



Expertise
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for the future

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Counselling parents about their child's vaccinations (ages 0 through 6)

Developing an educational PowerPoint presentation for the EDUVAC project

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<p>Immunization is an efficient and cost-effective way of preventing deaths globally. Health care professionals require ongoing education regarding immunization and thus, the purpose of this thesis is to enhance the vaccination competence of health care students. This thesis was done as part of the EDUVAC project which aims to improve the competence of health care students as vaccinators on an international scale. Therefore, the aim of this thesis was to create an educational video, for the EDUVAC project, about the counselling of parents of young children with their vaccinations. The final product will become part of the EDUVAC web-based course material.</p> <p>The method for this thesis included gathering scientific information on the different aspects of vaccination and counselling of parents of young children. Additionally, information gathering was done on the aspects of a great quality educational video. Therefore, the script and the video were created based on accurate and appropriate information. The educational video for this thesis was supposed to mimic a real-life situation of parents bringing their one-year old child into the health clinic for their scheduled vaccines. The filming was planned to be done in a simulation classroom where an authentic health care professional's office was to be replicated.</p> <p>However, due to the COVID-19 pandemic, some alternations needed to be made for this thesis. The educational video was replaced by a PowerPoint presentation that includes photographs taken from a client counselling situation at the clients' home. Hence, the presentation is the final product of this thesis and is included in the appendices. The presentation was created to help healthcare students gain better understanding and skills of client counselling regarding the vaccination of a paediatric patient.</p>	
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<p>Rokottaminen on tehokas ja kustannustehokas tapa estää maailmanlaajuisesti kuolemia. Hoitotyön ammattilaiset tarvitsevat jatkuvaa koulutusta immunisaation lisäämiseksi rokottamisen kautta. Tämän opinnäytetyön tarkoituksena on kehittää hoitotyön opiskelijoiden rokotusosaamista. Opinnäytetyö tehtiin osana EDUVAC hanketta, jonka tarkoituksena on kehittää ja lisätä hoitotyön opiskelijoiden ammatillista rokotusosaamista kansainvälisellä tasolla. Toiminnallisen opinnäytetyön tarkoituksena on opetusvideon luominen, jossa käydään läpi neuvolaikäisen lapsen vanhempien ohjaamista rokotustilanteessa.</p> <p>Opinnäytetyön menetelmiin kuului taustatiedon etsiminen rokotuksen eri aihealueista ja vanhempien ohjauksesta. Lisäksi etsimme taustatietoa laadukkaan opetusvideon tekemisen kriteereistä. Näin ollen käsikirjoitus ja videon suunnitelma tehtiin tarkkaan tutkimustietoon perustuen. Opetusvideolla tilanteessa oli tarkoitus kuvata tosielämää vastaava tilanne, jossa vanhemmat saapuvat neuvolakäynnille yksivuotiaan lapsensa kanssa. Käynnillä on tarkoitus antaa rokotusohjelma mukaiset rokotteet. Videolla oli tarkoitus esiintyä vanhemmat ja heidän yksivuotiaan lapsensa, ja terveydenhoitajana esiintyvä sairaanhoitajaopiskelija Kuvaaminen suunniteltiin toteutettavaksi simulaatio luokkatilassa, joka parhaiten vastaisi terveydenhoitajan vastaanottoa.</p> <p>Vallitsevan COVID-19 pandemiatilanteen takia, opinnäytetyön suunnitelmia piti muokata tilanteen sallimissa puitteissa. Opetusvideon kuvausta ei voitu toteuttaa koulujen sulkeuduttua, joten opetusvideo korvattiin PowerPoint esityksellä, johon liitimme valokuvia, jotka on otettu lavastetusta ohjaustilanteesta lapsen, vanhemman ja terveydenhoitajan välillä. Esityksen tarkoituksena on tarjota hoitotyön opiskelijoille kattavaa tietoa potilasohjauksesta, keskittyen erityisesti kommunikointiin vanhemman ja lapsen kanssa hoitokäynnillä, jossa on tarkoituksena antaa rokotteita lapsiasiakkaalle.</p>	
Avainsanat	Rokottaminen, rokotusosaaminen, ohjaus, neuvolaikäinen lapsi, vanhempi, opetusmateriaali

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Appendix 1. Script for the educational video

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1 Introduction

According to the World Health Organization (WHO) immunization is an important and efficient way of preventing deaths caused by life threatening diseases while also being cost effective. Public health care professionals require ongoing education concerning vaccinations in order to maintain proper procedures when vaccinating and providing patient guidance (Nikula, 2011, p. 15-16). The EDUVAC project works to improve the skills and vaccination competence of health care students on an international scale. One of the objectives is to develop a web-based course for educational purposes, and thus this thesis aims to produce material for this course. According to research, Finland's organized vaccination program has allowed the vaccination coverage of the country to be at an excellent level. (THL, 2018, p.7.) Many of the vaccines included in the national vaccination program are given in the early years of life (THL, 2020a).

The great importance of vaccines received in the early age of life makes the counselling of parents of young children extremely important. Therefore, the aim of this thesis is to collect information and knowledge about counselling of parents regarding the immunization of their children. Furthermore, the aim is to produce an educational video where a real-life counselling situation is modelled. Additionally, it is important to gather knowledge on how children experience the vaccination procedure in order to provide valid information on how to vaccinate the children accordingly and improve their experience.

2 Aim and purpose of the Thesis

The aim of this thesis is to provide educational video material for health care students about the vaccination of children (ages 0-6) and counselling of parents of those young children. Therefore, the purpose is to enhance health care students' competence as vaccinators. Furthermore, this thesis aims to develop educational video material specifically for the EDUVAC program that these health care students will be participating during their studies. An educational video on the guidance of parents with children from ages 0 to 6 will be produced and included in the EDUVAC web-course material. The aim is to create accurate and quality educational material and thus, the video will be produced by using empirical evidence gathered from different literary sources and official health promotion websites.

3 Description and purpose of the EDUVAC project

The World Health Organization (2019) states, that vaccinations have been proven effective in decreasing deaths around the world while also being highly cost-effective. On average, immunization prevents about 2 to 3 million deaths per year that are caused by life threatening infectious diseases. (WHO, 2019). Vaccinations are administered by certified public health care professionals and thus, maintaining proper procedures requires ongoing education of vaccinators (Nikula, 2011, p. 15-16).

The EDUVAC-project is about creating educational programs that will enhance the quality and relevance of the learning programs in vaccination at the partner institutions of the project. This is planned to happen via developing and implementing a web-based course and an intensive course to strengthen the knowledge, skills and attitudes of students at the universities about vaccination. The web-based course is set to be covering 3 ECTS and the Intensive Course worth 2 ECTS. These will provide students within the EU with valuable education on the attitudes, skills and knowledge regarding vaccinations. The EDUVAC-project will take time from 1st of September 2018 until the 31st of July 2021, with possible changes to the ending date. The participating partners in the project are all institutions of Higher Education from Greece, Finland, Slovakia, Spain and Italy and were chosen on the basis that they all educate students who will be health professionals having vaccinations integrated into their study programs in different ways. (Nikula, 2018, p.1-3.)

The EDUVAC project aims to increase vaccination competence of health care students by improving the current educational program with the inclusion of international partnership of other educational institutes in order to develop internationalized strategy regarding vaccination competence. The project is planned to be done in co-operation of teachers and professors from all the 5 institutions to produce the online material and arranging the Intensive Courses which are planned to happen two times. These courses are participated by students from all the institutes and they will gain competences in the topic of the project. Students participating to the Intensive course will also gain experience and improve their skills in the English language as the whole project will be conducted in English. Some possibilities will also be offered to students to participate into the project with their final thesis and/or innovations projects with the chosen topics related to the EDUVAC-project. (Nikula, 2018, p.1-4.)

4 Different aspects of vaccination

4.1 Vaccination in general

Vaccination means the administration of a vaccine that often contains micro-organisms or viruses, or nowadays also other substances, in a killed or weakened state to improve and help the immune system in developing resistance to certain diseases. Vaccination is one of the most effective interventions in health promotion. (Nikula A. 2007, Hermanson E. 2012, National Institute for Health and Welfare (THL), 2018.) It is a way of preventing human beings of having to go through dangerous infectious diseases such as tuberculosis or measles. Vaccinations are meant to protect people. (National Institute for Health and Welfare (THL), 2018).

Additionally, vaccinating is proven to be the most cost-effective health promotion investment due to its easy accessibility even to the most hard-to-reach populations at remote areas (WHO, 2016). In Finland the basic vaccinations, which are part of the national vaccination program, are voluntary and free of charge (THL, 2017a). Therefore, the public's trust in vaccine safety is of great importance in the success of vaccination programs (WHO, 2013). Overall, vaccination is a good health promotion and prevention action as it does not require any major lifestyle changes in one's life (WHO, 2016).

4.2 Immunization

The word immunization is used to describe the process whereby a person or a population is provided with protection and immunity, or resistance, against an infectious disease. This is usually achieved by the administration of vaccines. Immunity is a biological state of a human body to be able to resist the disease trying to invade it by inducing the immunological memory against a specific disease-causing pathogen. Via vaccines, the body's own immune system is stimulated to develop a long-lasting immunity towards any antigens from specific infections-causing pathogens. (Ministry of Health, 2018.) A vaccine contains typically particles called "agents" that resemble the disease-causing micro-organism, created from weakened or killed forms of the actual microbe. As the "agent" is inserted to the immune system of the body, it starts to stimulate the immune system in recognizing and remembering it, so that it is able to later destroy any similar microorganisms that may be encountered. (WHO, 2018.) This response is similar to the long-term

protection that the immune system would develop normally after the recovery from a naturally occurring infection (WHO, 2013).

Vaccination and immunization are of great importance and have many benefits (WHO, 2016). Life-threatening infectious diseases cause a lot of deaths all over the world but due the actions taken to create immunization, estimated 2 to 3 million deaths are averted each year (WHO, 2019). Vaccination does not only protect the individuals but can also benefit a wider community. Moreover, a wide vaccination and immunization coverage, often referred to as the herd immunity, occurs when vaccine coverage is so high that an infectious disease is unlikely to encounter any susceptible contacts and transmission stops. Herd immunity (or community immunity) prevents infections from spreading and can even make them non-excitant, whereby it also benefits all the individuals who are not, for one reason or another, able to receive some vaccines themselves. (Ministry of Health, 2018.)

