Siyavula physical science grade 11 pdf

Immunization is one of the most important things you can do to protect yourself, your family and your community from infectious diseases. IDSA focuses on immunization of children, adolescents and adults, including health workers. Schedule, Tools and Recommendations From the U.S. Centers for Disease Control for Vaccinating Children, Adolescent and Adult Patients Public Policy Specialists Public Policy Specialists Facebook LinkedIn Email Published, 10/1/2019 American Journal of Respiratory and Critical Care Medicine, Volume 200, Issue 7, October 1, 2019, Pages e45-e67, October 1, 2019. Metley, Grant W. Waterer, Ann C. Long, Antonio Anzueto, Jan Brozek, Christina Crothers, Laura A. Cooley, Nathan C. Dean, Michael Fine, Scott A. Flanders, Marie R. Griffin, Mark L. Meterski, Daniel M. Musher, Marcos I. Restrepo and Cynthia G. Whitney; On behalf of the American Thoracic Society and Infectious Diseases Society of America Background Information: This paper provides evidence-based clinical recommendations for practices to manage adult patients with community pneumonia. Methods: The multidisciplinary team conducted pragmatic systematic reviews of relevant studies and applied a methodology for evaluating, evaluating, developing and evaluating clinical recommendations. Results: The team reviewed 16 specific areas for recommendations covering diagnostic testing, treatment location, initial empirical antibiotic selection and follow-up management decisions. While some recommendations remain unchanged from the 2007 guidelines, the availability of new therapeutic trials and epidemiological studies has led to a review of recommendations for empirical treatment strategies and additional management decisions. Conclusions: The panel formulated and provided justification for recommendations for individual diagnostic and treatment strategies for adult patients with community pneumonia. Keywords: pneumonia acquired by the community; pneumonia; Patient management For more information, please visit the Website of the American Thoracic Society. Pocket Map PDF Split View Article Content Figures and Tables Video Audio Additional data The International Panel of Experts has produced based on actual guidelines for the vaccination of immunocompromised adults and children. These guidelines are intended to be used by primary health care providers and subspecies who care for immunocompromised patients. Evidence was often limited. Areas that require further investigation have been identified. These guidelines have been developed to provide primary health care specialized clinicians with evidence-based guidelines for active immunization of patients with modified immuno-infection and their family contact in order to safely prevent prevent vaccination They are not the only approach to vaccination. Recommended immunization schedules for normal adults and children, as well as some adults and children at high risk of vaccine infection, are updated and published annually by the Centers for Disease Control and Prevention (CDC) and partner organizations. Some of the recommendations have not been considered by the Advisory Committee on Immunization Practices (ASIP) at the CDC or they deviate from recommendations. The purpose of these guidelines is to reduce the morbidity and mortality from vaccine-preventable infections in immunocompromised patients. Below are the recommendations made by the group. The electronic version has support tables that provide additional information. The team followed the process used in the development of other American Society guidelines on infectious diseases, which included systematically weighing the quality of the evidence and evaluating the recommendation (table 1). The main clinical questions and recommendations are summarized in this summary. A detailed description of the methods, background data and evidence supporting each recommendation can be found in the full text of the guidelines. Table 1. Classification system to assess the strength of recommendations and the quality of supporting evidence the strength of the recommendation and the quality of the evidence . Clarity of the balance between desirable and undesirable effects. Methodological quality of supporting evidence (examples). Consequences. Strong recommendations, high-quality evidence of desirable effects clearly outweigh the undesirable effects, or vice versa consistent evidence from well-executed LCTs or exceptionally compelling evidence from impartial observational studies the recommendation can apply to most patients in most cases. Further research is unlikely to change our confidence in assessing the effect. Strong recommendations, moderate-quality evidence Of desirable effects clearly outweigh the undesirable effects, or vice versa Evidence from RCTs with important limitations (inconsistent results, methodological deficiencies, circumstantial or inaccurate) or exceptionally compelling evidence from impartial observational studies The recommendation can apply to most patients in most cases. Further studies (if they are conducted) are likely to have an important impact on our confidence in assessing the effect and may change the assessment. Strong recommendations, poor quality of evidence Desirable effects clearly outweigh the undesirable effects, or vice versa Evidence, at least 1 critical result from observational studies, RCTs with serious flaws or circumstantial evidence Recommendation may change when higher evidence becomes available. Further studies (if they are carried out) are likely to have an important impact on our confidence in assessing the effect and are likely to change Recommendation, very poor quality evidence (very rarely applicable) Desirable effects clearly outweigh the undesirable effects, or vice versa Evidence at least one critical result from non-systemic clinical observations or very circumstantial evidence Recommendation may change when higher quality evidence becomes available; any assessment of the effect of at least one critical result is highly uncertain. Weak recommendation, high-quality evidence of desirable effects, closely balanced with undesirable effects Consistent data from well-executed RSHT or exceptionally convincing evidence from objective observational studies The best action may differ depending on the circumstances, patients or public values. Further research is unlikely to change our confidence in assessing the effect. Weak recommendation, moderate-quality evidence Of desirable effects are closely balanced with the undesirable effects of evidence from RCTs with important limitations (incompatible results, methodological deficiencies, indirect or inaccurate) or exceptionally compelling evidence from impartial observational studies Alternative Approaches are likely to be better for some patients under certain circumstances. Further studies (if they are conducted) are likely to have an important impact on our confidence in assessing the effect and may change the assessment. Weak recommendation, poor quality of evidence of uncertainty in assessments of desirable effects, harm and burdens; Desirable effects, harms and burdens can be closely balanced evidence, at least one critical outcome from observational studies, RCTs with serious flaws or circumstantial evidence Other alternatives may be just as reasonable. Further research is likely to have an important impact on our confidence in assessing the effect and is likely to change the assessment. Weak recommendation, very poor quality of evidence Home uncertainty in assessments of desirable effects, harm and burden; desirable effects may or may not be balanced with the undesirable effects of Evidence of at least one critical outcome from non-systemic clinical observations or very circumstantial evidence Other alternatives may be just as reasonable. Any assessment of the effect, at least one critical result, is very uncertain. WHO is responsible for vaccinating immunocompromised patients and their family members? 