


A Review of Recommendations for Routine Immunization Services During COVID-19 Pandemic That are Relevant for Nursing Personnel Involved in the Implementation of Immunoprophylaxis

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Abstract: Immunization programmes are of key importance for maintaining good health and protecting life. Disruption to routine immunization may increase the incidence of diseases that can be prevented by vaccinations. The aim of this review is to present the current recommendations on immunization services during the COVID-19 pandemic that are relevant for the nursing practice. It contains an overview of recommended guidelines published in March and April 2020, and of scientific publications on immunizations for children and adults, taking into account recommendations related to the new epidemiological risk caused by SARS-CoV-2 infections. The ongoing global pandemic of COVID-19 calls for changes in the organization of health care and puts an additional burden on all resources forming the healthcare system. The COVID-19 pandemic poses a particular challenge to public health, as active immunoprophylaxis should make it possible to control other infectious diseases. Protection against the spread of SARS-CoV-2 may hamper routine immunization services, which must be administered with particular regard to epidemiological safety. Nurses have always had an important role to play in the implementation and promotion of vaccinations and in emphasizing their importance for public health. Therefore, it is crucial that they have up-to-date information on vaccinological interventions that reduce the risk of transmission of SARS-CoV-2 infections.

Keywords: immunization, COVID-19 pandemic, nursing practice of vaccinology

Introduction

Immunization programmes are an important element of the national health policy in every country. Disruption in the systematic immunization services can have an adverse effect on health and on the maintenance of herd immunity against many infectious diseases. The increase in the number of unvaccinated people increases the risk of VPD outbreaks.¹

The pandemic caused by SARS-CoV-2 resulted in an unexpected public health emergency. As of 19 March 2020, 51 out of 53 countries of the WHO European Region reported confirmed SARS-CoV-2 infections. Each of these countries initiated a range of measures to mitigate the transmission of SARS-CoV-2 infections. Healthcare resources have been shifted to the prevention and treatment of COVID-19 in order to reduce the impact of the outbreak on national healthcare systems.^{2,3}

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On 20 March 2020 the WHO issued guidance on routine immunization services during the COVID-19 pandemic in the WHO European Region. The WHO emphasized that immunization services are an essential component of healthcare services in every country. Routine immunization sessions should be adapted to the current epidemiological situation of COVID-19 and the capacity of the healthcare system. Through these measures, the risk of increased incidence and mortality due to VPDs shall be mitigated.⁴

Aim

The aim of this review is to present the current recommendations on immunization services during the COVID-19 pandemic that are relevant for the nursing practice in the field of vaccinology.

Review Methods

Compilation of source data selected on a subjective basis by the authors as part of the standard literature review of Medline, Cochrane, and Scopus databases. The paper is a review of the guidelines published in March and April 2020 and of scientific publications on immunization services for children and adults, which take account of the recommendations related to the epidemiological risk during the pandemic.

Results

Guidelines on Routine Immunization Services for Children and Adults During the COVID-19 Pandemic

The WHO presents six key principles for immunization services during the COVID-19 pandemic (Table 1). These recommendations will be regularly updated depending on the epidemiological situation related the spread of SARS-CoV-2 infections.⁵

Considerations for Decision Making on Immunization Services in a Given Country

The current COVID-19 situation is rapidly evolving, which directly translates into the organization of the healthcare system and its capacity in the individual countries of the WHO European Region. Differences in the methods of sustaining high levels of routine immunization coverage depend primarily on the incidence of COVID-19.

Table 1 New Guiding Principles for Immunization Programmes During the COVID-19 Pandemic

<ul style="list-style-type: none"> Follow the existing guidelines on COVID-19 infection prevention measures during immunization sessions.
<ul style="list-style-type: none"> Prioritize primary series vaccinations (especially MMR vaccines, polio vaccines and other combination vaccines).
<ul style="list-style-type: none"> Avoid mass vaccination campaigns.
<ul style="list-style-type: none"> Vaccinate newborns according to the National Immunization Programme before they are discharged from a neonatal unit.
<ul style="list-style-type: none"> Prioritize pneumococcal and seasonal influenza vaccines for the vulnerable population groups.
<ul style="list-style-type: none"> Communicate clearly to the recipients of medical services, including the parents of the children scheduled for vaccinations, the rationale for the inclusion of immunization as one of the priority health services during the COVID-19 pandemic, and the risks from VPDs, and the benefits of vaccinations.

