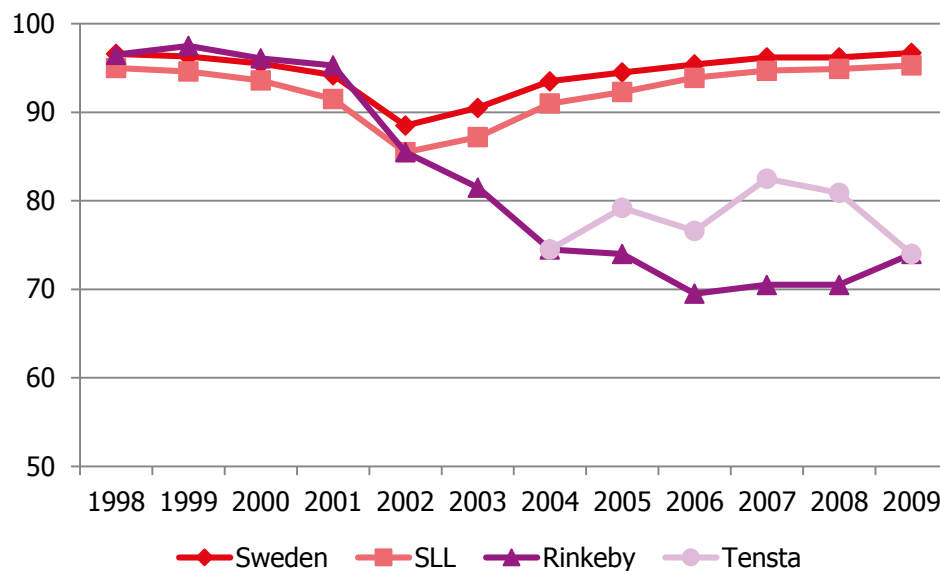
In Rinkeby and Tensta, there is concern about the MMR vaccination among groups of Somali origin, and a qualitative study conducted in 2007 among Somali women in the area showed that they do not want to vaccinate their children because they believe that the vaccine can cause autism (29). A report from The National Board of Health and Welfare confirmed these results (30). This is due to the study by Wakefield et al. (14), which claimed a link between the measles vaccine and mental retardation and autism. This causal relationship has been disproved in several subsequent studies—and this is included in information distributed to the Somali population in Rinkeby and Tensta—yet there are still some groups hesitant to accept the MMR vaccination. This is reflected in the area having had a low vaccination coverage since the late 1990s (Figure 2). Many parents choose to postpone the MMR vaccination. Data from child health care in Rinkeby show that 59 per cent of two year olds registered at the CWC were vaccinated while 76 per cent of the or four year olds were vaccinated. In Tensta 72 per cent of two year olds were vaccinated and 82 per cent of the four year olds had caught-up vaccination (31).

In 2012, the MMR vaccination coverage in Tensta and Rinkeby was around 70 per cent among two year olds (children born in 2009), which is significantly lower than

the average in Stockholm County and throughout Sweden (Table 2). In 2013, nine cases of measles were reported in Stockholm County. Two of the cases were acquired in Somalia, of which one child was aged 18 months and had not been vaccinated before departure (32). However, no outbreak occurred in association with these two cases.

In 2013, a large outbreak of polio occurred in Somalia suggesting that the vaccination programme is not functioning optimally (33). During the summer months, many Swedish-Somalis travel to Somalia without adequate protection and thus risk contracting vaccine-preventable diseases. The risk of a local outbreak increases when vaccination coverage has been low for a number of years.

Figure 2. Proportion (%) vaccinated against measles, mumps, and rubella (MMR) among 2 year olds in Rinkeby (triangles), Tensta (circles), Stockholm County Council (SLL) (squares), and Sweden (diamonds).



Source: Public Health Agency of Sweden.

Migrants

Approximately 20 per cent of the population in Sweden has a foreign background, in other words they were either born in a country other than Sweden (15 per cent) or have two foreign-born parents (5 per cent). Asylum seekers and other migrants without a residence permit are not included in the population statistics. Migrants are a very heterogeneous group in terms of reasons for and timing of migration, social situations, and countries of origin, and they include groups such as asylum seekers, family members of Swedish residents, migrant workers, students, researchers, and unaccompanied minors. The migration can vary significantly from year to year. During 2006–2013, 86,000 to 116,500 people a year received a residence permit in Sweden. In 2013, 54,259 people applied for asylum and the most common countries of origin were Syria, Somalia, Afghanistan, and Eritrea.

From the individual's and society's point of view, it is important to gain knowledge about newly arrived migrants' vaccination status. Many come from war-torn areas where the vaccination programmes ceased to operate because of conflicts, and this is evident, for example, in the outbreak of polio among children in Somalia in the spring of 2013 and in Syria in the autumn of 2013. Many new arrivals are likely to have good immunity either via a past infection or vaccination, but there is limited access to reliable data. In 2007, the Swedish Institute for Communicable Disease Control carried out a seroimmunity study among foreign-born adolescents aged 14–16 years and compared the results with Swedish-born adolescents (34). The study showed that immunity levels against diseases included in the childhood vaccination programme were equally as good in both groups. The study, however, was limited and cannot be deemed to be representative of the foreign-born population in Sweden because there was a large number of dropouts and the study focused only on adolescents.

Undocumented migrants in Sweden.

Irregular migrants or people staying in Sweden without permission are often referred to as “undocumented”. A report from the National Board of Health and Welfare showed that individuals in this group have limited options for care and are synonymous with the informal labour market. They live outside of society, often in crowded and unsafe conditions, and until recently they had limited rights to education and health care (35). The NGO Stockholm City Mission confirmed the vulnerability of undocumented children in their recently published report about children and adolescents (36). This population has limited access to education and health care even though they have the right to it by law.

In Sweden, undocumented migrants amount to 10,000 to 50,000 individuals, of which approximately 2,000–3,000 are children. Most undocumented migrants are likely to be asylum seekers who have been refused asylum, including unaccompanied minors, which is a growing and vulnerable group. Thus, there is a substantial need for studies on undocumented migrants and their living conditions (37).

Health check-up

According to the law regarding health care for asylum seekers (2008: 344), Sweden's county councils are to offer free health assessments for those seeking asylum in Sweden. The right to a health check-up also applies to family members of immigrants where the relative has had a residence permit in Sweden for a maximum of two years as well as to hidden and undocumented migrants. Health assessments, which are optional for the individual, are primarily geared towards assessing the individual's state of health, but they are also important for society as a whole from an infection-control perspective. According to guidelines by The National Board of Health and Welfare, the vaccination status is assessed during the health assessment and a plan for additional vaccinations is drawn up. Children are entitled to free additional vaccinations, which is not valid for adults, and this is a barrier for this group.

The statistics on completed health check-ups indicate that there are flaws in the system. For 2011, the Swedish Association of Municipalities and County Councils reported that only 56 per cent of asylum seekers underwent a health control. In 2012, the health status was assessed for 46 per cent of all newly-arrived asylum seekers, and preliminary figures for 2013 pointed to even lower levels (43 per cent) (38). One possible explanation for the decline in 2013 might be the unusually large influx of asylum seekers from, among other countries, Syria, which caused an overload at the Migration Board and/or the health clinics that perform health assessments. A study by Stockholm County Council in 2008 showed that the corresponding figure for asylum-seeking children under the age of 6 was 20%.

Right to health care

As of July 1, 2013, a new law (2013: 407) in Sweden was passed that gives all children under 18 years of age, regardless of legal status, access to health care, including vaccinations according to the national immunization programme. Even undocumented migrants of adult age have been extended the right to health care to the same extent that adult asylum seekers previously had. A recently published study shows that the new law with the extended right to health care for undocumented migrants does not work optimally in practice because one in five undocumented migrants is still denied subsidised care (39).

Tailoring Immunization Programmes (TIP)

The principle of TIP

As part of efforts to eliminate measles and rubella, the WHO/Europe has recently developed a method called *Tailoring Immunization Programmes* (TIP). The aim is to identify and increase knowledge about groups with low vaccination coverage (40).

The TIP method is based on behavioural theories and planning models for health programmes, including social marketing and communications, with focus on behavioural change. The models have since been adapted to the area of vaccines by the WHO.