1. Specialists, caring for patients with weakened immunity, are responsible to the main provider of health services to ensure that patients with weakened immunity (strong, low) are injected Vaccinations. Specialists caring for immunocompromised patients are responsible to the main provider of health care for recommending appropriate vaccinations for family members of immunocompromised patients (strong, very low). When vaccines should be administered Patients who are scheduled to initiate immunosuppressive drugs?3. Vaccines should be administered prior to planned immunosuppression, if possible (strong, moderate).4. Real-time vaccines should be administered ≥4 weeks prior to immunosuppression (strong, low) and should be avoided for 2 weeks after the onset of immunosuppression (strong, low). Inactivated vaccines should be administered ≥2 weeks prior to immunosuppression (strong, moderate). What vaccines can be safely administered to people who live in a family with weakened immunity? What precautions should be taken against immunocompromised patients after their family members are vaccinated? 6. Immunocompetent individuals who live in a family with immunocompromised patients can safely receive inactivated vaccines based on the CDC's annually updated recommended vaccination schedules (more, CDC annual schedule; strong, high) or for travel (strong, moderate).7 Individuals who live in a family with weakened immunity of patients at the age of ≥6 months should receive the flu vaccine annually (strong, high). They should receive either: an inactivated flu vaccine (IIV; strong, high) or a low-end flu vaccine (LAIV) provided they are healthy, not pregnant, and aged 2-49 (strong, low). Exceptions include individuals who live in a family with weakened patient immunity who has been a hemathoetic stem cell transplant (HSCT) recipient for 2 months after transplantation or with a transplant against the host disease (GVHD) or a patient with severe combined immunodeficiency (SCID). Very low).8. Healthy immunocompetent people who live in a family with weakened immunity patients should receive the following live vaccines based on the CDC's annual schedule: combined measles, mumps and rubella (MMR) vaccines (strong, moderate); rotavirus vaccine in children between the ages of 2 and 7 months (strong, low); chickenpox vaccine (VAR; strong, moderate); and the zoster vaccine (AIA; strong, moderate). In addition, these people can safely receive the following travel vaccines: yellow fever vaccine (strong, moderate) and oral typhoid (strong, low).9. Oral polio vaccine (OPV) should not be administered to individuals who live in a family with immunocompromised patients (strong, moderate).10. Patients with high immunocompromised should avoid the treatment of diapers of infants who have been vaccinated with rotavirus vaccine for 4 weeks after vaccination (strong, very low).11 Immunocompromised patients should avoid contact with people who develop skin damage after receiving VAR or until the defeat is clear (strong, low). WHAT vaccines can be introduced for immunocompromised individuals contemplating international travel? 12. Physicians may administer inactivated vaccines for trips based on the CDC's annual schedule for immunocompetent adults and children (strong, low).13 The yellow fever vaccine should not be administered to immunocompromised individuals (strong, moderate). If travel to an endemic area is not avoided, vaccination may be considered in the following minimally immunocompromized human immunodeficiency virus (HIV)-infected individuals: aritamptomatic HIV-infected adults with CD4 T-cell lymphocytes count ≥200 cells / mm3 (weak, low) aritemptonic HIV-infected children aged 9 months-5 years with CD4 T-cell lymphocytes percent ≥15 (weak, very low).14. With a few exceptions (e.g., yellow fever vaccine and PMR vaccine in some HIV-infected patients (see recommendation 13 and section Recommendations for vaccination of HIV-infected adults, adolescents and children), as well as in some patients with HSCT (see Recommendations for vaccination of patients with hemapoetic stem cell transplantation), live vaccines should not be given to those with weakened immunity (low). RECOMMENDATIONS FOR VARICELLA AND HEALTH VACCINE IN IMMUNOCOMPROMISED PATIENTS VAR V. Should immunocompromISED PATIENTS VAR V. Should patients with weakened immunity or patients scheduled to receive immunosuppressive therapy receive VAR? 15. VAR should be given to immunocompetent patients without signs of varikella immunity (e.g., age-appropriate vaccination against chicken varikella, serological immunity evidence, doctor-diagnosis or -proven history of chickencap or oster, or laboratory-proven wind or zoster; strong, moderate) if it can be administered ≥4 weeks prior to the onset of immunosuppressive therapy (strong, low). A 2-dose VAR schedule, divided into 4 weeks for patients aged ≥13 years and ≥3 months for patients between the ages of 1 and 12, is recommended if there is enough time before the onset of immunosuppressive therapy (strong, low).17. VAR should not be administered to immunocompromised patients. However, some categories of patients (e.g. patients with HIV infection without severe immunosuppression or with primary immunodeficiency disorder without defective T-cell immunity, such as primary deficiency of supplement components or chronic granulomatous disease (CGD)) should receive VAR by adhering to a 2-dose schedule divided by a 3-month interval (strong, moderate). VAR can be considered for patients without evidence of wind cup immunity (defined in recommendation 16) who receive long-term, low-level (weak, very low). VAR should be administered to immunocompromised patients as the sole antigenic product, not VAR in combination with the MMR vaccine (strong, (strong, Should immunocompromized patients or those who will undergo immunosuppression get herpes shingles-slinging lipo vaccine?20. AIA should be administered to patients aged ≥60 years if it can be administered ≥4 weeks before the onset of high immunosuppressive therapy (strong, low).21. AIA should be considered for wind-positive patients (i.e., individuals with a history of wind or ash infection or who are a chickencap virus (V'V) seropositive without previous doses of VAR) at the age of 50-59 years, if it can be administered ≥4 weeks prior to the onset of immunosuppressive therapy (weak, low). AIA should be used in patients aged ≥60 years, who receive therapy, which is thought to cause low levels of immunosuppression (strong, low).23. AIA should not be administered to patients with weakened immunity (strong, very low). RECOMMENDATIONS on INFLUENZA VACCINE IN IMMUNOcompromissIC HOSTE VII. Should immunocompromised individuals receive influenza vaccine? 24. Annual CIV vaccination is recommended for patients with weakened immunity at the age of ≥6 months (strong, moderate), except for patients who are unlikely to respond (although it is unlikely to be damaged by IIV), such as those who receive intensive chemotherapy (strong, low) or those who received anti-B-cell antibodies within 6 months (strong, moderate).25. LAIV should not be administered to persons with weakened immunity (weak, very low). Recommendations FOR THE REACTION OF PATIENTS with FIRST IMMUNOdeficiency VIII. What vaccines should be administered to patients with primary (congenital) supplement deficiencies? 