This creates temporary changes in the organization of health care, and transformations in the treatment and prevention needs of the society. Overflow of data (or rather ‘information noise’) during an epidemic can lead to a decrease in public confidence, affecting active immunoprophylaxis and the healthcare system as a whole. Therefore, the Ministry of Health of each individual country should make every possible effort to sustain constant high population immunity.⁶

During a pandemic, it is important to monitor the level of immunization services and to analyse all signals of reduction in the vaccination coverage rate among the general population and in specific vulnerable groups. The immunization service providers should start preparing lists of children who have missed their vaccine doses and develop an action plan for tailor-made catch-up immunization.⁷

Consideration of immunization options during the COVID-19 pandemic should be guided by a detailed assessment of the following local data on:

1. Epidemiological risks of VPDs (vaccine-preventable diseases) among the general population and in specific vulnerable groups. Special emphasis should be given to epidemic-prone VPDs and to halting any backslide in the achievement of measles elimination and polio eradication.
2. Epidemiological situation of COVID-19 and related mitigation measures in place. The need to divert resources to reduce the impact of COVID-19 on

the healthcare system must be weighed against the risk of increased morbidity and mortality of VPDs resulting from any change to immunization services, which may cause a potential additional burden to the healthcare system. In accordance with the WHO Strategic Preparedness and Response Plan for COVID-19 all countries should be prepared to respond to all the transmission scenarios.

3. Characteristics and constraints of the healthcare system and immunization services. Countries in the European Region have different healthcare systems and legislative frameworks for immunization.
4. Specific vaccines and available logistics. The availability of routine vaccines and the possibility of procurement and administration, in the current context, of all scheduled vaccine doses should be analysed according to the National Immunization Programme and the local guidelines on logistic operations. In addition, it should be taken into consideration that a ‘stop–start’ policy might have to be adopted, whereby the target population would receive the required vaccine doses at irregular intervals over a longer period of time.⁸

As the epidemiological and operational status is different in each country, a single vaccination strategy cannot be provided in the current situation. The algorithm proposed by the WHO may provide guidance to national public health authorities in taking decisions related to the continuing operation of immunization services (Figure 1).^{4,9}

The WHO draws attention to the key principles for immunization services during the COVID-19 pandemic, which should include measures to limit the risk of SARS-CoV-2 transmission during immunization sessions. Provision of immunization services should be aligned with the national guidelines and with the principles of anti-epidemic procedures concerning prevention and control of infections in healthcare facilities (Table 2).¹⁰

In times of the COVID-19 pandemic immunization services for healthy children and adults remain a very important issue and they are recommended to be carried out, provided the required level of epidemiological safety described above is maintained.^{4,11}

First of all, immunization services should be carried out in neonatal wards in accordance with the National Immunization Programme. Immunization services should