In addition, vaccinations can also help to limit the spreading of antibiotic resistance as they reduce the need to use antibiotics in treatment of certain diseases (WHO, 2016). Studies have shown impacts that vaccines can have on the spreading of antibiotic resistant bacteria. The main effect is that vaccines directly reduce the spreading of infectious diseases and thus, naturally reduce the amount of antibiotics used in their treatment in the first place. (Klugman & Black, 2018, p. 12896-12897.) Vaccines also have an indirect effect as they reduce the amount of specific complications that are linked to certain infectious diseases which often require the use of antibiotics (Ravi M., Ernesto Oviedo-Orta, Prachi Prachi, Rino Rappuoli and Fabio Bagnoli, 2012, p.3).

4.3 National Vaccination Program for Children in Finland

The vaccination program in Finland has been carefully considered and developed by professionals to cover all the infectious disease causing-pathogens relevant to people living in Finland. It is recommended for each child in the country, or an adult in the older age, to receive the suggested vaccinations, unless presented with a disease preventing the vaccination. (THL, 2018, p.5.) The program covers vaccinations against eleven diseases and their long-term complications. All of these vaccines are free of charge and available to every single young person living and residing in Finland. If a child for reason or another has not received the given vaccines as a young patient, they can receive the

vaccinations in school- or student health care. (THL, 2018) A child is considered “unvaccinated” if they have not received any of the Rotavirus-, PCV-, MRR- or 5-in-1 / 4-in-1 vaccinations, meaning the DTaP-IPV-Hib / DTaP-IPV-vaccines (THL, 2019a).

Additionally, girls are offered the Human Papilloma Virus-vaccine (HPV-vaccine) against cervical cancer, which is administered at the age of eleven to twelve. The HPV-vaccine has been offered as part of the national vaccination program since 2013. (THL, 2018.) Recent suggestion made by THL in Finland promotes the idea that the HPV-vaccination would also be added to the vaccination program for boys, which according to studies would help prevent cancers caused by the HPV. Since the vaccination coverage for the human papilloma virus is not yet at a desired level, adding the HPV-vaccine for the vaccination program of boys would also improve the girl’s protection against the spreading of HPV. (THL, 2019b) During the spring 2020 the Finland’s Ministry of Social Affairs and Health made a decision to add the HPV vaccine as part of the official National Vaccination Program for boys as well as for girls. The vaccination administration is to begin earliest in the autumn of 2020. (THL, 2020b.)

Due to the well-organized vaccination program, research shows that the vaccination coverage in Finland is at an excellent level. This has led to the extinction of almost all of the dangerous infectious diseases within the country. However, if more and more people refuse the vaccines, these diseases might return. (THL, 2018, p.7.) The children vaccination coverage is being monitored and followed with the national vaccination register, which is done in co-operation with the regional health centres in Finland and the National Institute for Health and Welfare, to better gain an understanding of how many children receive the vaccines every year (THL, 2019a). The National Vaccination Program for Children in Finland can be seen below in Table 1. In this thesis the focus will be on the vaccination program of children from ages 0 to 6 years old.

Table 1. The National Vaccination Program in Finland (THL, 2020a)

Age	Vaccine	Disease
<i>2 months</i>	Rotavirus	Rotavirus diarrhea
<i>3 months</i>	Pneumococcal conjugate (PCV)	Meningitis, pneumonia, sepsis and ear infection
<i>3 months</i>	Rotavirus	Rotavirus diarrhea
<i>3 months</i>	5-in-1 vaccine (DTaP-IPV-Hib)	Diphtheria, tetanus, pertussis, polio and Hib diseases, such as meningitis, epiglottitis and sepsis

5 months	Pneumococcal conjugate (PCV)	Meningitis, pneumonia, sepsis and ear infection
5 months	Rotavirus	Rotavirus diarrhea
5 months	5-in-1 vaccine (DTaP-IPV-Hib)	Diphtheria, tetanus, pertussis, polio and Hib diseases, such as meningitis, epiglottitis and sepsis
12 months	Pneumococcal conjugate (PCV)	Meningitis, pneumonia, sepsis and ear infection
12 months	5-in-1 vaccine (DTaP-IPV-Hib)	Diphtheria, tetanus, pertussis, polio and Hib diseases, such as meningitis, epiglottitis and sepsis
12–18 months	MMR(MPR)	Measles, mumps, rubella
6 months –6years	Influenza	Seasonal influenza (annual)
18 months	Chickenpox	Chickenpox (Only for children who not yet have had the disease)
4years	4-in-1 vaccine (DTaP-IPV)	Diphtheria, tetanus, pertussis, polio
6years	MMR	Measles, mumps rubella
girls aged 11 to 12years	HPV	Cervical Cancer
14 to 15 years	dtap	Diphtheria, tetanus, pertussis (whooping cough)

4.4 Vaccination administration competence

All vaccines are prescription medicines, meaning that they can only be administered by trained health-care professionals (Ministry of Health, 2018). Often the image and idea of vaccinations is simply treated as no more than giving a simple injection by anyone having received the minimal training. In reality the whole process is more complicated and should be carefully planned and executed. (Nikula, 2009, p.174) According to the law in Finland, the only qualified vaccinators are doctors and public health nurses, nurses, midwives and nurse-paramedics, who have been given the proper training and have proven their knowledge and techniques. These techniques have been specified in detail by the National Institute for Health and Welfare (THL) in Finland. (THL, 2017a.)

A competent vaccinator needs to be up to date on their knowledge and skills required for safe administration of vaccines. THL has listed eight points which include: 1. Basic

knowledge of the diseases prevented by vaccines, 2. Deepening knowledge of the content and administration of vaccines, 3. Knowledge of the basic safety guidelines in vaccinating, 4. Aseptic procedure while administering vaccinations, 5. Correct preservation and disposal of vaccines, 6. Complete knowledge of different vaccine administration techniques, 7. Correct recording of vaccinations, and 8. Knowledge of the possible adverse reactions of vaccines. Ultimately, the doctor is in charge of vaccinations administered in the department, but every single vaccinator needs to be able to prove their knowledge in the listed areas in order to administer vaccinations. (THL, 2017b.) It is vital that every vaccinator has been given the training to prepare, administer and dispose the vaccinations correctly because otherwise the desired effect of vaccinations will not be met (WHO, 2019).

In the world today, small but highly active group of people are extremely critical of vaccinations. This group is gaining more and more support, and most of them refuse either in whole or partially to be vaccinated themselves or let their children to receive the vaccinations offered. The skills required for a competent person administering vaccinations not only include practical but social as well. Therefore, a professional who administers vaccinations should independently update their knowledge on the latest research about the topic in order to better explain the importance of vaccines to these types of groups. (Nikula, 2009, p. 174,177-178.) The research also showed a competent vaccinator to be someone with the ability to empathize with the client by remaining calm, honest and confident. These characteristics will provide the client with security as they are coming to the vaccination procedure. In addition, safety and security are achieved when a health-care professional is able to observe and treat the clients with respect, in a professional manner. (Nikula, 2009, p. 178.)

4.5 Vaccination procedure

The whole procedure of preparing, administering, monitoring and recording of vaccinations has been carefully planned and instructed through various sources. In Finland, the official guidelines are given by the National Institute for Health and Welfare (THL), whose instructions are also followed by the teaching programs of various health-care schools while training the future nurses, doctors and other health-care professionals. (THL, 2017c.)

It is vital that the administration of vaccines is done properly to enhance the success of the immunisation program (CDC, 2019a). It all starts with the preparation of the vaccine. Each vaccine has a unique way in which they are prepared and stored before the administration. Even before preparing the vaccine, the health-care professional should always make sure that there are no limitations or contraindications for the vaccination. All vaccinators have the responsibility to educate themselves of any new vaccines they come in contact with, prepare or administer. (THL, 2017a). All vaccines administered as an injection should be drawn into syringes in the designated, sterile areas. Before drawing the vaccine, the liquid and diluent should be inspected via eyes to make sure that it has not been contaminated or damaged. One should not administer any vaccines that are suspected to be deteriorated or have expired. All vaccines drawn up to syringes should be used immediately or disposed properly. (CDC, 2019.b)

Choosing the site of vaccination is the next action taken in vaccination procedure. Several guidelines are given concerning this and each vaccinator should be familiar with them before administering vaccines. All vaccinations are given either via oral-, intranasal-, intramuscular- or subcutaneous route. For example, the Rotavirus-vaccine (RotaTeq-vaccine in Finland) is only administered orally while almost all other inactive vaccines are administered intramuscularly. Oral administration means, that the vaccine is administered as a liquid to the mouth. The vaccine is usually in a prefilled bottle, ready to be administered. Nasal administration is through the nose as an inhalation, for example the influenza vaccine in Finland is administered to young babies and children in this matter. (THL, 2019a; CDC, 2019a.) Needles for administering the vaccine are chosen by the guidelines given, depending on the route of administration. Nowadays many vaccines come in pre-filled syringes, some of them already having needles attached as well, which makes it easier for the health practitioner to administer the vaccine with proper equipment. (THL, 2017b; CDC, 2019c.) The following guidelines are given in Finland for the needle-choosing while administering vaccinations (see Table 2.).

Table 2. Choosing the size of the needle (THL, 2020a; CDC, 2019a)

The route of vaccination	Needle gauge	Needle length
Intradermal, ID	26 G	10 mm
Subcutaneous, SC	23-25 G	16-30 mm

Intramuscular, IM	20-25 G	25-40 mm
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When small children and babies receive vaccines by injection, it is primarily administered into the thigh muscle, though the vaccinator can use their own judgement as to where they give the injection. Adults and older children receive the vaccine to the deltoid muscle on the shoulder if possible. (THL, 2018) When given multiple vaccines at the same time, each of them should be administered to separate limbs if possible. The site of vaccination should be clean and whole, without any rash or wounds. (THL, 2017b) Correct administration of vaccines is the responsibility of every single nurse, doctor or other health-care professional, and the alternative injection sites or use of needles should always be based on professional judgement and knowledge (Ministry of Health, 2018). The National Institute for Health and Welfare in Finland has really clear guidelines to each injection technique and these are taught to all health-care students in the institutes around the country. The different techniques for vaccine injection are also illustrated in Figure 1.