26. Patients with primary kit deficiencies should receive all conventional vaccines based on the CDC's annual schedule; none of them is contraindicated (strong, low).27. Patients with the deficiencies of the primary supplement and between the ages of 2 and 5 should receive 1 dose of 13-valent pneumococcal conjugated vaccine (PCV13) if they have received 3 doses of PCV (or 7-valent PCV or PCV13) up to 24 months and 2 doses of PCV13 (8 weeks apart) if they received an incomplete schedule of ≤2 doses of PCV7 (PCV7 or PCV13) to 24 months (strong , low). between the ages of 6 and 18 with a classic pathway (C1, C2, C3, C4), an alternative pathway, or heavy mannan-binding lectin (MBL) deficiency that did not get PCV13 should receive one dose of PCV13 (strong, very low ≥). Very low). For those who have received pneumococ pc polysaccharide vaccine-23 (PPSV23), PCV13 should be administered ≥1 year after the last dose of PPSV23 (weak, low)28. Patients aged ≥2 years with an early classical route, alternative pathway, or severe MBL deficiency should receive PPSV23 ≥8 weeks after PCV13, and a second dose of PPSV23 should 5 years later (strong, low).29. Patients with primary supplement deficiencies should receive conjugated meningococcal vaccine. 4-dose series of bivalent meningococcal conjugic vaccine and conjugation of type B hemophilic influenza (HibMenCY) vaccine; MenHibrix, GlaxoSmithKline) should be introduced at the age of 2, 4, 6, and 12-15 months for children between 6 weeks and 18 months (strong, low) or 2-dose of the primary series of meningococcal conjugal vaccine, quadrivalent (MCV4) should be administered to patients with primary component deficits at age 9 months-55 years (MCV4-D Menactra, Sanofi Pasteur) for persons aged 9 to 23 months; MCV4-D or MCV4-CRM (Menveo, Novartis); CRM, protein of diphtheria CRM197 for people between the ages of 2 and 54; strong, low). For those aged 55 years old, MPSV4 (meningococcal polysaccharide vaccine, quadrivalentity) should be administered if they have not received MCV4 and MCV4 should be administered if they have received an MCV4 (strong, low). For patients between the ages of 9 and 23 months, doses should be administered 3 months apart; For patients aged ≥2 years, doses should be administered 2 months apart. MCV4-D should be administered ≥4 weeks after the dose of PCV13 due to reduced antibody response to some pneumocococ pdms when MCV4-D and PCV7 are administered simultaneously (strong, low).30. Patients with a deficiency of primary supplement components should be revaccinated with MCV4 (or MPSV4 for those aged 55 years who have not received MCV4) every 5 years (strong, low). IX. Which vaccines should be used in patients with phagocytic cell deficiencies (e.g., CGD, white blood adhesive deficiency, Chediaca-Higashi syndrome)?31 Patients with phagocytic cells should receive all inactivated vaccines based on the CDC's annual schedule (strong, low). Children between the ages of 2 and 5 should receive PCV13 as in recommendation 27a (weak, very low).32. Patients aged ≥6 years with phagocytic cell deficiencies other than CGD (if a patient with CGD receives immunosuppressive medication) should receive PCV13 as in recommendations 27b and 27c (weak, very low).33. Patients aged ≥2 years with phagocytic cell deficiencies other than CGD (if a patient with CGD receives immunosuppressive medication) should receive PPSV23 ≥8 weeks after receiving PCV13, and a second dose of PPSV23 should be given 5 years later (weak, low).34. Vaccines against live bacteria, such as calmette-Guerin bacillus (BCG) or oral typhoid fever, should not be administered to patients with a defect in phagocyte cells (strong, moderate).35 Real-time viral vaccines should be used in patients with CGD and patients with congenital or cyclical neutropenia (weak, low).36. Live viral vaccines should not be administered to patients with white blood cell deficiency adhesives, defects of cytotoxic

release pellets, such Chediak-Higashi syndrome, Chediak-Higashi, 13, recommendations 50 or any other unspecified defect of phagocyte cells (strong, low).X. What vaccines should be administered to patients with congenital immune defects that lead to cytokine-type/reaction defects or cellular activation (e.g. interferon-gamma/interleukin-12 axis defects)?37. Patients with congenital immune defects that lead to cytokines generation/reaction defects or cell activation should receive all inactivated vaccines based on the CDC's annual schedule (strong, very low).38 For patients with congenital immune defects that lead to cytokines generation defects/reactions or cellular activation, PCV13 should be administered as in 27a-c recommendations (weak to strong, very low to low).39. Specialist consultations should be addressed regarding individual conditions relating to the use of live vaccines in patients with congenital immune defects that lead to defects in the generation/reaction of cytokines or cellular activation/infection generation (strong, low).40. Live bacterial vaccines should not be administered to patients with interferon-gamma/interleukin-12 (IFN-γ/IL-12) pathways (strong, moderate).41. Live viral vaccines should not be administered to patients with defects produced by IFN (alpha or gamma) (strong, low). XI. Which vaccines should be administered to patients with minor antibody deficiencies?42. Patients with immunoglobulin (Ig) deficiency or specific deficiency of polysaccharide antibodies (SPAD) should receive all routine vaccinations based on the CDC's annual schedule, provided that other components of their immune system are normal (strong, low).43 Children with SPAD or ataxia-telangiaectasia should receive PCV13, as described in the 27a-c recommendations (weak to strong, very low to low). Persons aged ≥2 years should receive PPSV23 ≥8 weeks after these doses of PCV13, and the second dose should be given 5 years later (strong, low).44. Monitoring vaccine response may be useful for assessing immunodeficiency in patients with minor antibodies and protection levels (weak, moderate).45 OPV should not be administered to patients with IgA deficiency (strong, low). XII. What vaccines should be administered to patients with the main antibodies that receive immunoglobulin therapy?46. Inactivated vaccines, in addition to IVS, are not usually administered to patients with the main deficiencies of antibodies during immunoglobulin therapy (strong, low). For patients suspected of serious antibody deficiencies, all inactivated vaccines can be administered as part of an immune response assessment to immunoglobulin therapy (strong, low).47. IIV can be administered to patients with major antibody deficiencies and some residual antibody production (weak, low).48 LIVE OPV should not be administered to patients with major antibodies (strong, vaccines (except OPV) should not be administered to patients with severe antibodies (weak, low). Which vaccines should be administered to patients with combined immunodeficiency?50. For patients with suspected combined immunodeficiencies, all inactivated vaccines can be administered as part of an immune response assessment prior to the onset of immunoglobulin therapy (strong, low). Patients with combined immunodeficiency receiving immunoglobulin therapy, inactivated vaccines should not be regularly administered (strong, low).51 Patients with combined immunodeficiency and residual antibody production potential can administer IIV (weak, very low).52. Children with partial DiGeorge syndrome (PDGS) should undergo an immune system assessment with a subset of lymphocytes and mitogeneous responsiveness to determine whether they should be given live viral vaccines. Those ≥500 CD3 T cells/mm3, ≥200 CD8 T cells/mm3, and the normal mitogen response should get the MMR and VAR vaccine (weak, low). Patients with SCID, DGS with CD3 T-cell lymphocytes count of 500 cells / mm3, other combined immunodeficiencies with similar CD3 T-cell lymphocytes counts, Viscott-Aldrich syndrome, or X-associated lymphoproliferative diseases and family disorders that predispose them to hemophacyte lymphocystic disease should avoid all living vaccines (strong, moderate). Recommendations for HIV-INFECTED PEOPLE, AND CHILDREN XIV. Which inactivated vaccines should be administered to HIV-infected patients?54. HIV-infected patients should be vaccinated according to the CDC's annual schedule for the