TIP contains specific analysis tools for the following sub-steps:

- identify and stratify groups with low vaccination coverage
- map barriers and motivators for vaccination in these groups
- propose evidence-based interventions based on specific needs

The analysis method includes research studies linking traditional public health investigations and target group identification with refined stratification and profiling of the groups. This helps to understand the interests, characteristics, and needs of different population groups and individuals in a society.

The TIP guide provides methods and tools that support the work of the national immunization programme with a goal of designing targeted strategies that increase compliance with the programme. The methods described in this guide can be applied at any time in the work to maintain high vaccination coverage, but they can be especially valuable when one has identified groups with low vaccination coverage or at-risk groups with increased susceptibility to vaccine-preventable diseases.

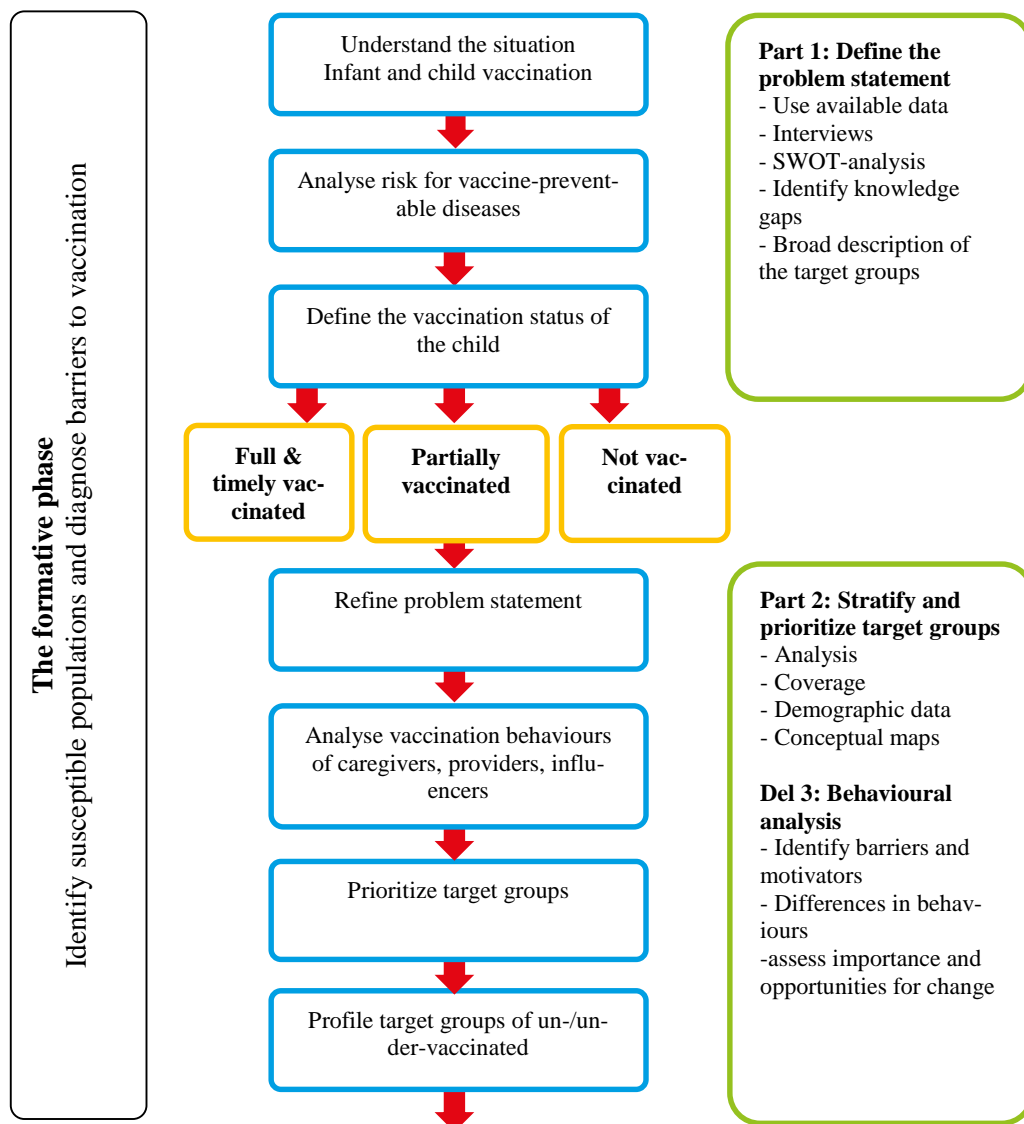
TIP: step by step

The TIP process consists of several steps, including two main phases (formative and planning), which in turn are divided into sub-steps.

The formative phase (Figure 3) aims to identify and analyse the problem via three sub-steps:

1. define the research problem
2. stratify and prioritise target groups
3. analyse behaviour patterns

Figure 3. Overview of the formative phase of the TIP.



Adapted from the TIP guide (40)

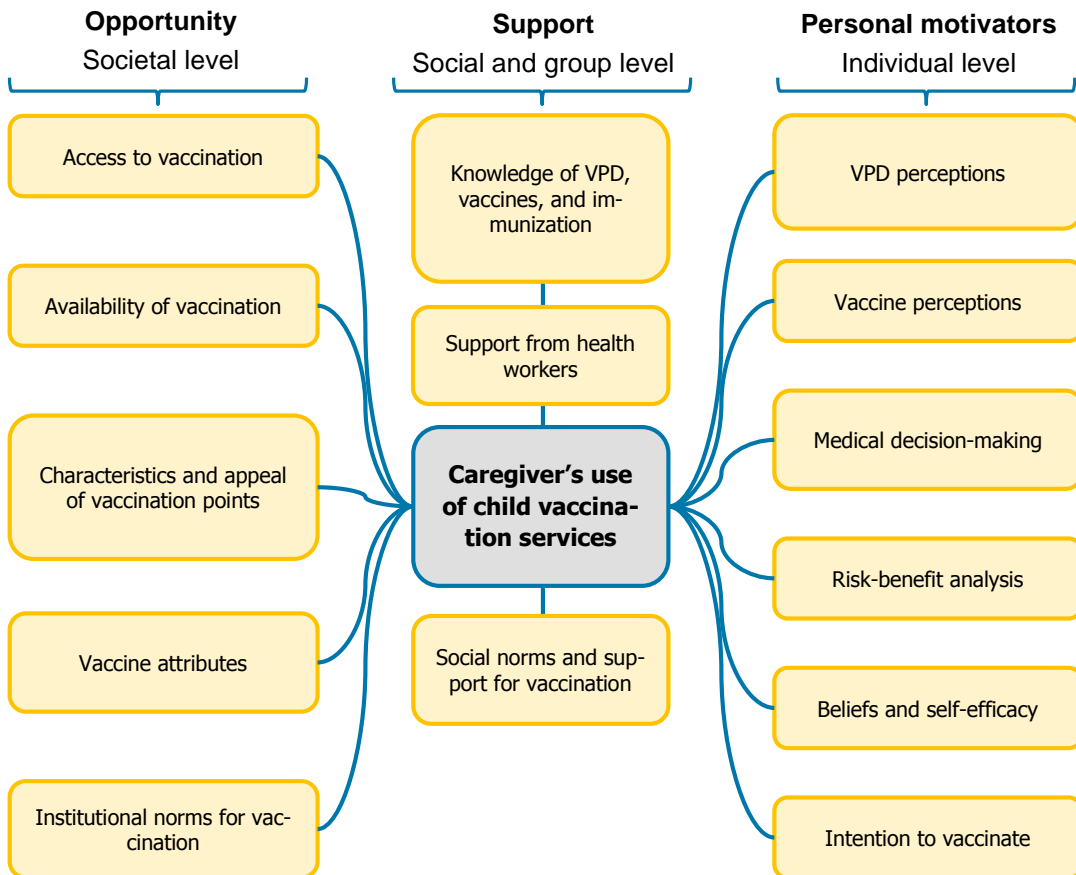
Part 1 involves identifying the research problem and focusing on research questions by identifying knowledge gaps.