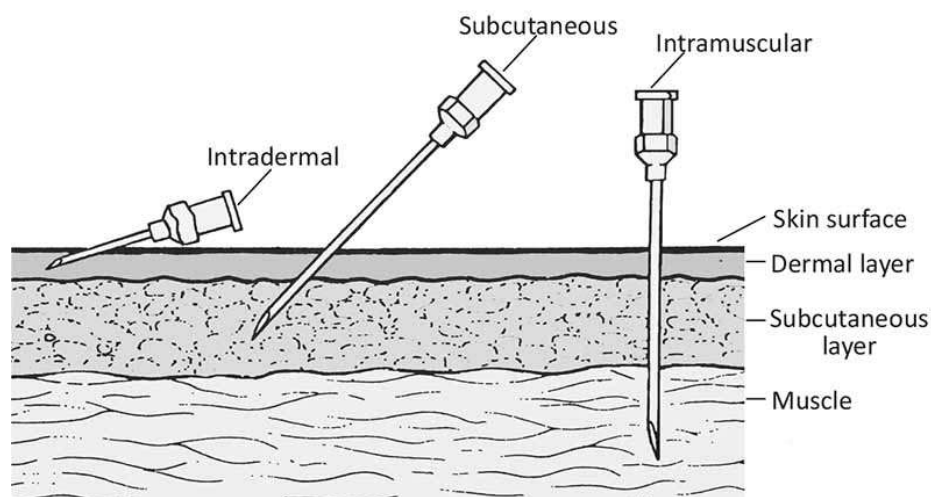


Figure 1. Different injection techniques (Department of Vaccines and Biologicals, 2001)

The experience of the patient, especially a paediatric one, during vaccinating correlates largely with the skills and knowledge of the healthcare professional. The WHO's Strategic Advisory Group of Experts on Immunisation (SAGE) have given some recommendations to help minimize the pain and fear of the patient during the vaccination appointment. These include for example the advice of not aspirating the syringe when giving vaccines, administering the vaccines in order from the least to the most painful one and providing

appropriate distractions. When vaccinating infants, mothers are supposed to be encouraged to breastfeed or feed the baby before and during the vaccine injection. Also, the use of topical anaesthetics, such as EMLA, could be considered if one has remarkably low tolerance for pain. (Ministry of Health, 2018.) Evidence also shows that the rubbing or stroking of the skin nearby the injection site before and during giving the injection, has an effect of possibly decreasing the pain in older children and adults. Parent's participation during the injection has also been seen to be of help. One can encourage the parent or guardian to hold and comfort the child during the vaccine administration, or to create distraction by talking or playing with them. Parents can also prepare for the vaccinations with their children by reading and discussing with them about vaccinations beforehand at home in an honest way. (CDC, 2019a.)

Every vaccination administering should be followed with the post-vaccination advice, both verbally and in a written form (Ministry of Health, 2018). The administrator should provide the parents and children with information of possible adverse reactions that the given vaccines might cause, and also guide them with the possible instructions of how to treat those reactions. Every patient receiving vaccinations should be monitored for 15 minutes after the injection, in case of severe allergic- or other vaccination reactions. (THL, 2018.)

4.6 Adverse reactions and preparing for them

Centers for Disease Control and Prevention (CDC) explains different classifications regarding adverse reactions that follow the vaccination procedure. These reactions can be classified by frequency, extent, severity, causality and preventability. Thus, they can be determined for example as common or rare, and local or systemic. Additionally, adverse events can happen due to coincidence or the risk of these may be increased by the vaccine (CDC, 2019b.) However, adverse reactions associated with vaccines are rare and affect only a small sample of the vaccinated individuals. The more common symptoms caused by vaccination are milder and often last for only a few days. The parents of the children should be educated prior to vaccination, about the possible adverse events, to decrease their concerns and prepare them for the possible outcomes. These possible reactions should also be repeated to the parents after the vaccination to make sure that they understand and remember them. (THL, 2019a.)

Every vaccination administrator should also be adequately educated and trained for treating any possible adverse reactions. Each vaccine has specific common adverse reactions and the health care worker should always get him/herself familiar with these prior administering the vaccine. Most common of these reactions are local and can include small irritation, redness, swelling or mild pain surrounding the injection site. Mild fever can also be included to these typical symptoms. (THL, 2019d.) Like any other medication, also the vaccines have a possibility to cause more severe allergic reactions for some clients, or even anaphylaxis. The possibility for this is approximately 1 out of million but still the vaccinator has to be aware of its possible occurrence. For this purpose, it is recommended that after receiving the vaccine, all clients would stay in for at least 15 minutes time for surveillance. In this way, the health care professional is able to quickly react to any possible worsening in the client's condition. Adrenaline or EpiPen should always be available for use in these conditions, following the given instructions in the administering. (THL, 2019a, e.) Parents also need to be educated on the treatment of adverse reactions, such as administering medication for pain or fever. It is also important to advise the parents to get in contact with the health care system quickly if some of more severe the reactions occur. (THL, 2019e.)

5 Counselling parents of young children

5.1 The importance of appropriate client counselling

Public health nurses are often the administrators of vaccinations and play a vital role in communicating information to parents of young children (Austvoll-Dahlgren, Helseth, 2012, p. 271). An online survey on health care providers' and parents' attitudes toward administration of new infant vaccines suggested that when parents are educated on vaccines and preventable diseases, they are more likely to have acceptance for those vaccines (Bakhache, Rodrigo, Davie, Ahuja, Sudovar, Crudup, 2012, p. 491). They also concluded that increasing preventable-disease awareness on a wider public scale would improve parents' attitudes on infant vaccination procedures globally (Bakhache et al. 2012, p. 492). In addition, a literary review on addressing vaccination hesitancy found that two thirds of parents in Canada believe professional health care workers, such as nurses or public health nurses, to be the most reliable source when it comes to information about immunization. Therefore, primary child health care centres provide valuable patient education in terms of increasing parents' confidence in vaccinations. (Shixin & Vinita, 2019, p. 176.)

When it comes to immunization, children often have a fear of vaccinations and these invasive procedures can involve the experience of pain, distress and fear (Harder, Christensson, Söderbäck, 2014, p. 268). In Finland, the vaccinations are often administered at the health clinic, thus providing a safe and familiar environment for both the parent and the child. (Nikula, 2007, p. 182.)

5.2 The health care professional's role in client counselling

Nurses are in an important role as they provide knowledge to parents about the immunization of their children. Therefore, it is vital that nurses keep up to date with current knowledge and know how to access and utilize it in a way that the parents' concerns will be mediated. (Austvoll-Dahlgren, Helseth, 2012, p. 276-277.) In their review, Shixin and Vinita (2019, p. 177) found different strategies that could be implemented in order to improve parents' vaccination confidence. Research shows that starting the counselling of parents early, in the beginning of the pregnancy, improves the parents' adherence to the vaccination schedule. It is recommended that counselling is done both pre- and post-natally as well as doing follow ups one month after birth. Thus, providing parents plenty of opportune moments to ask questions together with the provision of credible support material. (Shixin & Vinita, 2019, p. 177.) Another approach mentioned in the article was to present the required vaccinations in a presumptive way as opposed to a more participatory manner. This type of approach resulted in a significantly higher vaccine adherence rate amongst the parents who initially had concerns regarding immunization. (Shixin & Vinita, 2019, p. 177.)

Previous studies have shown that there are various approaches that can be utilized in enhancing the child's experience of the vaccination procedure. These involve both physical and pharmacological interventions such as sitting up instead of the child lying down or the use of topical local anaesthetics. (Harder, Christensson, Söderbäck, 2014, p. 268.) During the vaccination procedure it is vital for the health care professional to guide the parent and the child on the procedure at hand. Specific instructions are given on how to hold and comfort the child during the procedure. Additionally, information about possible pain management is discussed. The child often feels safer when the parents cooperate with the nurse and have concrete knowledge on how to proceed during vaccination. It is also important to discuss about the possible adverse reactions beforehand and how such incidents would be handled. It is also recommended that the nurse hands out written

instructions of the procedure. This way parents can remember better what was discussed regarding their child's vaccination process. (Nikula, 2007, p. 184.)

5.3 Encountering a child at the health clinic

It is vital that the child's wellbeing is at the forefront, when the family visits the child health clinic. Furthermore, it is important for the health care professional to give care by considering the point of view of the child, because each meeting might have an impact in the child's development. Therefore, the environment should be one where the child can feel important, safe and supported. It is essential to listen and encourage the child by for example asking them directly how they are feeling and what is important to them in their daily life. (STM, 2004, p.94.)

Additionally, the nurse should show their respect toward the child by explaining to them directly the possible procedures and examinations. Another way to create a welcoming environment is by including play in the care and having toys available during the appointments. Rushing the procedures is not an efficient way when caring for a child, thus it is imperative to allow the child time to get familiar with the surroundings. Furthermore, it is important to encourage the child by complementing in an honest way that addresses the uniqueness and significance of the individual child. This allows the child to feel valuable. (STM, 2004, p.95.)

5.4 Pain management techniques during vaccination

The basis of administering vaccines to children is to eliminate pain associated with the injection. However, if it is not possible to make the procedure painless it is vital to make the experience of pain as small as possible. (Nikula, 2007, p.185.) Help Eliminate Pain in Kids (HELPinKIDS) (2015), a multidisciplinary team from Canada, offers recommendations on how to alleviate the pain of a child during vaccination. These recommendations are divided into four different sections which include procedural, physical, pharmacological, and process interventions. Respectively, these discuss the injection techniques, the positioning of the child, the use of pain medication and patient education. (Taddio et al., 2015, p.976-980.) Moreover, it is important to inform parents about pain management because parents are affected when they see their child in distress (Nikula, 2007, p184).

Aspiration is not recommended when administering the vaccine. According to studies, there is no harm when giving the injection into the recommended muscle sites, because no major blood vessels are present there. With aspiration, the needle might move and stay longer in the tissue, which can increase pain in the injection site. Thus, creating increased distress to the child. Another recommendation is to inject the different vaccines in the order of the least painful to the most painful one. (Taddio et al., 2015, p.976.) HELPinKIDS (2015) also discusses the importance of proper holding and positioning techniques in managing pain. By incorporating these, the child can feel safer and comforted during the process. In older children, sitting in an upright position allows them to feel more in control and thus, their fear and experience of pain is decreased. (Taddio et al., 2015, p.978-979.)