following inactivated vaccines: IIV (strong, high); PCV13 in patients aged 2 years (strong, moderate); H. influenza type B conjugation (Hib) vaccine (strong, high); vaccine against diphtheria toxoid, tetanus toxoid, acellular whooping cough (DTaP); tetanus toxoid, reduced diphtheria toxoid, and reduced acellular pertussis (Tdap) vaccine (strong, very low); tetanus toxoid, reduced diphtheria toxoid (Td) vaccine (strong, low); Hepatitis B vaccine (Gepb) (strong, moderate); hepatitis A (Gepa) vaccine (strong, moderate); Inactivated poliovirus vaccine (IPV); and the quadrivalent vaccine against human papillomavirus (HPV4) in women and men between the ages of 11 and 26 (strong, very low) with an addition below 55. PCV13 should be administered to HIV-infected patients at the age of ≥2 years, as in the recommendations of 27a-c (strong, low to moderate).56. PPSV23 should be administered to HIV-infected children aged ≥2 years who have received specified doses of PCV (strong, moderate), HIV-infected adults with CD4 T-lymphocytes counts ≥200 cells/mm3 (strong, moderate), and HIV-infected adults with CD4 T-lymphocytes counts as lt;200 cells /mm3 (weak, low). PPSV23 give ≥8 weeks after dose (s) RSH13, and the second dose of PPSV23 should be given after 5 years (strong, low).57. HIV-infected children aged 59 months and without the Hib vaccine should receive 1 dose of Hib vaccine (strong, low). The Hib vaccine is not recommended for HIV-infected adults (weak, low).58 HIV-infected children between the ages of 11 and 18 should receive 2 doses of primary MCV4 series with the exception of 2 months (strong, moderate). One dose of booster (third dose) should be given at the age of 16 if the primary series was given at the age of 11 or 12 years and at the age of 16-18 years if the primary series was given at the age of 13-15 years (strong, low). If MCV4 is administered to HIV-infected children between the ages of 2 and 10 years due to risk factors of meningococcal infection, a 2-dose primary series of MCV4 should be administered at a 2-month interval between doses, and a booster dose should be given 5 years later (strong, very low).59. HIV-infected patients should receive a series of HepB vaccines (strong, moderate) given the high-dose Hepb vaccine (40 micrograms/dose) for adults (weak, moderate) and adolescents (weak, low). 1-2 months after completion, patients should be tested for anti-HBs (antibodies to the antigen surface of Hepb; strong, low). If post-vaccination against HB concentration ≥10 MEU/ml is not achieved, a second 3-dose series of Gepb vaccine (strong, low; alternative: 1 dose of HEP vaccine, after which anti-GBS is tested), using a standard dose (strong, moderate) or a high dose (40 micrograms; weak, low) for children and a high dose for adolescents and adults (high). The Hepb vaccine containing 20 micrograms of HBsAg surface antigen (HBsAg) combined with the HepA (HepA-HepB) vaccine; Twinrix, a 3-dose series, can be used for primary vaccination of HIV-infected patients aged ≥12 years (strong, moderate). Internationally adopted HIV-infected children who have received doses of OPV should receive a total of 4 doses of the combined opV and IPV vaccine (strong, low).62. The HPV4 vaccine is recommended for the bivalent vaccine against the human papillomavirus (HPV2) because the HPV vaccine prevents genital warts (strong, low), although there is no evidence of differences between vaccines to prevent cervical dysplasia in HIV-infected women. XV. Should live vaccines be applied to HIV-infected patients?63. HIV-infected or infected infants should receive rotavirus vaccine as scheduled for uninfected infants (strong, low).64 HIV-infected patients should not receive LAIV (weak, very low).65 The MMR vaccine should be applied to clinically stable HIV-infected children between the ages of 1 and 13 without severe immunosuppression (strong, moderate) and HIV-infected at the age of ≥14 years without immunity from measles and with the number of CD4 T cells ≥200/mm3 (weak, very low).66. HIV-infected children with CD4 T-cell percentages moderate) or patients aged ≥14 years with CD4 T-cell lymphocytes count as 200 cells /mm3 should not receive the MMR vaccine (strong, moderate).67. HIV-infected patients should not receive the quadrivalent MMR-varicella (MMRV) (strong, very low).68 Varikella-norimmun, clinically stable HIV-infected patients between the ages of 1 and 8 with ≥15% CD4 T-lymphocytes percentage (strong, high), at the age of 9-13 years with ≥15% CD4 T-lymphocyte percentage (strong, very low), and at the age of ≥14 years with CD4 T-lymphocytes calculates ≥200 cells / mm3 should get VAR (strong, very low). 2 doses should be divided into ≥3 months (strong, moderate). What vaccines should cancer patients give?69. Patients aged ≥6 months with hematological malignancies (strong, moderate) or solid malignancies of tumors (strong, low), except those who receive anti-B-cell antibodies (strong, moderate) or intensive chemotherapy, such as induction or excluding chemotherapy of acute leukemia (weak, low), should receive IIV annually. PCV13 should be administered to newly diagnosed adults with haematological (strong, very low) or solid malignancies (strong, very low) and children with malignancies (strong, very low), as described in the 27a-c recommendations. PPSV23 should be administered to adults and children aged ≥2 years (strong, low) at least 8 weeks after the specified dose (s) RSV13.71. Inactivated vaccines (except IIV), recommended for immunocompetent children in the CDC's annual schedule, may be considered for children who receive supportive chemotherapy (weak, low). However, vaccines administered during cancer chemotherapy should not be considered valid doses (strong, low) unless there is documentation of the level of protective antibodies (strong, moderate).72. Live viral vaccines (strong, very low and moderate) should not be administered during chemotherapy. Three months after cancer chemotherapy, patients should be vaccinated with inactivated vaccines (strong, very low and moderate) and live chickenpox vaccines (weak, very low); measles, mumps and rubella (strong, low); measles, mumps and rubella (weak, very low) according to the CDC's annual schedule, which is commonly indicated for immunocompetent individuals. Recommendations FOR THE VACCINATION of PATIENTS with GEMATHOPOETIC REBARION STEM CELLS XVII. Should HSCT donors and patients be vaccinated prior to transplantation?74. The HSCT donor must now be with a regular vaccines based on age, vaccination history and history of exposure according to the CDC's annual schedule (strong, high). However, administering MMR, MMRV, VAR and AIA vaccines should be avoided for 4 weeks after stem cell (weak, very low). Vaccination of the donor in the benefit of the recipient is not recommended (weak, moderate).75 Prior to HSCT, candidates should receive vaccines indicated for immunocompetent individuals based on age, vaccination history and exposure history according to the CDC's annual schedule if they are not yet immunosuppressed (strong, very low and moderate), and when the interval for starting conditioning regimen is ≥4 weeks for live vaccines (strong, low) and ≥2 weeks for inactivated vaccines (strong, moderate). Non-immunized HSCT candidates aged ≥12 months should get a VAR (as a 2-dose regimen if there is enough time) if they are not immunosuppressive and when the interval to start conditioning regimen is ≥4 weeks (strong, low). 11th Vaccines should be administered to adults and children after HSCT?77. One dose of IIV should be administered annually (strong, moderate) to those aged ≥6 months, starting 6 months after HSCT (strong, moderate) and starting 4 months after if there is an outbreak of influenza in the community, as defined by the local health department (strong, very low). For children between the ages of 6 months and 8 years who receive the flu vaccine for the first time, 2 doses should be administered (strong, low).78. Three doses of PCV13 should be administered to adults and children from 3-6 months after HSCT (strong, low). 