Part 2 involves stratifying and prioritising target groups using quantitative data, literature searches, and discussions with key informants. Data are then collected mainly through qualitative studies that are analysed, in this case, with content analysis. The results are then structured using conceptual maps (Figure 4). A conceptual map describes the most important determinants at the community, group, or individual level when it comes to decisions about vaccinating or having access to vaccination. A factor that hinders the individual or target group is illustrated by a red bubble, while a promoting or motivating factor is presented as a green bubble (see conceptual maps for each sub-study).

In **Part 3**, behaviour patterns are analysed based on the conceptual maps, and barriers to vaccination are identified and analysed in detail. Great emphasis is also

placed on understanding the reasoning of the sub-groups that do vaccinate their children. In the dynamics of the responses and arguments between those who vaccinate and those who do not vaccinate, one can discern patterns and better understand behaviours.

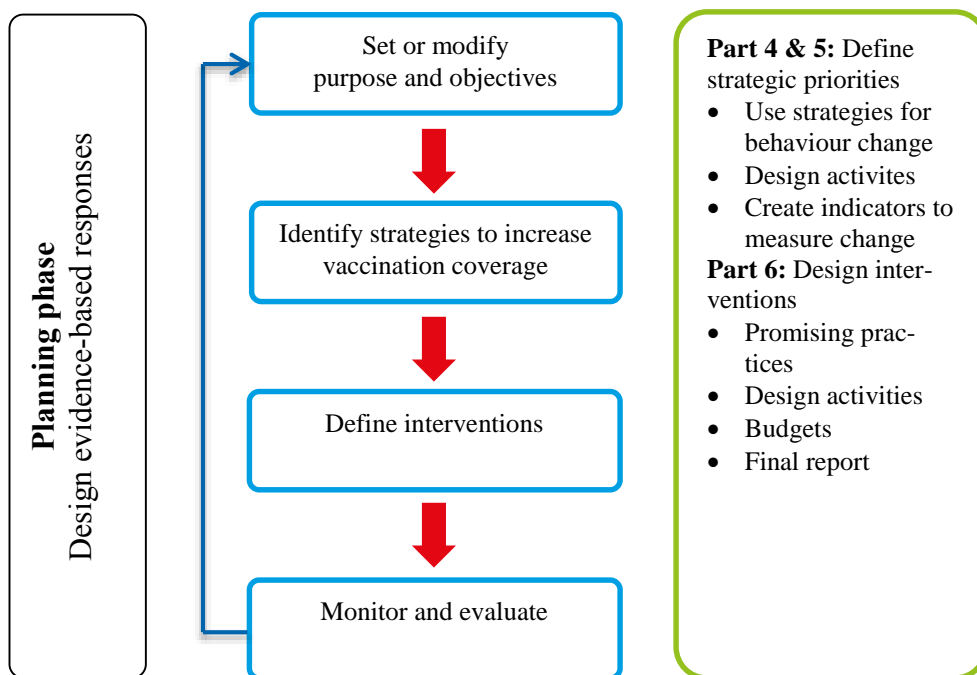
Figure 4. Example of a conceptual map according to the TIP methodology showing factors that influence decision-making and use of vaccination services.



Adapted from the TIP-guide (40)

The second phase of the TIP process is the **planning phase** that includes four steps for the design of targeted interventions based on the TIP results (Figure 5). During this phase, the aim and purpose might be modified based on the knowledge generated throughout the project. It is important that these discussions gather a broad and multidisciplinary group that includes people with local knowledge about the target groups as well as the organizations that are responsible for the vaccination coverage in the area being studied.

Figure 5. Overview of the planning phase of the TIP method.



Adapted from the TIP guide (40)

Purpose

The overall purpose of this project is to support the elimination of measles and rubella in Europe by increasing vaccination coverage to at least 95 per cent in areas with suboptimal coverage in Sweden.

Specific aims

- Pilot the TIP method in Sweden for increased knowledge about groups with low vaccination coverage and increased risk of outbreaks
- Map barriers and motivating factors for MMR vaccination in the groups studied
- Design proposals for possible interventions to prevent the spread of diseases in Sweden by developing targeted interventions in groups with low MMR vaccination coverage

The experiences gained from the project will be used for planning both information and education interventions aimed at health care workers and parents as well as other people with influence over the decision to vaccinate.

Method

The TIP methodology has been used throughout this pilot study in Sweden.

TIP step 1 - formative phase

Part 1: Define the problem statement

To define the research statement, a workshop was held with key informants, stakeholders, and the research group (appendix 1). The principles behind the TIP method were presented, and a status report of the situation was developed. Participants also performed a preliminary Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of the national immunization programme. An initial analysis of which groups to include in the project as well as an initial progress report about the groups was an important starting point for the future work and helped to specify the research questions for the qualitative studies.

The project has focused on three identified groups at risk for outbreaks of measles and rubella. The groups had been identified in advance and were described in the current situation section earlier in this report:

- the anthroposophic community in Järna, southern Stockholm
- the Somali community in Rinkeby and Tensta, northern Stockholm
- undocumented migrants in Stockholm and Gothenburg

Part 2: Stratify and prioritise target groups

The second part of the mapping phase involved three qualitative sub-studies consisting of in-depth interviews with parents of preschool children as well as in-depth interviews with child health clinic staff, health professionals, and other informants such as interpreters and staff at clinics for undocumented migrants. A qualitative research methodology was used in the study, and the material was analysed with content analysis (table 2). This part also included questions about the information and media channels as well as information search patterns within the field of vaccine preventable diseases and vaccinations.

Content analysis is an empirical scientific method that is used to draw conclusions about the content of various types of communication such as in-depth interviews (41). Within qualitative research, the latent content of an interview text is analysed meaning that the researcher makes an interpretation of the meaning of the text. The analysis process has a specific approach, and the process is explained in detail in each sub-study, in particular how the categorisation was set out.

After the qualitative analysis, the results were structured according to the TIP model and preliminary conceptual maps were produced for each sub-study.

Table 2. Overview of data collection methods and analysis for all studies

| Data collection and analysis | | |
|---|-------------------------------------|---|
| Järna | Rinkeby/Tensta | Stockholm/Gothenburg |
| Anthroposophic community | Somali community | Undocumented migrants |
| 19 in-depth interviews with 20 parents | 12 in-depth interviews with parents | 6 in-depth interviews with 7 parents |
| 6 interviews with key informants, 2 with nurses, 2 with researchers, and 2 with senior physicians at regional preventive child health services. | 11 interviews with nurses | 3 interviews with nurses |
| | | 10 interviews with care providers/volunteers at clinics for undocumented migrants |
| Content analysis | Content analysis | Content analysis |
| Literature review | Literature review | Literature review |
| Local vaccination data | Local vaccination data | Local vaccination data |

Part 3: Analyse behavioural patterns

Based on the combined quantitative and qualitative study results, each research team analysed the individual patterns of behaviour and the factors that proved to be important barriers and motivators for vaccination. In the third part, the qualitative results were analysed together with the dynamics that are evident in the conceptual maps. Results for the sub-study in Järna are described in a recent scientific publication (42), the results for the sub-study in Rinkeby and Tensta are currently being prepared for publication (43), and the results for the undocumented migrants are included in a master's thesis (44).

TIP step 2 - planning phase

In step 2 of the TIP model, the planning phase, the entire project team was gathered for a two-day workshop to discuss the results of the formative phase and to identify strategic priorities for designing feasible and relevant interventions. It was particularly important that representatives of the Department of Communicable Disease Control and Prevention and the Regional Preventive Child Health Services within the Stockholm County Council participated to identify appropriate interventions with those who carried out the studies at the Public Health Agency of Sweden and the Karolinska Institute. Representatives of the ECDC and WHO Europe also attended the workshop. In this interdisciplinary project group, there was broad knowledge represented by vaccine experts, health communicators, responsible stakeholders on the county councils, and researchers. Potential interventions were identified that were primarily based on the results of the studies, the group's collec-

tive knowledge, and the visual instruments that the TIP offers as coloured conceptual maps. Both the preliminary SWOT analysis and the conceptual maps were updated jointly during the workshop.

During the spring of 2014, several follow-up meetings were held with smaller project groups, and through them the interventions were planned in detail. Tables 3A–D describe the proposed goals, the activity plans, the target groups, and the project managers.