Furthermore, pharmacological intervention recommendations include using topical anaesthetics in children under 12 years old or the use of sucrose solution in children under 2 years. According to a meta-analysis, children experienced less pain when topical anaesthetics were utilized. Thus, having a less distressful experience and advocating for children not developing a fear of needles later in life. (Taddio et al., 2015, p.979-980.) However, the topical anaesthetics only numb the skin and the process of applying them can create a distressful situation before the actual administration of the injection, which only lasts for a short while. (Nikula, 2007, p. 185). Pain can also be minimized using correctly sized needles and right injection techniques (Nikula, 2007, p.185). Finally, patient education is at the centre of any nurse patient relationship. Thus, it is especially important to educate parents about the pain management techniques in advance. Parents can then cooperate with the nurse in using these techniques while creating a better vaccination experience for their child. (Taddio et al., 2015, p. 980.) When the parents and the nurse act calm in the situation the child will pick up on this atmosphere and feel calmer during the procedure. (Nikula, 2007, p.184)

5.5 Holding positions during vaccination

Finding the right position for the child during vaccination is an important part of the process and should be allowed enough time. The vaccinator instructs the parents on the best way to hold their child at the same time considering that parents know their own child the best and thus, it is important to collaborate with the parents on what holding method would be the most efficient. Additionally, the child's age should be taken into

consideration when vaccinating. If the child can participate in the conversation it is important to include them because this will allow them to feel safer during the vaccination. Having an appropriate technique when holding a child during vaccination is very important for the vaccine to be successfully administered. The child might possibly try to struggle and pull away because they are scared. If the child is moving during the vaccination the needle might move inside the tissue. This can inflict pain on the child, or the vaccine might end up in the wrong compartment. Another risk associated with the child moving during vaccination is an accident involving the needle. Therefore, it is extremely important that the child is held properly throughout the whole procedure and they will be released only after the needle is safely removed from the area of injection. (Nikula, 2007, p.184.)

The position of how the child should be held must be instructed carefully and in practice because the position can vary with every individual patient and parent. The position should feel comfortable and safe to them. The nurse must emphasize that the grip of the parent needs to be firm and they will then guide the parent on how to position their hands precisely. (Nikula, 2007, p.187.) Centre for Disease Control and Prevention (CDC) offers official recommendations on how to hold an infant or a toddler during vaccination. The parent is suggested to hold the child on their lap while placing the child in in a hug-like position and gently applying pressure for security, as well as holding the child's free arm steady. The parent can then either anchor the child's feet by holding them between the parent's thighs or by holding them down with their other hand (CDC, 2019d.) See Figures 3 and 4 for guidelines on appropriate child holding position during vaccination.

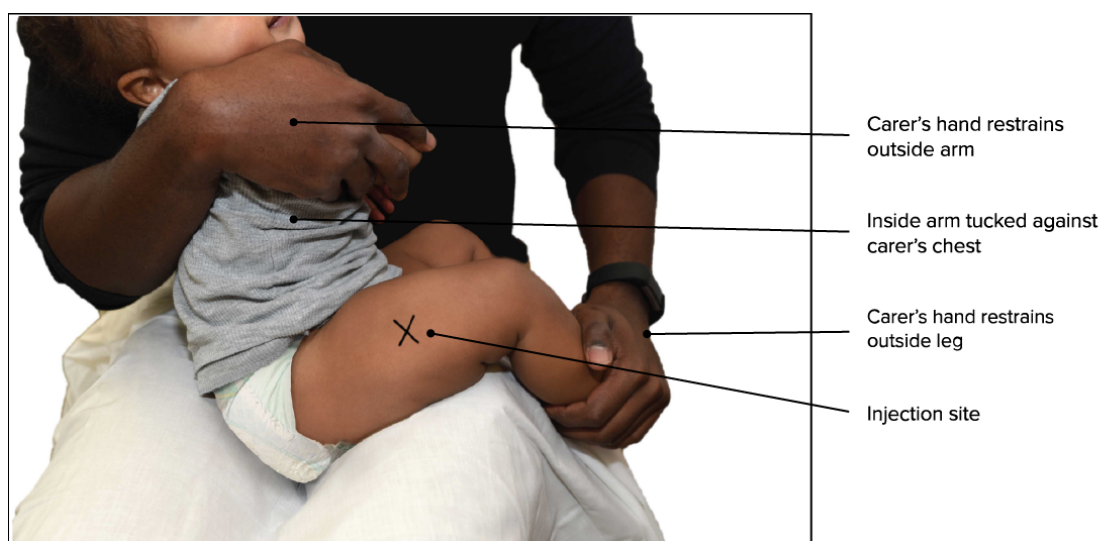


Figure 2. Positioning a child <12 months of age in the cuddle position (Australian Immunisation Handbook 2018).

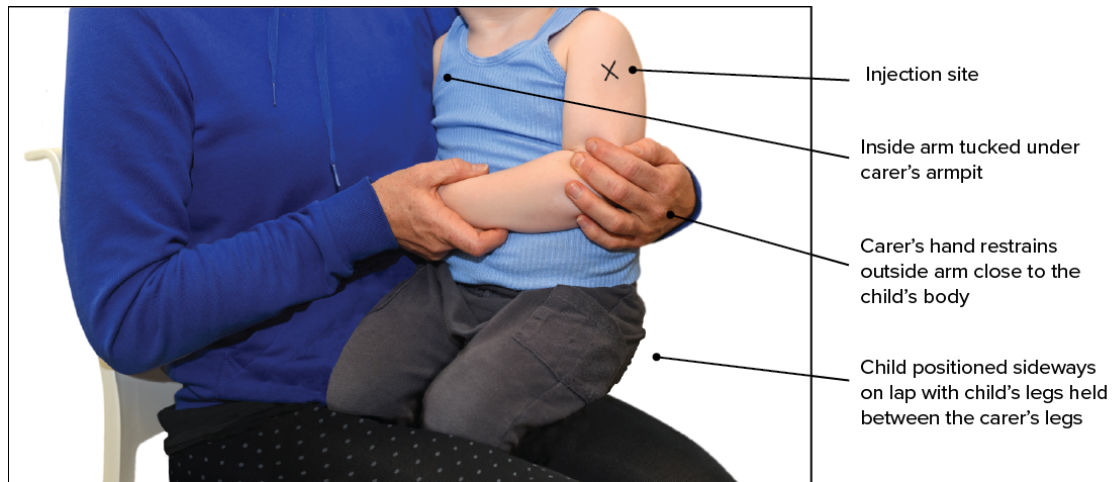


Figure 3. Holding an older child in the cuddle position (Australian Immunisation Handbook 2018).

Comforting the child and the parent is also an important part of the vaccination procedure. The child will often experience pain from the administration of the injection and after the administration at the injection site. Therefore, it is natural that the child might hesitate and cry during the procedure. (Nikula, 2007, p. 184.) It is important to acknowledge the child's pain and comfort them without adding too much emphasis on the pain they are experiencing. Parents might need comforting as well since seeing their child in pain can make the parents uncomfortable (CDC, 2019d).

5.6 Public health nurses' views and experiences on vaccination procedure

According to the opinion of public health nurses, there are many important aspects to consider when vaccinating children. Firstly, it is important that vaccinations and the schedule is discussed with the parents well in advance. The conversation must be open, and parents should be able to ask anything regarding this topic. It is important to discuss these matters regularly to instil trust in the parents and to create a cooperative environment. Secondly, it is essential that the nurse creates trust and communication with the child. The nurse must have skills in motivating the child, especially when they are older and more difficult to convince to be vaccinated. In that case it is also important that the nurse is honest with the child and lets them know that even though it hurts there will not be any harm to them. Finally, the vaccination procedure must be safe for both the child

and the nurse, as well as the parents. Therefore, it is vital that there is trust and cooperation and right holding and vaccination technique. Additionally, there are some tricks that the vaccinator can benefit from using while vaccinating. These include giving the vaccine first which is less irritating to the child when multiple vaccines are given during one appointment. The nurse can relax the patient and parents by creating a warm and safe environment, thus reducing the fear the child is experiencing. Children often enjoy an incentive, such as a sticker, given to them at the end of the procedure. Also, appraisal is important at the end of the visit. All these techniques will leave the child with a more positive experience of the vaccination procedure. (Nikula, 2007, p.191.)

6 The Educational Video

6.1 Definition and planning of an educational video

Educational videos have become an important part of education at schools, especially in higher education. Continuous research is still being conducted but it has already been proven that the use of videos in teaching certain topics or subjects has a greater impact to the students than them just reading books or articles about the subject matter. Studies have shown that videos can truly be a highly effective educational tool. (Brame, 2016 p. 1.)

In order for a video to become an educational video it needs to have some key features according to multiple different studies. Cynthia J. Brame, in the literature review found that some of the key recommendations for a “good educational video” are the following: Keep videos brief and targeted to a certain learning goal, use audio-visual elements and highlight and signal the important ideas and concepts, and use interactive questions in order to keep the learning active. (Brame, 2016, p. 6.) A checklist presented in an educational magazine also adds that the educational videos should be carefully planned, well structured, understandable to the target group, selected design methods should support the content, and the visual and audio channels should be used optimally. (Educational Development and Technology, 2015.) Both studies also suggest that an optimal educational video should not exceed 6-9 minutes. Another study presented statistics according to which a video with the length of 6 minutes or less, had a viewing engagement close to 100%, meaning that the students would be watching almost the whole video. With the length of 9-12 minutes, the viewing rate would immediately drop close to 50%, following with the fact discovered that the average viewing time of videos with any length

was about 6 minutes. (Guo, 2014, p.45.) According to this, Brame (2016) suggests that an educational video should not be longer than 9 minutes. (p.4).

Another interesting fact commented on a thesis article written by Ilkka Sartjärvi was that the material and content presented in the educational video does not really matter, if the video itself is not able to keep up the interest of the viewer. The sounds, division, movements and colours in the video should be planned so that they keep up the interest and the attention of the student. (Sartjärvi, 2014, p. 32.) What was also pointed out was that the clinical actions taking place on the video, should be shown in sections, this way keeping up the interest and not being too long or tiring to the viewer (Sartjärvi, 2014, p.33).