12 months after HSCT, 1 dose of PPSV23 should be given provided that the patient does not have chronic GVHD (strong, low). For patients with chronic GVHD, a fourth dose of PCV13 can be given in 12 months after HSCT (weak, very low). Three doses of the Hib vaccine should be administered 6-12 months after HSCT (strong, moderate).80. Two doses of MCV4 should be administered 6-12 months after HSCT to those aged 11-18 years, with a booster dose given at the age of 16-18 years for those who received the initial dose of the vaccine after HSCT at the age of 11-15 years (strong, low).81. Three doses of tetanus/diphtheria containing the vaccine should be administered 6 months after HSCT (strong, low). Children as young as 7 years of age should be given 3 doses of DTaP (strong, low). For patients aged ≥7 years should consider administering 3 doses of DTaP (weak, very low). Three doses of the Gepb vaccine should be administered 6-12 months after HSCT (strong, moderate). If post-vaccination against HBs concentration ≥10 mV/ml, second 3-dose series of Gepb vaccine (strong, low; alternative: 1 dose of GDB vaccine, followed by anti-HBs tested), using a standard dose (strong, moderate) or high dose (40 g; weak, low) for children and a high dose for adolescents and a high dose for adolescents adults (strong, low), should be introduced.83. Three doses of the IPV vaccine should be administered 6-12 months after HSCT (strong, moderate).84. Consider administering 3 doses of HPV vaccine 6-12 months after HSCT for patients aged 11-26 years and HPV4 vaccine for men aged 11-26 years (weak, very low).85. Do not administer live vaccines to patients with HVHT with active HVD or permanent immunosuppression (strong, low).86. A 2-dose series of MMR vaccine should be administered for measles seronegative adolescents and adults (strong, low) and measles seronegative children (strong, moderate) 24 months after HSCT in patients with neither chronic GVHD, nor ongoing immunosuppression and 8-11 months (or earlier, if there is a measles outbreak) after the last dose of immune globulin intravenously (IGIV). The 2-dose VAR series should be administered 24 months after HSCT to patients with varicella-seronegative patients with no CVD, nor ongoing immunosuppression and 8-11 months after the last dose of IGIV (strong, low). Recommendations FOR THE CURATION OF THE RECEMENT RECEMENT 19. For adults and children, solid organ transplants for candidates and living donors, which vaccines should be administered during the pre-transplant assessment?88. According to the CDC's annual schedule (strong, high); MmR, MMRV, VAR and zoS vaccine administration should be avoided for 4 weeks after organ donation (weak, very low). Vaccination of donors solely for the benefit of the recipient is generally not recommended (weak, low).89 Adults and children with chronic or end-stages of the kidneys, liver, heart or lungs, including solid organ transplantation (SOT) candidates, should receive all age-related, impact history, and immune status of the relevant vaccines based on the CDC's annual schedule for immunocompetent individuals (strong, moderate).90 Adult SOT candidates; Adults with kidney disease at the end of the stage; and pediatric patients who are SOT candidates; aged 6 years and have kidney, heart or lung disease at the end of the stage; or at the age of 6-18 years and have end-stage kidney disease should receive PCV13, as in the recommendations of 27a-c (strong, very low).91. Adults and children aged ≥2 years, who are SOT candidates or have end-stage kidney disease, should receive PPSV23 if they have not received a dose within 5 years and have not received 2 life doses (strong, moderate). Patients with kidney disease at the end of the stage should receive 2 life doses with separation (strong, low). Adults and children aged ≥2 years with end-stage heart or lung disease, as well as adults with chronic liver disease, including cirrhosis of the liver, should receive a dose of PPSV23 if they have never received a dose (strong, low). When both PCV13 and PPSV23 are specified, PCV13 must be 8 weeks before PPSV23 PPSV23 moderate).92. Anti-HBs-negative SOT candidates should receive a series of HepB vaccines (strong, moderate), and if for hemodialysis and at the age of ≥20, they should receive high doses (40 micrograms) of a series of hep vaccines (strong, moderate). If post-vaccination against HBs is not achieved concentration ≥10 MIE/ml, the second 3-dose series of the Hepb vaccine (strong, low; alternative: 1 dose of the Hepb vaccine, after which anti-HBs is tested) should be administered using a standard dose (strong, moderate) or high dose for children (weak, low) and high dose for adolescents and adults (strong, low). Hepa-unvaccinated, -unvaccinated, or -seronegative SOT candidates (especially candidates for liver transplantation) aged 12-23 months (strong, moderate) and ≥2 years (strong, moderate) should receive the hepA series.93. The combined HepA-HepB vaccine can be used for SOT candidates aged ≥12 years of age who have both vaccines (strong, moderate).94. A series of HPV vaccines should be applied to soT candidates between the ages of 11 and 26 (strong, low moderate).95. SOT candidates between the ages of 6 and 11 months can receive the MMR vaccine if they do not receive immunosuppression and if the transplant is not expected within 4 weeks (weak, very low). If the transplant is delayed (and the child does not receive immunosuppression), the MMR vaccine must be repeated within 12 months (strong, moderate).96 VAR should be administered to SOT candidates without signs of varikella immunity (as defined in recommendation 16) if they do not receive immunosuppression and if transplantation is not expected within 4 weeks (strong, moderate). VAR can be administered to VARicella-naive SOT candidates between the ages of 6 and 11 months who are not immunosuppressive provided that the timing ≥4 weeks prior to transplantation (weak, very low) Optimally, 2 doses should be administered ≥3 months apart (strong, low).97. SOT candidates aged ≥60 years (strong, moderate) and varicella-positive candidates (as defined in recommendation 22) aged 50-59 years (weak, low) who do not have serious immunodeficiency, should receive AIA if transplantation is not expected within 4 weeks. 20. Which vaccines should be administered to SOT recipients?98. Vaccination should be denied from SOT recipients during intense immunosuppression, including the first 2-month period after transplantation, due to the likelihood of an inadequate response (strong, low). However, the IIV may be ≥1 month after the transplant during the flu outbreak in the community (weak, very low).99. Standard age-appropriate inactivated vaccines should be administered 2-6 months after SOT based on the CDC's annual schedule (strong, low to moderate), including IIV (strong, moderate).100. PCV13 should be administered 2-6 months after SOT, if you do not enter before SOT, immunosuppression, as described in the recommendations of 27a-c (strong, very low to moderate).101. For SOT patients aged ≥2 years, 1 dose of PPSV23 should be administered 2 to 6 months after SOT, with terms based on the degree of immunosuppression of the patient, and ≥8 weeks after the specified doses of PCV13, if not given for 5 years, and if the patient received no more than 1 previous dose of life (strong, moderate).102. The vaccine against Hepb should be considered for chronic hep-infected recipients 2-6 months after liver transplantation in an attempt to eliminate the lifetime requirement for Hepb immune globulin (HBIG; weak, low). The MMR and VAR vaccine should generally not be administered to SOT recipients due to insufficient safety and efficacy (strong, low), except for chicken pox in children without