Method for planning and evaluation of interventions

The Public Health Agency of Sweden continuously monitors vaccination coverage, and this allows the effect of potential interventions to be evaluated. Immunization statistics are compiled at a national and local level each year. Additionally, the Public Health Agency of Sweden is responsible for the new national vaccination registry that started on January 1, 2013, and allows for continuous monitoring of vaccination coverage at the local level.

Interventions will be planned and evaluated according to the RE-AIM evaluation model (45). RE-AIM includes five aspects; Reach, Efficacy (effectiveness), Adoption, Implementation, and Maintenance. Together, these form the overall effect or outcome of a public health intervention. The model is flexible and can be based on different methods, and this allows it to be adapted to the various planned interventions that may lead to behavioural changes of a specific target group. The model can also be used during the planning phase of interventions by the use of a specific toolkit (36). Systematic planning of interventions with the various tools can lead to reliable results (46) as well as to better evaluations (47, 48).

Communication interventions for newly arrived and undocumented migrants can be difficult to evaluate due to the difficulties to estimate the actual size of the target group denominator. The RE-AIM evaluation model will be used for interventions in Järna as well as Rinkeby and Tensta and, to the greatest extent possible, to plan and evaluate communication interventions directed to undocumented migrants.

Results

The results are presented according to the TIP strategy. An analysis of the immunization programme is followed by the results of the three sub-studies (the anthroposophic community in Järna, the Somali community in Rinkeby and Tensta, and the undocumented migrants in Stockholm and Gothenburg), which is then followed by a presentation of the strategic priorities for designing relevant interventions.

Analysis of the national immunization programme

The first formative step in the TIP project was to analyse the national immunization programme according to the SWOT approach, which is a well-used tool when developing relevant strategies (Figure 6). Strengths and weaknesses provide an overview of the internal environment and the current situation, while the opportunities, risks, and threats reflect the external environment and provide a more future-orientated view of the situation.

Figure 6. SWOT analysis of the national immunization programme in Sweden

| | |
|---|---|
| <p>Strengths</p> <p>High and stable vaccination coverage for MMR. Well-established vaccination programme, including CWC services and School Health Care services.</p> <p>Focus on relations and trust among parents and health care providers.</p> <p>The website of the Public Health Agency of Sweden is well used by health care providers.</p> | <p>Weaknesses</p> <p>Distrust of the health care system among some social groups.</p> <p>Lack of knowledge regarding attitudes among child health care providers.</p> <p>Child health care providers are often overworked and lack time.</p> <p>Reduced resources for School Health Care Services.</p> <p>Lack of communication channels about vaccines from reliable sources.</p> |
| <p>Opportunities</p> <p>Government engaged in questions regarding vaccinations with a new law for the national immunization programme in 2012.</p> <p>A new national vaccination registry.</p> <p>A new Public Health Agency of Sweden in 2014 that is responsible for public health.</p> <p>Use of social media/IT, literate population.</p> <p>Parental consent required for vaccination (oral and written) – good opportunity to share information.</p> | <p>Threats</p> <p>Increasing vaccine hesitance among certain groups.</p> <p>Outbreaks due to imported cases of measles and rubella.</p> <p>Groups who actively refuse vaccination.</p> <p>Increased segmentation and marginalization of certain groups in society.</p> |

The Swedish childhood immunization programme is generally a well-functioning programme with many strengths and opportunities. However, there are a couple of weaknesses and risks identified in the SWOT analysis that are interesting to highlight. Among these is a lack of knowledge when it comes to care providers' perceptions and attitudes towards vaccination, and these must be addressed as part of the quality assessment of health care work, particularly in areas with low vaccination coverage. In addition, the CWC staff have a heavy workload with little time left for

dialogue with parents. Furthermore, the vaccine hesitance is increasing in certain groups as seen in social media. It is important, therefore, to use a variety of communication channels to convey factual knowledge about vaccines both to the public and to health care professionals.

Study among the anthroposophic community in Järna

Result of the qualitative study and the TIP analysis

The result of the study revealed that there were large differences in the interviewed parents' reasoning about the MMR vaccination and their attitudes towards vaccination in general. Three different parent groups could be distinguished:

- those who vaccinate on time
- those who postpone the MMR vaccination a few years
- those who avoid vaccination in childhood

Parents who vaccinate and those who avoid vaccinations for their children have a different approach to health that can be summed up as either an *allopathic approach to health* or a *holistic approach to health*.

The parents who vaccinated on time saw measles as a serious disease and felt that they could trust CWC staff and vaccine experts. The parents felt safe with the MMR vaccine because it has been used for a long time.

Another parent group postponed vaccination for a few years because they felt that their children were too young to be vaccinated with MMR at 18 months (Figure 7). Parents preferred natural immunity but did not refrain entirely from vaccination; instead, they would rather wait a few years to give the child time to grow, develop, and let the immune system mature prior to vaccination. While the child is un-vaccinated, parents are careful not to expose them to anyone with a disease. The parents considered themselves to be responsible for both their own and other's children in the community, and all parents who vaccinated their children before the age of 5 viewed herd immunity as an important concept.

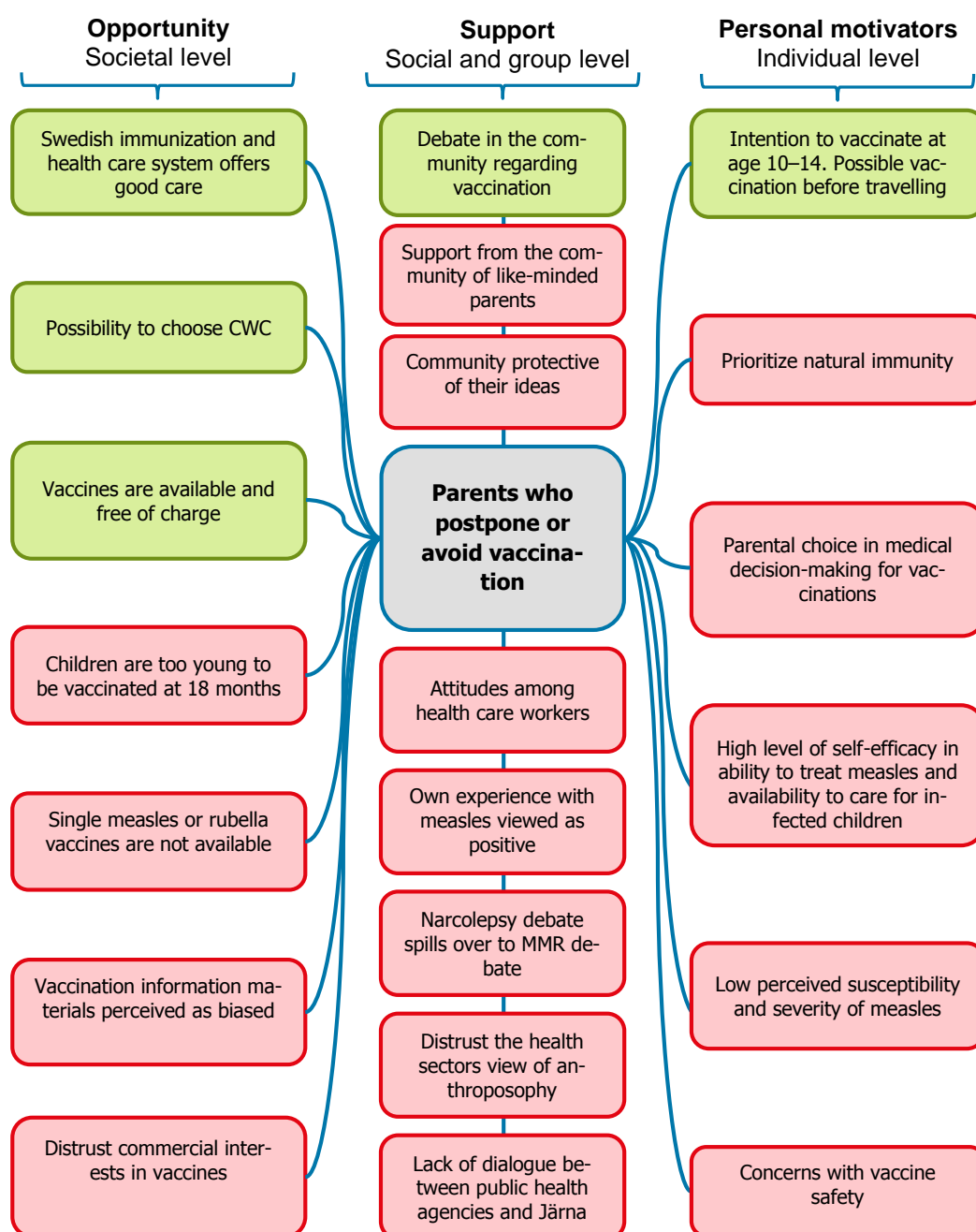
Parents who did not vaccinate their children prioritized natural immunity for children up until the teenage years. When the children became adolescents, however, the parents were planning on vaccinating them when travelling abroad if the child had not acquired natural immunity via infection (Figure 7). Concerns about long-term side effects were described as a reason to postpone or avoid vaccination, and parents also expressed distrust and questioned the commercial interests of the pharmaceutical industry and the societal motives for vaccination. They felt that decisions are made from an economic point of view. Parents felt they have the knowledge and ability to care for children having measles and consider that this only involved taking care of the children in a proper way to decrease the risks for complications due to measles. They also felt safe with the knowledge and availabil-