6.2 Our plan for the video

A preliminary plan was made for an educational video to be created as part of this thesis, after conducting research about the topic and discussing with our supervisor about what the EDUVAC project wants. The educational video will be featuring a student, acting as the public health nurse, and two parents and their child. The scene of the video is that the parents come to the nurses' office for their scheduled appointment in order to receive the next vaccinations according to the schedule, and to discuss further about the upcoming vaccinations in the national vaccination program. The MMR vaccine will be in the centre of this video. The video is planned to be 6-9 minutes long, specifically focusing on the guidance given to parents regarding vaccinations and the vaccination procedure. Filming will be done at an actual health care centre if possible. Another option for the filming location is the clinical laboratory space at the new Metropolia campus in Myllypuro. Additional help will be gathered from the digital-field teachers. The video will be filmed with the filming equipment available at school.

6.3 Background information for the video

The counselling video was planned to take place at a Health Care Centre, where parents come to with their 1-year old child to receive the MMR vaccine as part of the national vaccination program in Finland. MMR is administered for the first time at the age of 12 months. For producing an effective educational video, the following background information was researched.

6.3.1 Administering an intramuscular vaccine

All vaccines given by injection should be administered on a site where any neural, vascular or local tissue damage or injury is unlikely. Considering the patients age and size, the intramuscular injections are generally given to the anterolateral aspect of the thigh muscle or the upper arm deltoid muscle. These sites are illustrated in the picture below (see Figure 4.) (CDC, 2019c.) With contrast to the old protocol, the use of gluteal area when vaccinating is no longer recommended. In the tight muscle area for example there are far less nerves or veins that could be damaged than on the gluteal muscle area. Also, the vaccines are faster to absorb from the thigh or deltoid muscle than from the gluteal muscle which is commonly surrounded with more subcutaneous tissue. (THL, 2017b.) The needle size needs to be considered and decided according to the injection site, and the size and body mass of the patient. When administering the intramuscular injections, meaning the injection given to a muscle, it is important that the needle is long enough to reach through the subcutaneous tissue to the actual muscle mass. However, it is important to make sure that all possible underlying nerves, blood vessels and bones are left unharmed during vaccination. (CDC, 2019c.)

The size of the needle should be between 20-25G, and the most common needle size used for vaccination is 23G. Many of the vaccines come in a pre-filled syringe in which case the health care professional might not have to choose the correct needle. When vaccinating a paediatric patient however, it is important to change to a smaller needle or only partially insert the needle into the tissue. (THL, 2017b.)

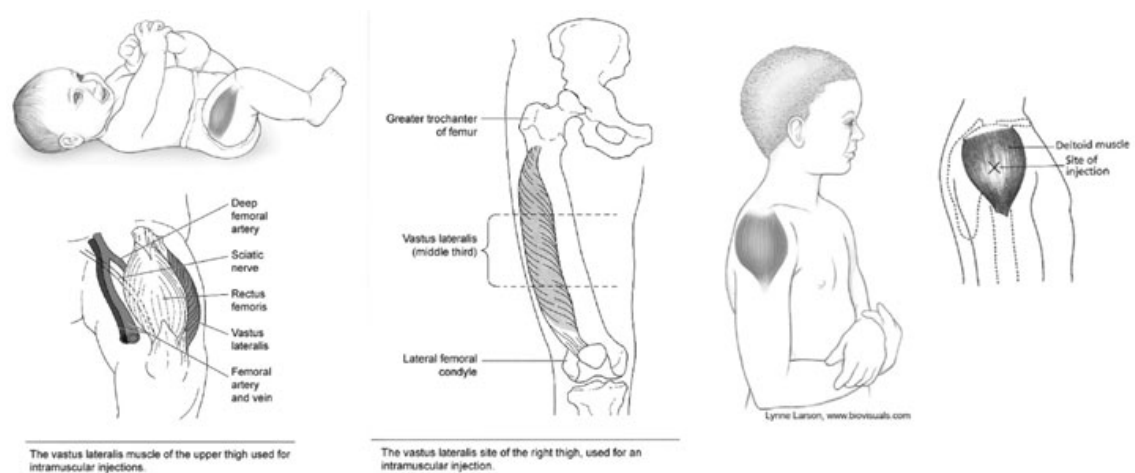


Figure 4. Intramuscular injection sites for a pediatric patient (CDC,2019c)

When administering vaccines to a paediatric patient, the site of vaccine injections depends greatly on the age and size of the child. Recommendations are that to children younger than 12 months, the intramuscular injections should be generally given to the thigh muscle, meaning the vastus lateralis, which is the upper-outer part of the thigh. To children from ages 1 to 6, the vaccine can be administered either to the deltoid or the thigh muscle. When administering the vaccine, first make sure the vaccine is prepared properly and is ready to be used. Ask the parent, if present, to hold their child and especially the vaccinated leg with a firm grip so that they will stay put. Hold the leg with your own hand tightly as well. This helps to administer the vaccine securely to the muscle tissue. (THL, 2019f.)

The skin area is not required to be cleansed but if so, the antiseptic used should be allowed to dry completely. The vaccinator takes a firm grip of the muscle, while at the same time inserting the needle into the muscle in a 60-90-degree angle to the skin, most often in 90-degrees. Once the needle is in, the needle is supported with the other hand to make sure it stays in place and makes sure that the needle is not in a blood vessel by pulling back the stem a little bit to check if there is blood coming to the syringe. Although, aspiration is not necessary. After this the vaccine is slowly inserted into the muscle. The needle is then removed from the tissue and the injection site is pressed for a couple of seconds with a clean pad. (CDC, 2019c.) After the injection it is important to inform the parents of the possible local reactions that might occur on the injection site. When administering the vaccine into the thigh muscle it is common that there might be some local pain and for example the child might refuse to walk or put weight on the vaccinated leg. This is totally common but does not occur with every child. Normal pain medication can be used to treat this symptom and it usually fades away within just a few days. (THL, 2019f.)

6.3.2 The MMR Vaccine

The MMR vaccine is an effective and the only way to protect oneself against measles, mumps and rubella which are highly infectious diseases. Most people vaccinated with the MMR vaccine have a protection for a lifetime according to most recent studies. In the future there might be a third vaccine recommended but for now the two-phased program is used. (THL, 2019g; THL 2020c.) Despite the vaccine, people might still be at risk of getting the diseases, but the symptoms are really mild and often the exposure time to the pathogen has to be really long and close. Vaccinated people are also creating pro-

tections for those who are not able to receive the vaccine themselves. This group includes for example people who have had a serious, life-threatening allergic reaction from the vaccine, are pregnant or have a weakened immune system due to an illness. (CDC, 2019e.) Every child and adult should have immunization against the three diseases either by vaccination or by having gone through the diseases. In Finland, the MMR vaccine is given as part of the national vaccination program at childhood, but it can also be administered later on if the person for a reason or another does not have an adequate defence for the diseases. It is also advised to give the vaccine to a person who has an unclear record for the immunization even when they might have received it already. (THL, 2020d.)

The measles vaccine was first administered in Finland in 1975 when the vaccine was given to a 1-year-old child as a one-time vaccine. The combined MRR vaccine, which includes pathogens for measles, mumps and rubella, has been used since 1982 in the two-phased vaccination program and because of that, measles, mumps and rubella have all almost completely disappeared from the country. (THL, 2019h.) Thus, the sequela diseases such as meningitis, testicular infections and pneumonia requiring intensive hospital care have also been tamed down. The vaccine is administered with the schedule of two dosages. The first dose is given to a 12 to 18-month-old child, preferably right at the age of 12 months. However, the MMR vaccine can be administered as early as the age of 9 months. This is strongly recommended if the family, for example, is travelling somewhere outside of Nordic countries or Estonia. (THL,2020c.) The second dosage is administered at the age of 6 and is given as a booster for the first vaccine. If a child has not yet had chicken pox by the age of 6, they receive the MMRV vaccine which also includes protection against it. (THL,2018.)

The two brands of MMR vaccines in Finland are the PRORIX and the M-M-RVAXPRO-vaccine. The PRIORIX is administered either intramuscularly or subcutaneously but the M-M-RVAXPRO is recommended to be given only intramuscularly, since it can cause pain and irritation if given to the subcutaneous tissue. (THL, 2020c.) Both of the vaccines include living pathogen viruses of measles, mumps and rubella that have been weakened. These pathogens cannot cause the vaccinated individual to get the diseases but instead will develop an immunisation against them. The vaccines are only to be administered and prepared by a health-care professional who has been given and adequate training regarding vaccination. Both of the vaccines come in a package that includes an injection bottle with dry powder and a pre-filled syringe with a clear liquid solvent. The

solvent is injected into the bottle and the vaccine is lightly shaken until the powder has completely dissolved. Depending on the vaccine used, the ready vaccine is either peach to fuchsia colour (PRIORIX) or lightly yellowish colour (M-M-RVAXPRO). The prepared vaccine is then drawn back into the syringe and should be either administered right away or stored in the fridge and used within 8 hours from the preparation. The product should never be allowed to freeze. (Lääketietokeskus, 2019.)

Just like any vaccinations or medications, these vaccines have some adverse reactions which occur in different ratios. Most common reactions, occurring with more than 1 out of 10 people, are redness around the injection site and a mild fever. There can also be swelling and some pain at the site of the injection, and some people might develop a rash or upper airway infection. However, these occur within less than 1 out of 10 people. Rare but possible adverse reactions include middle ear infection, insomnia, redness and irritation of the eyes (conjunctivitis's) diarrhoea, vomiting, hives or aseptic meningitis. Some cases of seizures, joint pain and severe allergic reactions have been reported but these affect less than 1/100 of the vaccinated. (Lääketietokeskus, 2019.) The post vaccine symptoms usually appear 5-12 days after the vaccination and last from a couple of days to a week. The common disease-like symptoms after receiving the vaccine are not a contraindication for the second vaccine. Usually the symptoms or reactions only occur after the first MRR vaccination. Some people might not receive any symptoms after the vaccination. (THL, 2019g.)