signs of immunity (as defined in recommendation 15), who are recipients of kidney or liver transplants, receive minimal or no immunosuppression, and do not have a recent rejection of the graft (weak, moderate). Vaccination should not be denied due to concerns about organ rejection (strong, moderate). RECOMMENDATIONS FOR VACCINATING PATIENTS WITH CHRONIC INFLAMMATORY DISEASES FOR IMMUNOSUPPRESSIVE DRUGS XXI. Which vaccines should be used in patients with chronic inflammatory diseases supported by immunosuppressive therapy?105. Inactivated vaccines, including IIV, should be administered to patients with chronic inflammatory diseases (strong, low moderate) or are about to be treated with (strong, moderate) immunosuppressive drugs for immunosuppressive individuals based on the CDC.106 annual schedule. PCV13 should be administered to adults and children with chronic inflammatory disease, which is treated with immunosuppression, as described in the standard schedule for children and in the recommendations of 27a-c (strong, very low-moderate).107. PPSV23 should be administered to patients aged ≥2 years of age with chronic inflammatory diseases with the planned onset of immunosuppression (strong, low), low-level immunosuppression (strong, low) and high-level immunosuppression (strong, very low). Patients should receive PPSV23 ≥8 weeks after PCV13, and a second dose of PPSV23 should be given 5 years later (strong, low).108. VAR should be administered to patients with chronic inflammatory diseases with no signs of varikella immunity (defined in recommendation 15; strong, moderate) ≥4 weeks prior to the onset of immunosuppression (strong, low) if the onset of treatment can be safely delayed.109. VAR should be considered for patients without signs of varicella immunity (defined in recommendation 15) treated for chronic inflammatory diseases with long-term, low-level immunosuppression (weak, very low). AIA should be administered to patients with chronic inflammatory which which в возрасте ≥60 лет до начала иммуносупрессии (сильная, низкая) или лечится с низкодозной иммуносупрессией (сильная, очень низкая) и теми, кто в возрасте 50-59 лет и ветряной варикаллы положительный до начала иммуносупрессии (слабый, низкий) или лечится с низкодозной иммуносупрессией (слабая, очень низкая). Другие живые вакцины не следует вводить пациентам с хроническими воспалительными заболеваниями при поддерживая иммуносупрессии: LAIV (слабая, очень низкая), вакцина MMR у пациентов, получающих низкоуровневую (слабую, очень низкую) и иммуносупрессию высокого уровня (слабая, очень низкая); и вакцина MMRV у пациентов, получающих низкоуровневую (слабую, очень низкую) и высокоуровневую иммуносупрессию (сильную, очень низкую).112. Другие рекомендуемые вакцины, включая вакцину IIV и НерВ, не следует утаить из-за опасений по поводу обострения хронических иммунно-опосредованных или воспалительных заболеваний (сильных, умеренных). РЕКОМЕНДАЦИИ ПО ВАКЦИНАЦИИ ПАЦИЕНТОВ С АСПЛЕНИЯ ИЛИ СЕРПОВИДНО-КЛЕТОЧНЫХ ЗАБОЛЕВАНИЙ XXII. Какие вакцины следует вводить пациентам с аспленикoм и больным болезнями клеток?113. Пациенты с серповидно-клеточными заболеваниями должны получать вакцины, в том числе PCV13 для <2 years,= as= recommended= routinely= for= immunocompetent= persons= based= on= the= cdc= annual= schedule.= no= vaccine= is= contraindicated= (strong,= moderate)= except= laiv= (weak,= very= low).114. pcv13= should= be= administered= to= asplenic= patients= and= patients= with= sickle= cell= diseases= aged= ≥2= years= based= on= the= cdc= annual= schedule= for= children= and= in= recommendations= 27a–c= (strong,= very= low-moderate).115. ppsv23= should= be= administered= to= asplenic= patients= and= patients= with= a= sickle= cell= disease= aged= ≥2= years= (strong,= low)= with= an= interval= of= ≥8= weeks= after= pcv13,= and= a= second= dose= of= ppsv23= should= be= administered= 5= years= later= (strong,= low).116. for= ppsv23-naive= patients= aged= ≥2= years= for= whom= a= splenectomy= is= planned,= ppsv23= should= be= administered= ≥2= weeks= prior= to= surgery= (and= following= indicated= dose(s)= of= pcv13;= strong,= moderate)= or= ≥2= weeks= following= surgery= (weak,= low).*117. one= dose= of= hib= vaccine= should= be= administered= to= unvaccinated= persons= aged= ≥5= years= who= are= asplenic= or= have= a= sickle= cell= disease= (weak,= low).118. meningococcal= vaccine= should= be= administered= to= patients= aged= ≥2= months= who= are= asplenic= or= have= a= sickle= cell= disease= (strong,= low),= as= in= recommendation= 29.= however,= mcv4-d= should= not= be= administered= in= patients= aged=></2> <2 years= because= of= a= reduced= antibody= response= to= some= pneumococcal= serotypes= when= both= mcv4= and= pcv= are= administered= simultaneously= (strong,= low).= revaccination= with= mcv4= (or= mpsv4= for= those= aged=>детей в 55 years who have not received MCV4) is recommended every 5 years (strong, low). RECOMMENDATIONS FOR VACCINATING PATIENTS WITH ANATOMICAL BARRIER DEFECTS WITH THE RISK OF INFECTION WITH EXCITABLE PATHOGENS, PREVENTABLE WITH VACCINES. What vaccinations should be given to individuals with cochlear implants or congenital dysplasia of the inner ear or permanent cerebrospinal fluid with oropharynx or nasopharynx?119. Adults and children with deep deafness are scheduled to receive a cochlear implant, congenital inner ear dysplasia, or persistent cerebrospinal fluid (CSF) association with oropharinx or nasopharynx should receive all vaccines recommended regularly for immunocompetent individuals based on the CDC's annual schedule. No vaccine is contraindicated (strong, moderate).120. Patients with cochlear implant, deep deafness and scheduled to receive a cochlear implant, or permanent connections between CSF and oropharynx or nasopharynx or nasopharynx should receive PCV13, as described in the standard schedule for children and recommendations 27a-c (strong, low-moderate).121. Patients aged ≥24 months with cochlear implant, deep deafness and planned to receive a cochlear implant, or permanent connections between CSF and orofarix or nasopharynx should receive PPSV23, preferably ≥8 weeks after receiving PCV13 (strong, moderate).122. PCV13 and PPSV23 should be administered ≥2 weeks prior to cochlear implant surgery if possible (strong, low). INTRODUCING Vaccination of immunocompromised patients is important because master protection disorders predispose patients to an increased risk or severity of vaccine-preventable infection. These patients may also have greater exposure to pathogens due to frequent contact with the medical environment; however, vaccination rates are often low (2-4). Inadequate vaccination of patients with weakened immunity may occur due to insufficient or inaccurate information about safety, efficacy and contraindication to vaccinate such patients. Specialized doctors may not have the infrastructure needed to administer vaccines to their at-risk patients. Data on the safety, immunogenicity and efficacy/effectiveness of vaccines for immunocompromised populations are limited. Pre-smoking studies often exclude people with weakened immunity, and post-refrigerator studies look at a small number of immunocompromised patients. These small numbers are problematic when assessing side effects. In addition, immune defects differ between and within immunodeficiency patients (e.g., immunodeficiency, nutritional status, immunosuppressive regime), which may limit the generalization of the results of the study. The aim of this guide is to provide primary care physicians and specialized health services based on evidence-based recommendations for active vaccination of immunocompromised patients and their household members in order to safely prevent vaccine-preventable infections with ultimate reducing associated morbidity and mortality. Recommended vaccination schedules Immunocompetent adults and children, as well as certain groups