ity of the anthroposophic health care in Järna with its knowledgeable and experienced staff. Before taking a final decision on vaccination, they discussed the matter with the anthroposophic care professionals and sought information on the Internet.

Parents from all groups requested more balanced information about vaccinations and an objective dialogue with health care providers using evidence-based information.

Results for the sub-study in Järna are described in a recent article in *Vaccine* (42).

Figure 7. Conceptual map indicating barriers (red) and motivators (green) for parents in Järna who postpone or avoid MMR vaccination for their children.



Interventions in Järna

Future targeted interventions in Järna should be long-term and include both parents of young children as well as the rest of the community and the health sector in the area.

The following suggestions for further work in Järna should be carried out in close collaboration between the Public Health Agency of Sweden, Child Health services, and the Department of Communicable Disease Control and Prevention of Stockholm County Council.

For overall and detailed objectives and activity plans, see Tables 3A and 3B.

Interventions to improve competence among health care professionals

- In-depth educational interventions in vaccinology for increased ability to respond to vaccine-related questions
- Educational interventions to facilitate a constructive dialogue related to issues affecting children's health
- Educational interventions for increased knowledge on how a dialogue with vaccine-hesitant parents might be facilitated in a respectful manner

Health communications interventions aimed at parents

- Balanced and factual information about the MMR vaccination
- A contact person—a vaccine expert—who can provide a balanced view and information about vaccinations
- Information about the importance of being vaccinated with MMR before travelling abroad

Study among the Somali community in Rinkeby and Tensta

Result of the qualitative study and the TIP analysis

The findings from the qualitative study among parents of Somali origin can be summarised with one overall theme: *Persistent perceptions of the side effects of the MMR vaccine: children who do not start talking/autism*. In addition, there are two sub-themes: *Reasons to vaccinate* and *Reasons not to vaccinate*. The study shows that several factors influence parents' choices about the MMR vaccination (Figure 8). Newly arrived parents were generally more positive about the MMR vaccination, but when they become well rooted and have established social contacts in the area they wanted to postpone the MMR vaccination until the child had begun to talk.

In conclusion, this study in Rinkeby and Tensta suggests that parents who do not vaccinate their children generally believe that the MMR vaccine can cause side effects such as autism.

Both parents and CWC staff expressed how non-vaccinating parents tried to influence other parents not to vaccinate children against measles. Non-vaccinating parents spread rumours that the MMR vaccine is associated with autism, and some parents became frightened and refrained from vaccination.

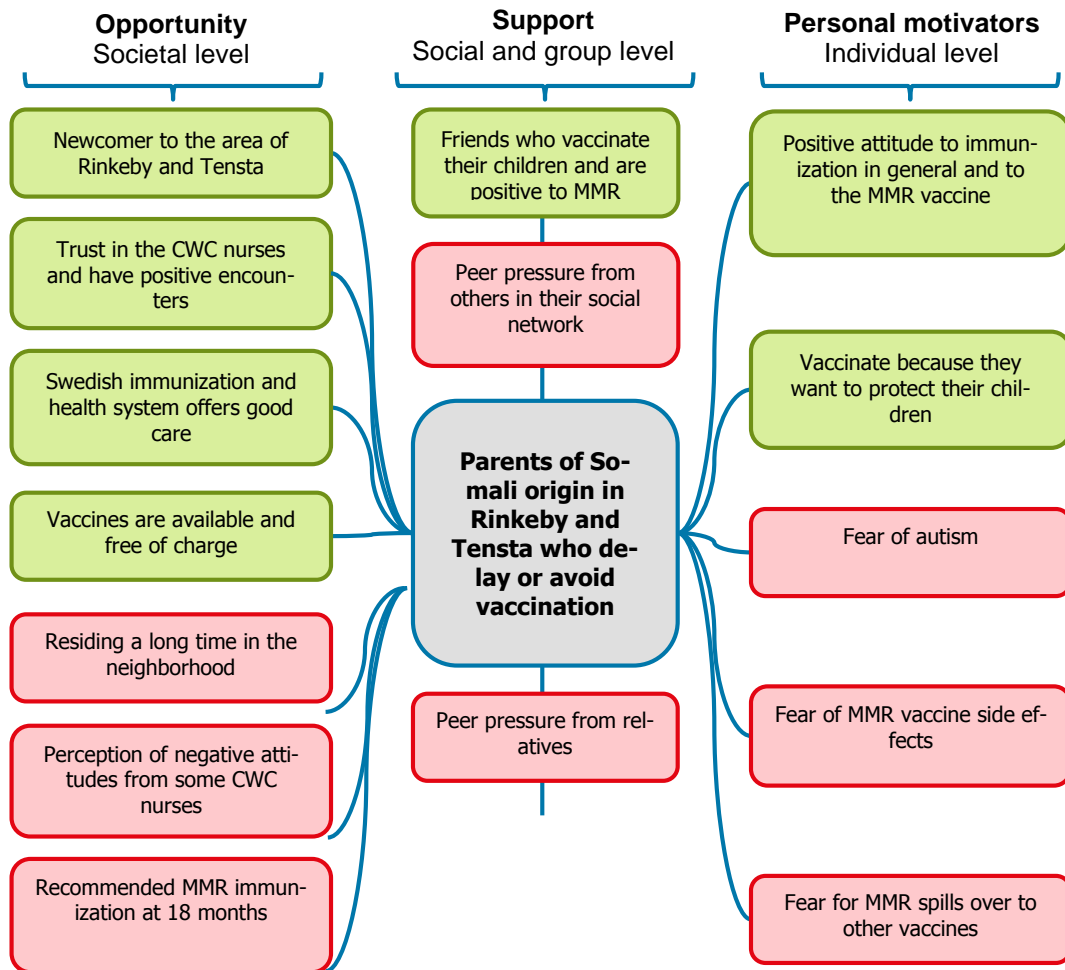
A new trend that has caught the attention of CWC nurses over the past year is the fear that the MMR vaccine also affects decisions regarding other vaccinations. CWC staff also confirmed that some parents decline vaccination at both one and five years of age due to the fear that it could be the MMR vaccine that was being offered.

The population has asked for more information about the pros and cons of vaccines, but they do not use traditional channels offered through the CWC and School Health Care. Many come from a culture where the word-of-mouth tradition is strong and where information and knowledge is passed through personal relationships. It is, therefore, difficult for health care staff to communicate knowledge about vaccines.

Parents' confidence in CWC staff was another key factor in choosing vaccination. Parents who trusted the CWC staff were more motivated to vaccinate on time. These parents also asked for advice about children's health and development, asked more questions and were more accepting of answers. The attitude of health care staff is also very important for the choice to vaccinate, and the study subjects called for a dialogue with CWC staff.

Some of the results of this sub-study will be presented in an upcoming scientific publication (43).

Figure 8. Conceptual map indicating barriers (red) and motivators (green) for parents in the Somali community in Tensta and Rinkeby who postpone or avoid MMR vaccination for their children.