6.3.3 MMR vaccination coverage

Since the MMR vaccine was started to administer in Finland in 1992, the main source of measles and rubella infections have been from countries abroad. However, in the recent years there have been some reported cases, where people have been diagnosed with measles and got infected in Finland. (THL, 2019h.)

In a study conducted by the ECDC (the European Center for Disease Prevention and Control), there were 17 measles cases and 0 rubella cases diagnosed and reported in Finland. According to THL there were also 4 mumps cases diagnosed in the year 2018. The highest numbers of cases reported where in France, Romania, Italy, Poland and Bulgaria. (ECDC, 2020; THL, 2019h.) Also, there have been great outbreaks in countries outside of Europe, for example in Brazil, Samoa, Philippines, Thailand and New Zealand. The biggest Rubella outbreaks have been recorded in South-Africa, India, China, Poland and Germany. All the recent measles-, mumps- and rubella outbreaks in European- and

other countries are clearly been occurring due the low vaccination coverage among the citizens in those countries. In Finland the coverage is still relatively good, being over 90% and WHO has officially cleared Finland as a measles-free country. However, the coverage for Finland does not add up to the WHO's recommended safe herd coverage for measles which should be over 95%. (Kontio M., 2020.) The vaccination coverage for Europe is illustrated in Figure 5.

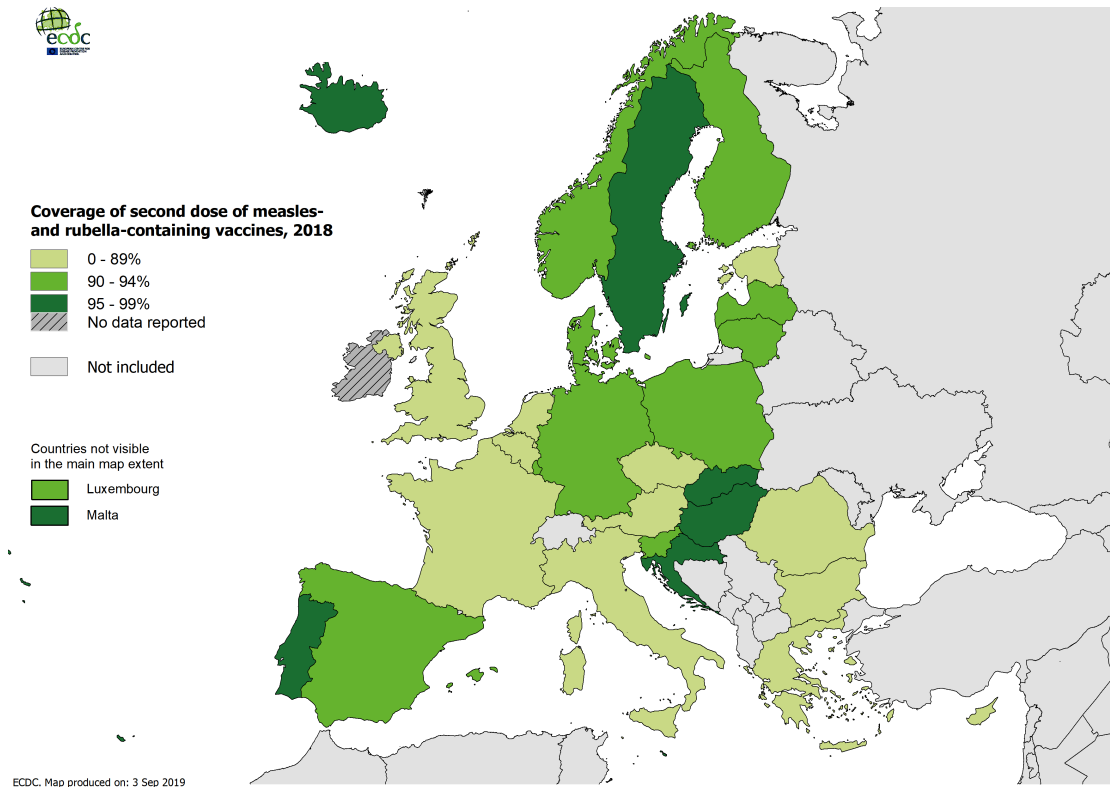


Figure 5. Vaccination Coverage of the measles and rubella in Europe, (ECDC, 2019)

One large concern people have about the MMR vaccine has been due to a study was study which suggested a link between the vaccine and autism. This caused a lot of hesitation in parents and still creates concern among some groups of parents regarding vaccinating their child. The study was first published in 1998 and since then there have been many studies proving the link wrong. Yet some people choose to believe the study and hence, it is still causing challenges. Recently there was a nationwide cohort study made, which has clearly proven that there is no relation between the MMR vaccine and autism. The study simply states that no support for the hypothesised link between the MMR vaccine and development of autism was found. The study was conducted as a

nationwide unselected population study amongst Danish children and they concluded that the MMR vaccine does not trigger or increase the risk of a child developing autism. (Hviid A, Hansen JV, Frisch M, et al., 2019.)

6.3.4 Measles, Mumps and Rubella

Measles is characterized as a highly contagious virus by the CDC (2019f). The virus lives in the infected person inside their nose and throat. It is transmitted by humans via coughing and sneezing and it can stay alive in that airspace for up to two hours. Thereafter, the other people in that space can get infected if they touch any contaminated surfaces or breathe the air, and then touch their eyes, noses, or mouths. (CDC, 2019g)



Figure 6. Measles rash (CDC 2019h)

Because of its highly contagious status, 90% of the other people in their close circles will acquire the infection as well. The contagious period of the Measles is four days before the symptoms and in the first four days after the rash symptoms appear. Measles is more than a mild rash; it can be a dangerous disease especially if babies or young children become infected. Symptoms usually appear seven to fourteen days from the infection. The first typical symptoms include high fever, cough, runny nose and red watery eyes. After the first few days tiny white Koplik spots may appear in the mouth of the infected. The measles rash breaks out in the third to fifth day after the symptoms have started. Flat red spots first appear in the face and hairline where it descends to the neck, arms, legs and feet. Additionally, some raised bumps can appear with the red spots and the

spots can join together when they spread to the whole body. At the time of the rash the patient's fever can also spike to above 40 degrees Celsius. (CDC, 2019f.)

Mumps was a common viral infection in children before the MMR vaccine (NHS, 2018). This disease is characterized by the puffy cheeks and a tender swollen jaw also called parotitis. This occurs due to the swollen salivary glands which can be found on both sides under the ears. Mumps is contagious and transmitted through droplets from coughing, sneezing or talking. It can also spread via objects that are infected with droplets. Transmission happens from two days prior the swelling of the salivary glands to five days after this started. Some symptoms may begin before parotitis and they include fever, headache, muscle aches, tiredness and loss of appetite. Usually the symptoms begin sixteen to eighteen days after the person has been infected but it can range from twelve days to twenty-five days. In some cases, the initial symptoms of Mumps are so mild that the person might have no idea of the disease and think of it as just a common cold. Additionally, in rare cases this disease can cause more severe complications. (CDC, 2019i.) These can include either an infection of the brain or temporary hear loss (NHS, 2018).

Rubella is a virus that causes a contagious disease and it usually appears with mild symptoms in children. Usually about 25-50% of the infected cases show no symptoms. However, a red rash is usually the first sign, if symptoms appear. Rubella is transmitted through coughing and sneezing as droplets, and it can also be transmitted from mother to a child during pregnancy. The transmission period starts a week before the rash symptoms and continues in the following week from that. In the beginning, the rash often appears on the face and descends to the rest of the body. This lasts for about three days only. Additionally, there are symptoms that can appear prior to the rash, usually one to five days before. These may include a low-grade fever, headache, general discomfort, swollen lymph nodes, cough, or a runny nose. A case of mild pink eye may also be seen. Most of the infected adults also experience mild version of the disease with a low-grade fever, headache, sore throat and rash. People who are infected with rubella must inform others, especially women who are pregnant, of their disease. (CDC, 2017.)

6.4 Synopsis of the video

The parents come into the public health clinic with their 12-month-old child to receive the scheduled immunisation. The nurse will explain in detail what the vaccination is for and what adverse reactions might be associated with this vaccine to address the parents'

concerns. The vaccination in question for this video is the MMR vaccine. The nurse will also address concerns of pain and how the parents may be of assistance during the procedure. The nurse will then administer the vaccination. At the end of the appointment the nurse will mention the upcoming vaccines. The whole script for the video can be seen in Appendix 1.

7 Thesis Process

7.1 Beginning of the thesis process

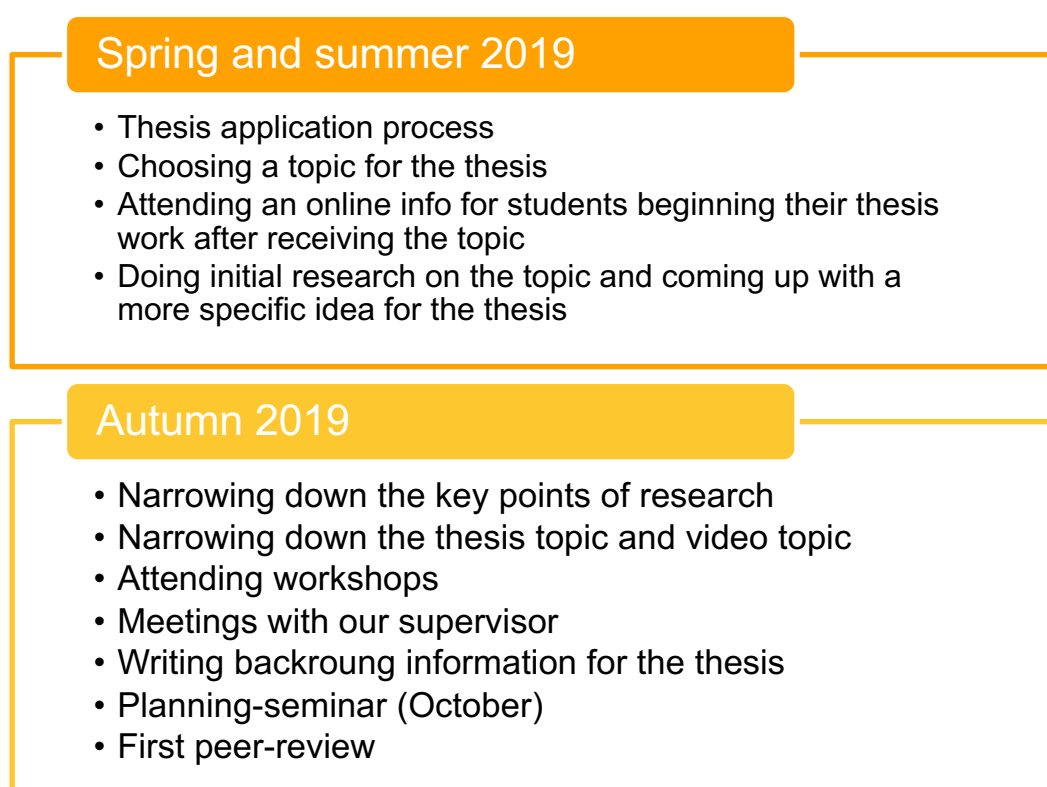
The thesis process began with the application in the spring of 2019. An application form was filled, and a short motivational letter was written in order to describe our interest in this specific topic and project. When topics were selected by teachers an internet-based meeting was held on the 8th of May 2019 to further expand and discuss the specific topics of each group of students. Information was given regarding the expectations of supervisors on each topic. Specific plans were expected to be prepared during the summer of 2019.