at high risk of vaccine-preventable infections, are updated and published annually by the Centers for Disease Control and Prevention (CDC), the American Academy of Pediatrics (AAP) and the American Association of Family Physicians. Additional information on the vaccination of immunocompromised patients is also available, such as guidelines for the use of specific vaccines and guidelines for specific populations (6-14), but comprehensive guidelines are not. SCOPE OF GUIDELINE This guideline applies to children and adults with primary (congenital) immunodeficiency; patients with secondary immune failure due to HIV infection, cancer associated with immunodeficiency, cancer chemotherapy, stem cells or solid organ transplantation (SOT), sickle cell diseases and surgical assling; and patients with chronic inflammatory diseases, systemic corticosteroid therapy, immunomodulatory drugs and/or biological agents. Vaccination of immunocompetent patients who have anatomical anomalies protecting the host (e.g. cerebrosal fluid leakage) associated with vaccine-proof infections and individuals living in a family with weakened immunity patients is also considered. Vaccination of newborns (including premature infants), elderly people, burn patients and pregnant women goes beyond this guide. This guide examines vaccines, usually recommended based on the patient's age, social or professional history, increased risk of infection associated with a major disease or treatment of the disease, and travel. Bioterrorism vaccines are not considered. Immunobiological agents administered for active vaccination are considered; globale and monoclonal antibodies used for passive vaccination are not. This guide focuses on vaccines available in the United States, which are often relevant to other areas. Informed consent prior to vaccination, including the provision of a CDC vaccine information statement, vaccination documentation, vaccination information to a patient (parent) or physicians involved in patient care, and discussion of vaccination registers, goes beyond this document. Answers to the following 23 clinical questions: Who is responsible for vaccinating immunocompromised patients and their family members? When should vaccines be administered to immunocompetent patients who are planning to initiate immunosuppressive drugs? What vaccines can be safely administered to people living in a family with immunocompromised patients, and what precautions should be taken against immunocompromised patients after family members are vaccinated? What vaccines can be administered immunocompromised, considering international travel? Should patients with weakened immune systems or patients, patients, Immunosuppressive therapy receives a vaccine against chickenpox (VAR)? Should immunocompromised patients or those who undergo immunosuppression receive a zooster vaccine (AIA)? Should immunocompromised patients receive influenza vaccine? What vaccines should be administered to patients with primary (congenital) deficiencies? What vaccines should be administered to patients with phagocytic cell deficiencies (e.g. chronic granulomatous disease, white blood cell deficiency, Chediac-Higashi syndrome)? Which vaccines should be administered to patients with congenital immune defects that lead to cytokines generation/reaction defects or cell activation (e.g., interferon-gamma/interleukin-12 IFN-γ/IL-12)?? What vaccines should be administered to patients with minor antibody deficiencies? What vaccines should be administered to patients with major antibodies receiving immunoglobulin therapy? What vaccines should be administered to patients with combined immunodeficiency? What inactivated vaccines should be administered to patients with the human immunodeficiency virus (HIV)? Should live vaccines be administered to HIV-infected patients? What vaccines should cancer patients do? Should donors and patients of hemapo-ethnic stem cells (HSCT) be vaccinated before transplantation? What vaccines should be administered to adults and children after HSCT? For adult and children SOT candidates and living donors, what vaccines should be administered during pre-transplant assessment? What vaccines should SOT recipients administer? What vaccines should be administered to patients with chronic inflammatory diseases supported by immunosuppressive therapy? What vaccines should be administered to patients and sickle cell patients? What vaccines should people with cochlear implants or congenital internal ear dysplasia or constant CSF communication with oropharinx or nasopharynx be made? METHODOLOGY Practice Guidelines Practice Guidelines systematically develop statements to assist practitioners and patients in making decisions about appropriate health care for specific clinical circumstances. The attributes of good guidelines include validity, reliability, reproducibility, clinical applicability, clinical flexibility, clarity, interdisciplinary process, review of evidence and documentation. The Society of America's Infectious Diseases Group (IDSA) Standards and Practice Steering Committee (SPGC) collaborated with partner organizations and convened a team of 12 experts in the field of vaccinating immunocompromised patients to develop recommendations for clinical practice. The group represented a variety of geographical areas, paediatric and adult practitioners, as well as a wide range of specialties (gastroenterology, Infectious Infectious Diseases hematology and oncology, rheumatology, stem cells and solid organ transplantation) and organizations (CDC; American College of Rheumatology; North American Society of Pediatric Gastroenterology, Hepatology and Nutrition; AAP; Society of Children's Infectious Diseases; and the European Blood and Bone Marrow Transplantation Group). As part of the process review and consensus development based on evidence, the subgroups reviewed the initial literature search, selected links, evaluated the evidence, prepared recommendations and summarized the evidence for each section. Published guidelines No.7, 8, 15 formed the basis of recommendations for vaccinating HIV or HSCT patients, with changes based on new recommendations and discussions among the group members. The evidence-based evaluation process was based on the IDSA Handbook for the Development of Clinical Practice Guidelines, which includes systematically weighing the quality of the evidence and evaluating recommendations using the Recommendation Assessment, Development and Evaluation System (GRADE) (table 1). The projects were circulated to the group for comment and discussed 14 times in a teleconference or face-to-face meeting. Feedback from 3 external expert reviews and endorsements of the organization was received and used to modify the document. This guidance has been reviewed and approved by AARP; American Society of Hematology; American Society of Pediatric Hematology/Oncology; European Blood and Bone Marrow Transplantation Group; North American Society of Pediatric Gastroenterology, Hepatology and Nutrition; and the Society of Children's Infectious Diseases. The guidance was reviewed and approved by IDSA SPGC and the board of directors. The Review of Literature and Analysis Expert Group reviewed and analysed the literature published on 1 January 1966, as well as some later publications. Computerized English-language literature studies in the National Library of Medicine PubMed database were conducted using the terms vaccination, vaccine, immunization, and the names of specific vaccines for each group of patients or disorders under consideration. Individual links in individual publications were also considered. Literature was limited to many vaccines and patient groups and consisted mainly of a series of cases assessing immunogenicity and vaccine safety in specific populations of immunocompromised patients. There have been several comparative or effective trials described in the