Interventions in Rinkeby and Tensta

Future interventions in Rinkeby and Tensta should contain several parallel communication interventions aimed at both parents of young children as well as other community members and health care staff in the area. Interventions should particularly focus on the key Swedish-Somali informants in the area since the results of this study show that parents' social networks influence their decision about whether or not to vaccinate their children.

The report from The National Board of Health and Welfare in 2009 (30) showed that the preventive child health services made several interventions in Tensta and Rinkeby during the 2007–2009 period to answer questions from the public and to provide information about the MMR vaccine. Despite this, the fear of autism remains among Swedish-Somalis. This suggests a need for innovative interventions and thinking outside the box when it comes to education and information interventions.

Below is a proposal for continued work in Rinkeby and Tensta to be performed in close collaboration between the Public Health Agency of Sweden, Child Health services, health clinics and School Health services in the area, the Department of Communicable Disease Control and Prevention of Stockholm County Council, Regional Preventive Child Health Services, health communicators in counties and municipalities, and Somali NGOs.

For overall and detailed objectives and activity plans, see Tables 3A and 3C.

Interventions to improve competence among health care professionals

- Strengthened education in vaccinology for increased ability to respond to vaccine-related questions
- Educational interventions for local health care staff to facilitate a constructive dialogue with Somali groups regarding vaccination and the non-existent link between the MMR vaccine and autism
- Increased support for responding to vaccine-hesitant Somali parents

Health communications interventions targeted at parents

- Culture and target-group tailored communications
- Balanced and factual information about MMR vaccinations
- Conditions to discuss autism within existing networks
- Information about the non-existent link between the MMR vaccine and autism
- A contact person—a vaccine expert—who can provide a balanced view and information about vaccinations
- A “vaccine champion” project, i.e. innovative channels to reach key Somali informants who can forward information about vaccinations to Swedish-Somalis in Rinkeby and Tensta
- An educational project following *peer-to-peer* methodology (49-51) based on educators from the Somali community. An advantage of the peer-to-peer method is that the local trainer can provide information in the target group’s own language and can consider cultural aspects.
- Information about the importance of being vaccinated against MMR before travelling abroad.

Other targeted interventions

- Ensuring that vaccination status is always assessed as part of the medical check-ups of newly-arrived Somalis
- A targeted seroimmunity study in Rinkeby and Tensta in order to investigate the immunity levels of the population as a whole against measles and rubella. This is to better assess the risk of an outbreak and the need for tailored interventions.

Study of undocumented migrants in Stockholm and Gothenburg

Result of the qualitative study and the TIP analysis

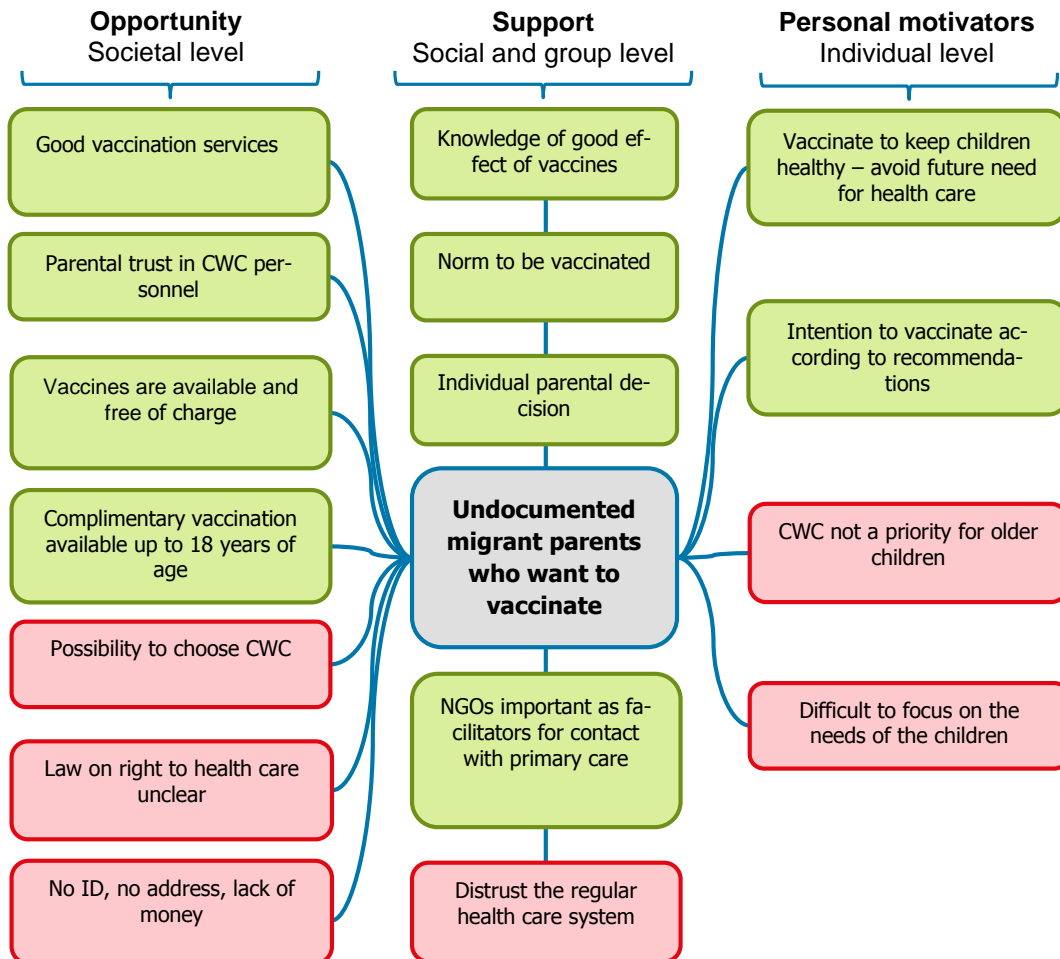
The findings of the qualitative study among undocumented migrants can be summarised in two overall themes: *parental acceptability of childhood vaccines* and *parental fear of being questioned*. In summary, this study showed that undocumented migrant parents tend to have a positive attitude toward childhood vaccination and want to vaccinate their children to keep them healthy (Figure 9). However, there are structural obstacles at different levels and a consistent level of fear that reduce their access to health care and to vaccinations. Undocumented migrant families move around, often at short notice, which limits access to vaccination services. Despite knowing that every child is entitled to health services in Sweden, undocumented parents expressed mistrust toward the health care providers, thus they avoided the health care facilities. Many were afraid that they would be deported or be required to show ID or provide a permanent address when seeking care. The laws are complex and difficult to interpret for both migrants and health care staff since access to health care depends on the individual's legal status and regional regulations.

The main challenge that the CWC staff face is strengthening parents' confidence in child health services and motivate them to come for regular follow-ups and vaccinations. CWC staff also struggle with administrative and financial barriers such as the reimbursement system that impedes the nurses' work and limits the time they can spend with patients.

One of the objectives of this project was to find out how undocumented migrant parents gain access to child health care and the health care system (so-called *entry/exit points*). The health care sector finds it difficult to deal with people with no Swedish personal ID number or LMA card (the LMA is the Act on the reception of asylum seekers), and misunderstandings about rights arise when medical staff is not familiar with the law. This results in families feeling scared and rejected and choosing to forgo health care. NGOs take on an essential support function for undocumented migrants' contact with health care, and the clinics for undocumented migrants (Red Cross, Doctors of the World, and Rosengrenska) mediate and facilitate contact with health care for both adults and children. In this context, it is important to remember that a person can change legal status several times during the asylum process—from asylum seeker, to “in hiding”, and back to asylum seeker—and the rights to health care are different depending on their legal status.

Part of the results have been presented in a master's thesis (44).

Figure 9. Conceptual map indicating barriers (red) and motivators (green) for undocumented migrant parents who want to vaccinate their children in Stockholm and Gothenburg.



Interventions involving undocumented migrants

Interventions should include parallel and innovative communications interventions that are targeted to both the different migrant groups as well as health care staff. Special focus should be given to key informants and NGOs because the TIP results show that they are important entry points and they form a link to regular health care for both children and adults who are undocumented migrants.