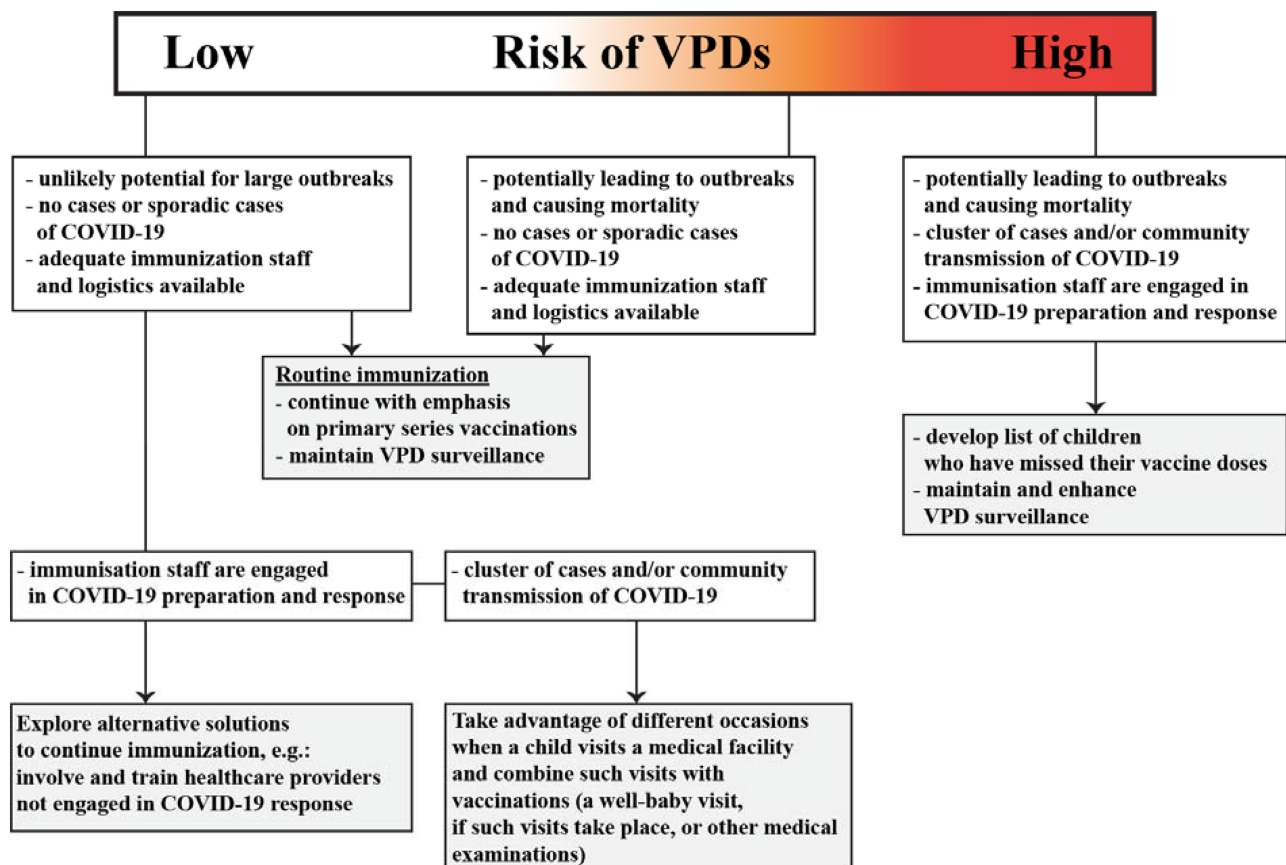


Figure 1 Decision-making algorithm for immunization services in the general population.

Table 2 Organization of Immunization Services and Vaccination Procedures During the COVID-19 Pandemic – Guidelines for Doctors and Nurses