The first face-to-face meeting between students and supervisors was held on 13th of August 2019 at the Metropolia Vanha-Viertotie Campus where every topic was further discussed and specific goals for each Thesis was set. We started planning on what research needed to be done to create an educational video about vaccinations and guidance. We discussed with our teacher about the expectations of the EDUVAC-project concerning the video. We began researching for information regarding immunisation and vaccination guidelines and patient counselling. We chose the specific topic for our video: a client-counselling situation where parents come to their child's scheduled appointment with to receive the scheduled vaccinations. We attended a workshop held by Metropolia Library staff regarding research techniques and guidelines and continued on searching for reliable references and studies to support our thesis. Search for material was made using the Cinahl and PubMed databases and also Google Scholar for researches on different topics. Also, WHO's and THL's websites, and also other sources, were of great help when researching vaccination guidelines and information regarding different vaccines and vaccination programs of different countries, especially Finland's.

We met with our supervisor before the planning-seminar on the 24th of September 2019 to receive comments and further guidance to the current plan of our thesis. Some

changes were made and the plan for the educational video got more detailed. We also received a confidential research plan regarding the EDUVAC-project, which helped us to describe it more in detail in our thesis. Planning-seminar was held on 16th of October at Metropolia campus, where the first peer evaluation by other students was performed and we received constructive comments from other students and the supervising teacher. Further research continued and we set a deadline for ourselves to have most of the background information searched and written before the beginning of winter-holiday from school. Research was also done regarding criteria of a good educational video and planning a script and filming the video.

Figure 7. Thesis process schedule in 2019



7.2 Implementation and completion of thesis

The second phase of the thesis process began in the Spring of 2020. The writing of additional background information continued and detailed plans, for the educational video, were created in co-operation with the supervising teacher. More research was conducted regarding a quality educational video. Our plans for the video evolved during the spring. The initial rotavirus-vaccine for the video, was changed into the MMR vaccine. This vaccine is administered as a subcutaneous or intramuscular injection and has also

been greatly discussed lately as much of hesitation has been surrounding it among parents in some parts of Finland. Due to these changes, more specific information was collected regarding the MRR vaccine and its administration. The video was planned to be filmed at a health clinic but due to the time-limitations and difficulties with licences we decided to film it at the Myllypuro Campus of Metropolia UAS. The family participating in the video are friends of ours. One of us was set to be acting as the public health nurse and the other in charge of the filming.

A reporting-seminar was held at the school on the 5th of February where we introduced our thesis topic again and told other students about our specific plans for the video. We received good feedback on the thesis and on the draft of the script for the video. On the same day we also attended a digital workshop where we discussed with the teacher about our plans for the video and agreed on filming the video with the school's iPad and editing the video using iMovie. On the 11th of February we attended another workshop where we practiced filming with the iPads and created solutions for recording the sounds in a way that it would be clearer and easier for the viewer to hear and understand. Additionally, we practiced using iMovie to edit these practice-clips to see how editing works on it. During this whole process we met as a thesis pair almost once a week to discuss our progress and work on the thesis. A lot of individual work also went into our thesis. Work was divided evenly for both participants and we made steady progress. The final script was sent to the supervising teacher and final changes were made. Also, plagiarism checks were performed via Turnitin program.

The filming was set to happen on week 12. The healthcare staff was contacted regarding the use of their office place and also the digital media teacher was contacted on the use of the iPad on a specific date. The script was finalised and sent to the family couple weeks before the set date for filming.

Due to the special conditions and circumstances with the COVID-19 pandemic, special arrangements needed to be made for the implementation of this thesis. The Metropolia UAS campuses were all closed starting on 18th of March, which was originally planned as the filming day, and due to the closure we lacked access to both classes and the filming equipment for an unknown period of time. Additionally, the health clinics were not able to lend their workspaces. Consultation was done with the lawyer of Metropolia UAS and no special permission could have been granted for the production of the educational video. Therefore, the original plan of the educational video was changed into a series of

photographs showcasing a client counselling situation. These photographs were to be taken with the students' own equipment and the filming to be done at one of their homes.

We gathered together with the participating family, to take photos at their own home on 25th of March 2020. The scenario showcases a situation where the nurse visits the client at home and administers the vaccines there. Agreements were signed by the participants regarding the photoshoot. Therefore, they agreed that the taken photos can be used as part of the international web based intensive course by the EDUVAC-project. After this the photographs were edited and added as part of the PowerPoint slides, accompanied by explanatory text regarding each phase of the vaccination and counselling procedure. Attempts were made to follow the original script as closely as possible, but due to the circumstances and the resources available, some adjustments were made. The PowerPoint was created using an EDUVAC PowerPoint base. This PowerPoint was returned to the supervising teacher for approval and evaluation.

Reporting seminar for the thesis was held online on the 7th of April. Before this date, a final draft of the thesis was returned to the teacher and also to the students performing peer evaluation. Final adjustment successions will be considered, and the last changes are made. The final return date for the thesis and the planned PowerPoint presentation is on the 17th of April.

Figure 8. Thesis process schedule in 2020

Spring 2020

- More background research on the topic
- Implementation of the thesis seminar
- Creating a script for the video
- Meeting and corresponding with our supervisor
- Changing plans because of the COVID-19 pandemic
- Photoshoot for educational material
- Final thesis seminar
- Returning the thesis and the final product

8 Discussion

We feel that our thesis process was well planned, and went according to schedule and thus, progressed successfully overall. Moreover, we carried out communication well with our supervisor, teachers and each other throughout the whole process. However, because of the ongoing COVID-19 pandemic, we were unable to create the final product. Because of these circumstances we could not film the educational video and had to change our plans to a PowerPoint presentation with similar aims. Therefore, taking the current worldwide situation into consideration, we feel that we succeeded in creating a cohesive and educational presentation about our topic which can be utilized by the EDUVAC-project.

8.1 Review of the product

Our aim was to create a quality educational video for the web-based course created by the EDUVAC project. Unfortunately, this was not possible because of the current circumstances. Therefore, we will review our altered final product, the PowerPoint presentation. We were able to use the evidence-based information, which we gathered during our thesis process, to create this presentation. The photos we took for the purpose of this PowerPoint turned out well, even though the home setting was not something we originally planned. We feel that the slides showcase well how this sort of counselling situation should be carried out. The purpose of this thesis was to enhance the health care students' competence as vaccinators. Thus, taking the circumstances into consideration, we were successful in what we set out to do.

8.2 Reliability, validity and ethics

Our functional thesis did not include actual research, instead it was completed based on information gathering from reliable sources and previously done studies about the topic without plagiarising. The final product of our thesis is an educational PowerPoint presentation for a web-based course. We did not have much previous knowledge and skill in creating educational material, which may have affected our process. However, we researched and consulted teachers in these areas to the best of our abilities.

Ethical principles include few important aspects, beneficence and non-maleficence. Respectively, these mean that the intentions should be good and should cause no harm to participants. (Laerd Dissertation, 2012.) This thesis has a good purpose of educating

health care students on an important international health promotion issue, thus being ethically moral. Furthermore, the participants were treated with respect and ethical principles. Ethical principles include minimising the risk of harm, attaining informed consent, providing the right to withdraw and protecting anonymity (Laerd Dissertation, 2012).

Therefore, before we carried out the photoshoot, we made sure on multiple occasions that our participants still wished to be part of the filming. We informed them of the changes to our plans and made sure they agreed with the changes. It was also important for them to know this was completely voluntary and they could withdraw at any moment if they wished to do so. We explained what the aims of the photos we took were and that they were going to be part of an educational web-based course for the EDUVAC project. During the photoshoot we made sure that the participants were comfortable in the situation. We worked around the child's schedule. For example, when he got tired of the photoshoot, we allowed him to take his scheduled nap and nutrition. We also made sure from the mom that her and her child were feeling comfortable at all times. Additionally, we obtained informed consent from the people participating in the photoshoot. We had written photo release agreements for them to sign, which were also signed by the Metropolia representative. The participants agreed to have their personal information (name) to be included in the final product.

8.3 Usefulness of the product and suggestions for future projects

As mentioned previously, major changes and adjustments were made to the original plan of creating an educational video to be used as part of the vaccination competence web-based course. Therefore, the final product became a PowerPoint presentation, including photographs taken of a counselling situation between a nurse, mother and child. Because of these pictures, the PowerPoint works as learning material that can be of great benefit to all future students getting access to it.

For improvement suggestions in the future, it would be more efficient if there were students from the media-field of studies involved in these types of thesis projects. As a nursing student, we had little or no experience in planning, filming or editing a video and had to completely rely on teachers and resources found online. Additionally, due to the circumstances no proper equipment for filming could be borrowed from the school and thus, the pictures taken with a phone camera are not of the best quality. The PowerPoint presentation does include the same topics and key principles as the video was supposed

to, but we do acknowledge that the educational video would be a more efficient way for learning. These are aspects that could be taken into consideration when planning future thesis'.