The Public Health Agency of Sweden has prepared guidelines for health care personnel on medical check-ups (52) within the framework of the project “Structural improvement and coordination regarding health assessments of asylum seekers”. The overall objective of the project was to improve health assessments for asylum seekers. In the guidelines, there are also important themes on the work with migrants in a health care context with particular emphasis placed on health assessments. These guidelines can be valuable in future work with newly arrived migrants.

Below are suggestions for further work that should be carried out in close collaboration between various stakeholders such as the Public Health Agency of Sweden, Child Health services, the Department of Communicable Disease Control and Prevention and NGOs active in each geographic area and in different fields of expertise. The purpose of the interventions is to increase access to complimentary vaccinations for vulnerable migrant groups, especially undocumented migrants, asylum seekers, and new arrivals.

The undocumented migrants' situation regarding vaccination and health care issues involve structural problems at different levels that need to be addressed by authorities at a societal level. This might involve disseminating information about new laws concerning the right to health care for new arrivals and increasing the implementation rate of health assessments.

For overall and detailed objectives and activity plans, see Tables 3A and 3D.

Interventions to improve competence among health care professionals

- Information interventions with the goal that vaccination status against vaccine-preventable diseases is always evaluated as part of the health assessment
- Educational interventions about complementary vaccination for staff who perform health assessments.

Other targeted interventions

- A seroimmunity study among new arrivals to gain knowledge about the immunity status against measles, rubella and polio in order to be able to assess the need for special interventions and to gain guidance regarding recommendations for complimentary vaccinations for children and adults
- A targeted seroimmunity study in migrant-dense areas with low vaccination coverage
- Informing about the importance of being vaccinated with MMR before traveling abroad

Discussion

The Public Health Agency of Sweden is responsible for surveillance of the national immunization programme, and it works in collaboration with relevant authorities and stakeholders to proactively maintain high vaccination coverage at a national and local level. At the national level, in addition to the continuous monitoring of vaccination coverage analysis of the trends and changes in attitudes to vaccinations is needed. There should be a clear objective so that preventive interventions meet the needs of those groups who are difficult to reach with information and knowledge. This includes the most vulnerable groups such as children and certain migrant groups, especially undocumented migrants.

The results of this project and its sub-studies have provided insights into how parents in the studied populations reason when it comes to vaccination issues. In addition, knowledge has been gained regarding how the work with vaccine-related issues among hard-to-reach groups could be conducted. The results reveal that targeted interventions such as communications strategies need to be strengthened at the local and individual level in areas with low vaccination coverage and that these interventions should be carried out for an extended period of time. Furthermore, health care staff need relevant and evidence-based information about vaccines and the people's attitudes toward them. Issues related to health care providers' interactions with vaccine-hesitant parents also need to be addressed.

To our knowledge there are no scientific evaluations of interventions within the field of vaccination. Thus there are no evidence-based interventions aimed at increasing vaccination coverage through behavioural change among hard-to-reach groups. Evaluation of interventions is often complex, expensive, and time-consuming, and in the face of a lack of scientific evidence, one often has to rely on best practices. However, evaluations of the interventions are necessary regardless of the strategy used.

It would also be beneficial if several European countries could cooperate and exchange knowledge and experience regarding vaccinations in anthroposophic communities since several neighbouring countries have similar communities. Several European countries (Germany, Austria, the UK, and the Netherlands) have had outbreaks in anthroposophic communities in recent years (53-56), but interventions have been focused on controlling and limiting outbreaks rather than preventing them. Thus, there is limited information about interventions to increase vaccination coverage in anthroposophic communities. In addition, to our knowledge, there are so far no scientific publications on evidence-based interventions for the work with the Somali community or with undocumented migrants in Europe.

This project has contributed with new knowledge and interesting findings that are specifically related to the different targeted groups. We have gained a better understanding of parents' attitudes to vaccination and barriers in deciding to vaccinate children. We have also gained a major insight into care providers' challenges and

the need for additional training and support in their daily work with hard-to-reach groups.

The project has provided a foundation and guidance for the continued work in disseminating knowledge and communicating messages and information about vaccination. This report also includes proposals for targeted interventions for each target group, communication strategies, and materials that will be developed in the future. The health care field has the responsibility to implement the vaccination programme and will also take the lead in developing interventions. Interventions will be tested and evaluated so that municipalities and counties will later be able to use them as a complement to current work on vaccination coverage.

Reflections on the TIP method

Our overall experience with the TIP method is that it is a valuable tool for structuring the research statement. The method is flexible in terms of data collection, which is done using both qualitative and quantitative methods, as well as so-called grey literature. The grey literature consists of reports, summaries, and research publications that have not been published as peer-reviewed articles or monographs, and this literature search also includes such conference papers and reports. One strength of the method is that it allows for an overall perspective of the research question and for the identification of possible solutions and interventions.

Formative studies should be included in the project to develop and adapt the TIP method. Also, these studies should be carried out while the project is ongoing in order to refine and improve the project activities. Below are some brief comments about our experiences and lessons learned on the implementation of the TIP method.

Work process

- By using the TIP, it is easier to focus on the content rather than the format of the methodology. There is a structure—a toolkit—that provides support on how to focus on the problem statement through formative research.
- Technical support from the WHO consultants and possibly from local TIP experts is very important to get started and to analyse and structure the data gathered at an early stage of the project.
- Seminars and workshops with interdisciplinary expertise and key informants are essential.
- TIP provides a good start for planning and designing targeted evidence-based interventions.
- Data are collected in several different ways with focus on qualitative studies.

TIP benefits

- The systematic approach of the TIP method and its structured way of presenting qualitative findings facilitates the understanding of the problem and possible solutions from different perspectives.
- One of the cornerstones of the TIP method is stratification of the target group into *doers* and *non-doers*. In a vaccine context, *doers* are the parents who choose to vaccinate, and *non-doers* are those who do not vaccinate. The types of interventions that are most suitable emerge from the dynamics between the two groups.
- Our experience is that the TIP method is flexible because all steps do not need to be included during the formative phase. TIP can be applied even if the study population does not allow for stratification, as in the case of the undocumented migrants in the present study.

TIP disadvantages

- A general limitation is that the TIP method focuses too much on individual behavioural patterns. There are often structural barriers at the societal level that cannot be addressed at the individual level.
- The implementation part of the TIP method needs to be further developed and supplemented with a toolbox containing suggestions for evidence-based strategies for communicating with and providing information about vaccinations to the specific target groups.
- It is also necessary to propose models and tools for systematically planning and evaluation of the targeted interventions.

The usefulness of TIP in Sweden

- TIP has directly contributed to the design of the national action plan to prevent the spread of measles and rubella (6) as well as to a national communication plan for vaccines and the immunization programmes in Sweden (7).
- TIP was useful for identifying structural, administrative, and financial obstacles outside the influence of health care providers.
- Experiences and lessons learned in testing and implementing the TIP method for immunizations will be utilised in other areas of public health. For example, the TIP method has been adapted in order to reach target groups for an antibiotic programme called *Tailoring Antimicrobial Resistance Programmes* (TAP). The Public Health Agency of Sweden has been assigned to pilot and implement the TAP method in 2014.

In summary, the TIP project has contributed to new knowledge and important insights regarding vaccination among hard-to-reach groups.