<p>Preparation for Immunization</p> <ul style="list-style-type: none"> • Use available communication technology (eg: telephone medical advice) to communicate on immunization services and set appointments for sessions.
<ul style="list-style-type: none"> • When setting an appointment for an immunization session for a child, it is important to inform the parent/guardian that only one person without any symptoms of infection can accompany the child during the visit at a healthcare facility. An initial prevaccinal qualification for vaccination must be conducted over the phone along with an epidemiological inquiry concerning other household members of the patient. Vaccination should be postponed if the inquiry reveals that a member of a patient's household: <ul style="list-style-type: none"> ○ Has a respiratory infection of unknown origin. • Is under quarantine. • Is self-isolating at home.
<ul style="list-style-type: none"> • Immunization sessions for healthy patients should be scheduled for a specific time slot to avoid unnecessary crowding in waiting rooms (time separation).
<ul style="list-style-type: none"> • Consider combining vaccination visits with well-child visits.
<ul style="list-style-type: none"> • It is advisable to perform a medical examination and administer vaccination in the same room.
<p>Preparation of Medical Personnel to Administration of vaccines</p> <ul style="list-style-type: none"> • Train medical personnel to prevent SARS-CoV-2 infection during immunization sessions.
<ul style="list-style-type: none"> • Consider mobile vaccination posts or health outreach posts whenever feasible to improve an equal access to immunization, while minimizing the risk of infection.
<ul style="list-style-type: none"> • Perform exposure risk assessment of healthcare personnel who have a history of contact with COVID-19 patients.
<ul style="list-style-type: none"> • Healthcare personnel should receive all mandatory and recommended vaccinations as listed in the National Immunisation Programme.
<ul style="list-style-type: none"> • Ensure that vaccination rooms are prepared according to the guidelines of the Ministry of Health, and that the rooms are properly adapted to the current situation of SARS-CoV-2 pandemic.
<ul style="list-style-type: none"> • Perform a regular update of vaccine demand and maintain a safe level of vaccine stockpile, taking into account the available capacity of refrigeration equipment.
<p>Tasks for the Healthcare Personnel Who Administer Vaccinations</p> <ul style="list-style-type: none"> • Inform the parent/guardian who accompanies a child at the immunization session on COVID-19 measures, including the use of hand and respiratory hygiene and the importance of social distancing (maintaining a distance of at least 1 metre from others).
<ul style="list-style-type: none"> • Use generally recommended personal protective equipment inside the facility which provides immunization services (face masks and disposable gloves) to minimize the risk of transmission of SARS-CoV-2 from a healthcare staff to a patient in the event of asymptomatic infection of personnel.
<ul style="list-style-type: none"> • Conduct vaccinations in a dedicated immunization room, where patients with symptoms of acute infection are not admitted (spatial separation).
<ul style="list-style-type: none"> • Healthcare personnel must adhere to all rules concerning the prevention of airborne infections and direct contact infections – hand hygiene, protective clothing that has not come into contact with patients showing symptoms of acute infection, disinfection of all surfaces that the patients and/or their parents/guardians come into contact with, and ventilation of the room after each vaccination.
<ul style="list-style-type: none"> • In the absence of a waiting room and a room dedicated exclusively to well patients, immunization sessions should be scheduled in the first hours after the opening of the facility, before the admission hours for other patients.
<ul style="list-style-type: none"> • All vaccinated persons should be kept under observation after administration of a vaccine. In order to maintain public trust in immunization, efficient systems for reporting, analysing and performing causality assessment of serious Adverse Events Following Immunization (AEFIs) should be put in place and information about the causes of AEFIs should be made available.

also be provided as soon as possible in the group of children under 24 months of age, as infants and young children are most vulnerable to all kinds of infections, and

in this age group, the risk of developing infectious diseases is the highest. Chronically ill children, for whom there are often special medical indications for immunization,

require individual attention. When medical indications require, post-exposure vaccinations against rabies, tetanus, measles, varicella and hepatitis B should be carried out systematically in all age groups. At the same time, it is advisable to carry out other immunization services, whose administration or completion is necessary due to the characteristics of the medicinal product. In addition, it is recommended to promote vaccinations against pertussis for pregnant women, and vaccinations against pneumococcus and seasonal flu for adults in risk groups and for people over 60 years of age.⁵

Patients should be reminded that lung diseases, cardiovascular diseases, cancer, diabetes, kidney failure and immune disorders make them prone to pneumonia. It is particularly important when we think of prophylaxis against SARS-CoV-2 infection.^{7,12}

It is recommended to administer the maximum number of vaccinations which are included the National Immunization Programme (in accordance with the summary of product characteristics of the particular vaccine) during one immunization session. Such a procedure eliminates the unnecessary additional contact between the vaccinated person and the medical facility which provides immunization services.^{10,13} The first step is to vaccinate children, whose immunization has already been delayed due to factors not related to their general health condition. Since the most common generalized postvaccination reaction is fever, in time of the current epidemic it is recommended to administer a prophylactic dose of paracetamol to children who have been vaccinated.^{14–16}