8.4 Professional growth as a nursing student

As nursing students and health care professionals in the future we have gained a great amount of new knowledge about immunisation, counselling, making of educational videos and PowerPoint presentation, and the thesis process overall. We feel that immunisation is an important health promotion technique worldwide and thus, we are excited to have learned a great deal about it. Especially, because we are conducting our nursing studies in English. We have learned and enhanced our skills in information gathering, communicating, planning scripts, filming and creating educational material. Also due the change of plans on a short notice, we learned about creating alternative solutions and also how to develop and create a good and clear PowerPoint presentation for educational purposes. We learned how educational materials are developed in practice. For example, we have learned what goes into it legally such as the informed consent forms. We believe this whole process has supported our learning immensely as nursing students and future professionals. Furthermore, we learned time management skills on a wider project that stretched out for a period of a whole year. It was vital to keep to our schedule and co-operate with our supervisors and teachers on that timeline so that the thesis would keep progressing sufficiently. We also learned to adapt to changes and feel that this helped us to be creative in the ways we conducted this project. Overall, it has been a very educational part of our nursing studies.

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Appendix 1 Script for the educational video

Scene 1 – Encountering the parent and the child

The health care worker (HCW) is at their office. They are preparing for the next client and checks for client and vaccination history.

Scene 2 – Informing and parents about their child’s vaccinations

The HCW invites the child and the parent in. They discuss about recent events and well-being as a family.

HCW: Hello, how is everything going? (introduction is required if the patient is new) Hello ‘baby’ (make contact with the child)

Parents: Hi, everything is well. He has been ill a couple of times since we last saw you but now everything is good. He is taking his first steps and sleeping quite well now.

HCW: That’s good to hear. You have grown a lot (to the child). Do you have his health record booklet with you?

Parent: Yes, here it is, he has gotten all the vaccines on the schedule so far.

HCW: Yes, great they are all recorded here. So today we are planning on giving him the MRR vaccine as well as third vaccine for the 5-in-1 and the PCV vaccine which he has received earlier. What do you know about the MMR vaccine? Do you have any question?

Parent: Isn’t that the vaccine for measles?

HCW: Yes, that’s correct, and it also contains immunization for mumps and rubella as well.

Parent: Ah yes! We have been reading about measles and vaccine in the news and social media. We are somewhat concerned about other people who are not vaccinated. What’s the current situation with measles here?

HCW: Those are good questions. Currently the vaccination coverage for measles in Finland is very good, there are some small areas in Ostrobothnia that have a lower coverage but nothing to be worried about yet. But there are areas in the world, even in Europe where the situation is worse and in case of travelling, it is good that he has sufficient coverage. It’s very good that you are vaccinating him, because there is hardly any chance, he will get ill. And even if he does there would have to be a strong exposure, and the symptoms will be milder and there will be no complications afterwards.

Patient: Ok good to know. What possible adverse reactions are there with the vaccine?

HCW: Have noticed any reactions on him from the previous vaccinations?

Parent: He has been a little bit fuzzy after wards in the following day but no fever.

HCW: That's good. Much like the other vaccines 5-15% experience mild disease like symptoms. Local reactions such as pain, redness, bruising, mild swelling, itching, warmth in the area and mild rash can appear in within a week from the vaccine. They should disappear within a few days or a week. These can be accompanied with fever as well. These are nothing worried about and it is possible to treat the symptoms with appropriate fever and pain medication. You should contact the doctor if his fever rises higher than 40 even with medication or if lasts for more than three days. Also, if there are any seizures or paleness, or if he is very lethargic. However, these reactions are extremely rare.

Parents: Yes, thank you.

Scene 3 – Holding a child during the vaccination

HCW: This vaccine will be given into the thigh muscle and so as you know it's important that he stays still during the vaccination. You can help me by holding him in your arms.

Parent: Ok, what would be the best way to hold him?

HCW: There are different ways of holding him, but you know him best so together we can find the most comfortable position. Then you will be able to comfort him during the vaccination because it's normal for him to feel uneasy. We will try to make it as painless as possible for him.

Parent: Yes, I think he will be comfortable like this

HCW: Good, now it's important that his legs don't move so you can hold them in between your own legs and use your other hand as well. And then you can hug him with your other arm like you are doing right now. (guidance)

Scene 4 – Instructions on how to prepare the vaccine

HCW: I will now prepare the vaccination

(Package contains prefilled syringe and injection bottle.)

1. Insert the liquid from the syringe with a needle into the injection bottle.
2. Gently shake the bottle until the powder has dissolved into the liquid and the suspension is turbid and of light color.

3. Immediately after the suspension is ready, draw it into a new syringe and shake the syringe gently.
4. Check the content of the syringe and shake rapidly if a gel like phase is still visible.
5. Swap in a clean needle and administer right away.

Scene 5 – Administering the vaccine

HCW: I will now administer the vaccine, please hold him firmly. (To the child in a calming voice) This will pinch a little, but everything is ok.

1. The vaccinator prepares the area by exposing the surface (cleansing is not necessary according to guideline but if done, the area needs to be let dry completely before administering any injections)
2. Health care worker takes a firm grip and injects the needle into the muscle in a 90-degree angle
3. Once the needle is in, the vaccinator supports it with her other hand while aspirating slightly to see there is no blood. (Aspirating is not necessary, but it can be done)
4. Then the vaccine is slowly inserted into the muscle
5. The vaccinator takes the needle out and firmly presses the area
6. Appraise the child for the procedure

Scene 6 – Summary/follow up instructions

HCW: Alright that went well, you were very brave! The holding worked well! (comfort child and parent)

Parent: It went well, it's over now (Talks to the baby)

HCW: Let's mark this on his vaccination card and here you can see that the next vaccination is at the age of 4 and it's a part of the basic series following for what we gave him now. Also, possible other vaccinations before that can include the influenza vaccine. Do you have any questions?

Parent: Not right now. Thank you for today!

HCW: Thank you for coming in and being so brave! Here's also some information for you to take home with.

Parent: Thank you so much. Have a great day!

End of the video

Appendix 2 Educational PowerPoint Presentation


4/16/20



COUNSELLING PARENTS ABOUT THEIR CHILD'S VACCINATIONS
(ages 0 through 6)

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1



This presentation provides information on how to counsel parents about their child's vaccination. The following slides showcase a healthcare visit where the public health nurse visits the clients' home. During the visit their one-year old child receives vaccines according to the vaccination schedule. The MMR-vaccine is used as an example in this scenario.


The presentation is divided into sections that describe the different phases of an authentic healthcare visit.

```

    graph LR
      A[Encountering the Child] --> B[Counselling the Parents]
      B --> C[Correct Holding Positions]
      C --> D[Vaccine Administration]
      D --> E[Ending the Visit]
  
```

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2



Encountering the Child


What to consider when meeting the child and parents for the first time.

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3

Encountering the Child

- It is vital that the child's wellbeing is at the forefront
- Create an environment where the child can feel important, safe and supported.
 - Use toys and play as part of the care
 - Allow time for the child to get familiar with the surroundings




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4

Encountering the Child


Listen to and encourage the child

- E.g. by directly asking them how they feel
- Complement the child in an honest way by addressing the uniqueness of the individual child



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5




Counselling the Parents

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6

Counselling the Parents

- Health care professionals provide valuable information to parents about immunization
- Parents are more likely to vaccinate their child when they are educated on vaccines and preventable disease



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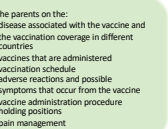
7

Counselling the Parents

- Discuss with parents about their concerns, they should be able to ask anything
- Create an open environment for conversation

Inform the parents on the:


- disease associated with the vaccine and the vaccination coverage in different countries
- vaccines that are administered
- vaccination schedule
- adverse reactions and possible symptoms that occur from the vaccine
- vaccine administration procedure
- holding positions
- pain management



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8

Correct Holding Positions




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9

Correct Holding Positions

- Instruct the parents and collaborate with them on the best holding position
 - Create a safe and comfortable position
- Inappropriate holding technique might result in the child moving
 - The needle can move inside the tissue which can create pain for the child
 - Vaccine might end up in the wrong compartment
 - Risk of accidents involving the needle

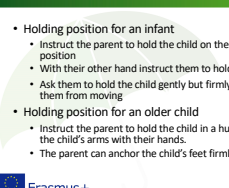


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10

Recommendations on How to Hold the Child


- **Holding position for an infant**
 - Instruct the parent to hold the child on their lap while placing the child in a hug like position
 - With their other hand instruct them to hold the feet down
 - Ask them to hold the child gently but firmly to create a secure feeling and prevent them from moving
- **Holding position for an older child**
 - Instruct the parent to hold the child in a hug like position on their lap while securing the child's arms with their hands
 - The parent can anchor the child's feet firmly between their own legs



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11

Vaccine Administration



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12

Vaccine Administration


- Every vaccine has specific, **individual instructions** for the preparation, that the health care worker should get familiar with
- For example, the MRR vaccine is prepared accordingly:
 1. Insert the liquid from the syringe with a needle into the injection bottle.
 2. Gently shake the bottle until the powder has dissolved into the liquid and the suspension is turbid and of light color.
 3. Immediately after the suspension is ready, draw it into a new syringe and shake the syringe gently.
 4. Check the content of the syringe and shake rapidly if a gel like phase is still visible.
 5. Swap in a clean needle and administer right away.

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13

Vaccine Administration

- Vaccines are administered either via nasal-, oral-, subcutaneous- or intramuscular route
- Intramuscular injection is given to the upper-outer part of the thigh muscle, or to the deltoid muscle, depending on the age and size of the child




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14

Intramuscular Injection Administration (1/2)

- Once the vaccine is prepared, it should be administered immediately
- The injection site area isn't required to be cleansed, but if done so, needed to let dry completely prior the injection
- Take a firm grip of the the muscle and insert the needle in 60 to 90-degree angle



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15

Intramuscular Injection Administration (2/2)

- Next hold the needle steady with the other hand while making sure the needle is not in a blood vessel
 - Aspirating isn't required but is not harmful
- Slowly administer the vaccine
- Remove the needle and press the injection site with a clean pad for couple of seconds

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16


Ending the Visit

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Ending the Visit

- It is important that the child will leave with a positive experience
- Comfort and encourage the child without adding too much emphasis on the pain they are experiencing
 - Sometimes it is also necessary to comfort the parents, since seeing their child in pain can be uncomfortable



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