Activity Plans – The Public Health Agency of Sweden in cooperation with county councils

Table 3A. Suggestions for interventions – all target groups

| Aim of project | Target group | Activity | Manager |
|--|---|---|--|
| Increased competency in vaccinology, VPDs, and methodology for improved dialogue with vaccine-hesitant parents. | Health care workers – CWC | Web-based information on the history of infectious diseases and vaccine safety. How to encounter vaccine-hesitant parents (role-playing). Three movies uploaded on the website of the Public Health Agency of Sweden. | The Public Health Agency of Sweden in collaboration with: a. Virologists b. Medical Products Agency c. the senior physicians at regional preventive child health services and vaccine experts |
| Facilitate the dialogue between health care workers and vaccine-hesitant parents by producing and providing written evidence-based educational material. | Health care workers – CWC and School Health Care. | A reference group will go through and translate existing information material from the ECDC, the National Board for Health and Welfare, and the preventive child health services. An example of this is Promovax (see Appendix 2 External resources - communications material). | The Public Health Agency of Sweden and the Department of Communicable Disease Control and Prevention of the Stockholm County Council. |
| Increased knowledge of the importance of vaccination before travelling abroad for both children and adults. | General public and professionals | Information on the website with a focus on diseases and vaccination before traveling abroad. Brochure for vaccinations before traveling abroad, including a risk/benefit analysis. | The Department of Communicable Disease Control and Prevention of the Stockholm County Council, the Preventive child health services, the National Board for Health and Welfare, and the Public Health Agency of Sweden. Review of the reference group consisting of TIP participants and target group members. |
| Increased knowledge of vaccinations with updated information on the website of the Public Health Agency of Sweden | Health Care Professionals General public | Improve and upgrade the website. Include a FAQ Address vaccine hesitance Complimentary vaccinations Information to parents with a focus on: How vaccines work Side effects Vaccine adjuvants (excipients) Links to testimonials | The Public Health Agency of Sweden |

Table 3B. Suggestions for targeted interventions – Anthroposophic community in Järna

| Aim of project | Target group | Activity | Manager |
|--|---|---|---|
| Inform about the results of the study in Järna. | Public and health care workers from CWCs in Järna | Presentation and discussion of the results at the regional meeting for CWC nurses in Järna and Södertälje | The Public Health Agency of Sweden, the Preventive child health services, and the Department of Communicable Disease Control and Prevention of the Stockholm County Council |
| Good knowledge of MI (Motivational Interviewing) among health care providers. | CWC nurses | MI with a focus on discussions regarding vaccinations (evidence-based techniques) | Preventive child health services as part of an educational programme for all CWC nurses in Stockholm County Council |
| Increased knowledge in vaccinology. | Staff in school health services and the CWC in Stockholm County Council | Targeted education regarding vaccinations | Preventive child health services and the Department of Communicable Disease Control and Prevention of the Stockholm County Council will organize the education. |
| Attitudinal study among preventive child health services as part of the quality assurance work | CWC and health clinic staff | Individual interviews with CWC nurses and physicians Focus group discussions | Regional preventive child health services will develop and organize a qualitative study. |

Table 3C. Suggestions for targeted interventions – Somali community in Tensta and Rinkeby

| Aim of project | Target group | Activity | Manager |
|---|--|---|--|
| Inform about the results from the TIP study in Rinkeby and Tensta. | General public and staff at the CWC and School health care in Rinkeby and Tensta | Meeting and discussion about the results of the TIP and scientific article at a district meeting for CWC staff in Rinkeby and Tensta. | The Public Health Agency of Sweden, the Preventive child health services, and the Department of Communicable Disease Control and Prevention of Stockholm County Council |
| Increased knowledge about vaccines in the Somali community through educational and communication interventions with the aim to: a. increase the proportion of timely MMR vaccinations at 18 months of age b. dispel rumours and misinformation regarding any causal link between MMR and autism | Somali community (parents) | <p><u>Web-based slideshow</u> Develop a slideshow with a speaker voice in both Somali and Swedish regarding VPD, MMR, and autism.</p> <p><u>Direct contact with a vaccine expert</u> A vaccine expert will be available to answer questions through email.</p> <p><u>Written information</u> Develop targeted information regarding vaccinations.</p> <p><u>"Vaccine champion" project</u> Develop YouTube clips with a famous Somali and a Somali physician.</p> <p><u>Peer-project</u> Educational "peer-to-peer" project including discussion forums</p> <p><u>Lectures</u> on vaccine-related themes targeted to parents. Hosted by local NGOs.</p> | Managed by the Public Health Agency of Sweden in collaboration with the Preventive child health services and the Department of Communicable Disease Control and Prevention of Stockholm County Council |
| Increase competencies among the health care staff to provide objective information to promote timely vaccination at 18 months of age among Somali children as well as increase knowledge about autism. | Health care staff, health communicators, and translators | Discussion forum and a database of Frequently Asked Questions (FAQ) and other targeted communication interventions developed within the primary health care. Education in smaller groups with the aim to increase competence regarding MMR vaccination and autism among health care providers and health communicators who work with the Somali community | Preventive child health services and the Department of Communicable Disease Control and Prevention of Stockholm County Council |
| Increased knowledge and a description of the current situation regarding autism in Somali communities. | | Literature review and a compilation of information regarding diagnoses for autism and MMR in Rinkeby/Tensta and similar communities such as that in Minnesota, USA | Public Health Agency of Sweden (master student) and Stockholm County Council |
| Gain knowledge of the immunization status and the risk for outbreaks among children and adults in Rinkeby/Tensta. | General public in the districts | Seroimmunity study in Tensta/Rinkeby through the collection of leftover blood samples at the local laboratories. | Public Health Agency of Sweden. The health care centres in Tensta and Rinkeby will collect the blood samples |

Table 3D. Suggestions for targeted interventions – migrants, including undocumented migrants

| Aim of project | Target group | Activity | Manager |
|---|--|--|--|
| Present and discuss the results of the TIP study among undocumented migrants | Health care staff at clinics for undocumented migrants | <u>Present the results of the study</u> Four interviewed key informants and volunteers. <u>Planning of activities</u> Organize a lecture about vaccinations and the child immunization programme and planning of activities. | Managed by the Public Health Agency of Sweden |
| Vaccination status is checked during the health assessment for newly arrived migrants in Sweden | Health care staff who conduct health check-ups | Develop web-based educational lectures regarding complimentary vaccination for health care staff conducting health check-ups. Series includes planning for complimentary vaccinations and puts children and parents in contact with CWC and health care clinics if wanted. | The Public Health Agency of Sweden, the National Board for Health and Welfare, and County Councils |
| Gain knowledge regarding the immunity status among children and adults in migrant-dense areas with low vaccination coverage | Hard-to-reach groups with low vaccination coverage | Targeted seroimmunity study in migrant-dense areas with low vaccination coverage (such as Angered in Gothenburg and Rosengård in Malmö) by collecting leftover blood samples from selected laboratories. | The Public Health Agency of Sweden. Health care centres in Angered and Rosengård will collect the leftover blood samples |
| Gain knowledge regarding the immunity status among newly arrived child and adults migrants (refugees and asylum seekers) | Hard-to-reach groups with unknown vaccination coverage | Pilot study, targeted seroimmunity study (Stockholm) by collecting additional blood samples in connection to testing for other reasons. | The Public Health Agency of Sweden. Six health care centres that perform health check-ups in Stockholm. |

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Appendices

Appendix 1 Project organisation

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Appendix 2. External resources - communications material

The number of people without protection against vaccine-preventable diseases is increasing in the WHO's European Region. As of recently, a number of international agencies, networks, and organisations have been formed to work jointly with vaccination interventions targeted at different groups. Among other things, the following guideline documents, information, working methods, and tools have been published:

ECDC

- *Let's talk about protection*. Support for health care staff in dialogues about child vaccinations and flu vaccinations as well as handling myths about the MMR vaccine. <http://www.ecdc.europa.eu/en/healthtopics/immunisation/comms-aid/Documents/Vaccine-comms-action-2013.pdf>
- Conducting health communication activities on MMR vaccination. http://www.ecdc.europa.eu/en/publications/publications/1008_ted_conducting_health_communication_activities_on_mmr_vaccination.pdf
- Communication on immunization – Building trust. <http://www.ecdc.europa.eu/en/publications/Publications/TER-Immunisation-and-trust.pdf>

WHO

- *Immunization in Practice - A practical guide for health staff, 2014 Updated*. <http://www.who.int/immunization/documents/training/en/>

Promovax (Promote Vaccination among Migrant Populations in Europe) project, www.promovax.eu.

- *A toolkit for the Health Care Worker*. Information for health care providers. Available in English and Somali.
- *Do you know all about vaccines?* Information for migrants. Available in English and Somali.

The National Board of Health and Welfare

- Brochure. The Swedish vaccination programme for children. Information for parents. <http://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/17855/2010-1-2.pdf>

The report presents results from a pilot test of Tailoring Immunization Programmes (TIP), a method developed by WHO/Europe to identify barriers and motivating factors to MMR vaccination in communities with low coverage in Sweden.

The study is the basis for suggested tailored communication and educational interventions with the goal of increasing vaccination coverage in the studied populations.

This report describes experiences and lessons learned during the implementation of the TIP and is mainly intended for health care professionals, other national authorities, and non-governmental organisations.



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