In view of the COVID-19 pandemic and the spread of SARS-CoV-2 infections, it is important to demonstrate understanding towards parents and adults who often have strong reservations or unfounded fears related to immunization services, which may result in a temporary vaccine refusal.^{1,17}

In 1974 the WHO initiated the Expanded Program on Immunization (EPI), which resulted in an increase in the percentage of children who received four core EPI vaccines, ie vaccines preventing tuberculosis (BCG), diphtheria, tetanus and pertussis (DTP), poliomyelitis and measles, from <5% to 86%. As a follow-up to this program in 2012, the WHO approved the Global Vaccine Action Plan (GVAP). The main objective of this project is to increase to at least 90% the proportion of children vaccinated with vaccines used routinely in national immunization programmes in all WHO regions, and to reduce

inequalities in access to these vaccines. The WHO had planned to achieve these objectives in 2020.¹⁸

According to preliminary reports published by the WHO, even before the COVID-19 pandemic, every year 20 million children under the age of 1 did not receive vaccinations against measles or poliomyelitis. In 2019 over 13 million of the youngest children were not given any vaccine. Most of these children live in countries with an inefficient healthcare system. The lowest vaccination coverage rates are in the WHO African Region and, taking into account the whole population of incompletely vaccinated children, more than half of them (60%) live in only 10 countries (Nigeria, India, Pakistan, Indonesia, Ethiopia, Philippines, Democratic Republic of Congo, Brazil, Angola, Vietnam).¹⁹

In poorer regions of the world immunization services are often carried out in unconventional places that gather a large number of people (schools, religious facilities). Educational methods and incentives are effective strategies to support vaccination systems. However, vaccination campaigns pose a huge logistical challenge, requiring the involvement of tens of thousands of healthcare workers. The task is further complicated by the need to maintain the cold chain and to administer the vaccine by injection.²⁰

The WHO recommends that the governments of developing countries perform their own assessment of the risk that may be associated with temporary suspension of immunization services, and that state authorities financially support immunization programmes. In this current difficult pandemic situation, it is recommended that efforts be made to continue basic immunization programmes while maintaining adequate safety for medical personnel and local communities through appropriate procedures and equipment. The WHO also calls on partner organizations, European governments and donors to financially support immunization programmes in developing countries and thus reduce vaccination inequalities.⁴

It is undisputable that vaccinations are the most effective public health intervention aimed to reduce the incidence and mortality of infectious diseases. Unfortunately, a number of prevention programmes in developing countries are not implemented or do not achieve the required population coverage due to specific circumstances, especially economic conditions. Lack of awareness and limited resources of qualified personnel should also be identified as obstacles to this form of immunoprophylaxis. Moreover, it should always be noted that the WHO only recommends certain measures and rules of conduct, but

their introduction into the healthcare system is a sovereign decision of each individual country.⁵

Conclusion

Immunization affects many aspects of health at a global level, no matter at what stage of life it is done. Therefore, immunization services should be carried out on a continuous basis. During the epidemic of SARS-CoV-2 infections vaccinations should be administered with a particular regard to epidemiological safety. Nurses have an important role to play in promoting knowledge about immunization. Especially during the COVID-19 pandemic, it is important that nurses have up-to-date information on immunization services. It is important for building a relationship based on mutual trust with parents of vaccinated children and with vaccinated adults, which is a basic condition for a proper vaccination procedure.

Abbreviations

COVID-19, coronavirus disease 2019, a disease caused by infection with SARS-CoV-2; AEFI, adverse events following immunization; MMR, measles, mumps and rubella vaccine; SARS-CoV-2, severe acute respiratory syndrome coronavirus; VPD, vaccine-preventable diseases; WHO, World Health Organization.

Disclosure

The authors declare that they have no competing interests for this work.

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