literature. The results are organized into general sections (vaccine safety, vaccine effectiveness, timing of vaccination, vaccination of persons living in a household with weakened patient immunity, introduction of vaccines, tourist vaccines, chickenpox and ostervacia of immunocompromised patients, influenza vaccination of patients with immunity) and sections on vaccines for specific immunocompromised conditions (primary (primary deficiency, HIV infection, oncology, HSCT, SOT, patients with chronic inflammatory diseases on immunosuppressive drugs, assellification, and patients with CSF or cochlear implants leaks). Each section on immunocompal conditions addresses both inactivated and live vaccines. Recommendations for vaccinating patients with immunocompality conditions are contained in tables 2-7. Recommendations not reviewed by the CDC ACIP or the AARP Committee on Infectious Diseases or deviate from their recommendations are marked by an asterisk. Table 2. Vaccination of people with HIV vaccine infection. Low or no immunosuppression. High-level immunosuppression drug. Recommendations. Strength, quality of evidence. Recommendations. Strength, quality of evidence. Hemophilin Influenza b Conjug U: Age 5 Years: Age 5-18 yc Strong, highStrong, Low U: Age of 5 yR: Age 5-18 yc Strong, HighStrong, Low Hepatitis U Strong, Moderate U: Age 1 y Strong, Moderate Hepatitis Bd R Strong, Moderate R Strong, Moderate Toxic Ditheria, Tetanus Toxoid, A cellulular whooping cough U Strong, moderate tetanus toxoid, Decrease in diphtheria toxoid, and decrease in acellular pertussis U Strong, very low U Strong, very low tetanus toxoid, decreased diphtheria toxoid U Strong, low U Strong, low human papillomavirus (HPV4)e U: 11-1-1-0 26 u Strong, Very Low U: 11-26 u Strong, Very Low Influenza Inactivated (Inactivated Influenza Vaccine) U Strong, High U Strong, High Influenza Live attenuated (Live Attenuated Flu Vaccine) Xf Weak, Very Low X Weak , very low measles, mumps, and rubella-live U: age 12 mo-13 yU: age ≥14 in strong, moderateWeak, very low X: age 12 mo-13 yX: age ≥14 Strong, moderate Strong, moderate measles, mumps, and rubella-varicella-live X Strong, very low X Strong, very low meningococcal conjugated U: age 11-18 years Strong, Strong Moderate pneumococcus conjugates (PCV13) U: age: 5 years: age 5 g/h: age 6-18 years: age ≥19 yi Strong, moderateStrong, moderateStrong, lowStrong, low U: age qlt;5 yR: age 5 yR: age 6-1 8 yR: age ≥19 yi Strong, moderateStrong, moderateStrong, lowStrong, very low pneumococcus polysaccharide (PPSV23)j: age ≥2 y Strong, moderate R: age 2-18 yR : adults (CD4 T lymphocytes qlt;200 cells/mm3) Strong , moderateWeak, low polio inactivated (inactivated poliovirus vaccine) U Strong, moderate U Strong, Moderate Rotavirus-Live U Strong, Low U Weak, Very Low Varicella-Live U: Age 1-8 yU: Age ≥9 y Strong, HighStrong, Very Low X Strong, Moderate Before or during chemotherapy. Starting mo post-chemotherapy and ≥6 mo post anti-B-cell antibodies for inactivated vaccines; See every live living For Interval. Recommendations. Strength, quality of evidence. Recommendations. Strength, quality of evidence. Hemophiline Influenza b Conjugation Ua Weak, Low U Strong, Moderate Hepatitis Ua Weak, Low U Strong, Very Low Hepatitis B Ua Weak, Low UR: Adult Strong, Moderate Strong, Very Low Diphtheria Toxoid, Tetanus Toxicoid, Acellular Pertussis; tetanus toxoid, decreased diphtheria toxoid, and decreased acellular pertussis Ua Weak, Low U: Age 0-18 yR: Adults with Acute Lymphoblastic Leukemia or Lymphoma Strong, moderateWeak, very low human papillomavirus U: 11-26 i Weak, very low U Strong, very low flu inactivated (inactivated flu vaccine against influenza) Ua Strong, low moderate Ub Strong, moderate live attenuated (live attenuated) , very low U Strong, low measles, mumps, and rubella-live Xc Strong, moderate Starting at 3 mo: U Strong, low measles, mumps, and rubella-varicella-live Xc Strong, Moderate Starting at 3 mo: U Weak, Very Low Meningococcal Conjugation Ua Weak, Low U Strong, Low Pneum Conjugat-13 (PCV13) R: zlt;6 yR: Age ≥6 Years Strong, LowStrong, Very Low U Strong, Low Pneumococcal Polysarid (PPSV23) R : Age ≥2 in Strong, Low U Strong, Low Polio-Inactivated (Inactivated Poliovirus Vaccine) Ua Weak, Low U Strong, Low Rotavirus-Live X Strong, Very Low Inapplicable Varicella-Live Xc Strong, Moderate Starting with 3 m: Ue Weak, Weak, Very Low or After Allogeneic or Autogenic Pre-HSCT. Post-HSCT. Recommendations. Strength, quality of evidence. Recommendation; Earliest Time Posttransplant; Number of doses. Strength, quality of evidence. Hemophilin Influenza b conjugation U Strong, Moderate R; 3 mo; 3 doses Strong, Moderate Hepatitis U Strong, Very Low R; 6 mo; 2 Doses Weak, Low Hepatitis B U Strong, Low R; 6 mo; 3 doses Strong, Moderate DTaP, DT, Td, Tdap U Strong, Low R; Age: 7 years old: DTaP; 6 mo; 3 doses R; age ≥7 years: DTaP; 6 mo; 3 doses of OR1 dose of Tdap, then 2 doses of DT or Td; 6 mo Strong, lowWeak, very lowDTaP: weak, moderate, Td: weak, low human papillomavirus U: 11-26 y Strong, very low U; 6 mo; 3 doses Weak, very low flu-inactivated (inactivated flu vaccine) U Strong, low R; 4 mo Strong, Moderate Influenza Live attenuated (live attenuated flu vaccine) X Weak, very low X Weak, very low measles, epidemic mumps, and rubella-live Ua Strong, very low Xb Strong, low measles, mumps, and rubella-varicella-live Ua Weak, very low X Strong, very low Meningococcal 11-18 years old; 6 mo; 2 doses Strong, low pneumococococ tank (PCV13) Strong, low R; 3 mo; 3 Doses Strong, Strong, polysaccharide (PPSV23) Rc Strong, very low R; ≥12 mo post, if there is no GVHD Strong, low polio inactivated (inactivated poliovirus vaccine) U Strong, very low R; 3 mo; 3 doses Strong, Moderate Rotavirus-Live X Weak, Very Low X Weak, Very Low Varicella-Live Ua Strong, Low Xd Strong, Low zoster-Live Ra, e: Age 50-59 y'ua: Age ≥60 in Weak, Very LowStrong, Low XX Strong, LowStrong, Low Table 5.Vaccinations Before or After Solid Organ Transplantation Vaccine. Pretransplant. Starting at 2-6 mo Posttransplant. Recommendations. Strength, quality of evidence. Recommendations. Strength, quality of evidence. Hemophilin Influenza b Conjugation U Strong, Moderate U Strong, Moderate Hepatitis U: Age 12-23 moR: ≥2 y Strong, Moderate Strong, Moderate R, if not completed pretransplantator Strong, moderate hepatitis B: age 1-18 yR: ≥18 y Strong, moderate Strong, moderate R, if not completed pretransplant Strong, moderate diphtheria toxoid, tetanus toxoid, acellular whooping cough; tetanus toxoid, reduced diphtheria toxoid, and decreased acellular whooping cough U Strong, moderate U, if not completed pretransplantation Strong, moderate human papillomavirus U: women 11-26 yU: men 11-26 y Strong, ModerateSung, Low U: Women 11-26 yU: Men 11-26 u Strong, Moderate Strong, Low Influenza Inactivated (Inactivated Influenza Vaccine) U Strong, Moderate Ub Strong, Moderate Influenza-Live Attenuated (Live Influenza Vaccine) Weak Flu Vaccine , low X Weak, low measles, mumps, and rubella-live Rc: 6-11 mod: age ≥12 mo Weak, very lowStrong, moderate X Strong, low measles, mumps, mumps, mumps, Rubella-varicella-live Ud Strong, Moderate X Strong, Low Meningococcal Conjugation U Strong, Moderate U Strong, Moderate Pneumococcal Conjugation (PCV13) U: Age ≤5 yR: Age ≥6 Years Strong, Moderate Strong, Very Low U: Age ≤5 Years: ≥ , moderate Strong, very low U: Age ≤5 years : age ≥6 years, if not introduced to pretransplant strong, moderate Strong, very low pneumococote polysaccharide (PPSV23) R: age ≥2 in Strong, Moderate R: Age ≥2 y if not administered pretransplant strong, moderate polio inactivated (inactivated poliovirus vaccine) U Strong, Moderate U Strong, Moderate Rotavirus-live Uc Strong, Moderate X Strong, Low Varicella-Live Rf: 6-11 MoUd Weak , very lowStrong, low Xg Strong, low zoster-live Rh : age 50-59 yUi: age ≥60 years Weak, lowStrong, Moderate X Strong, Low Table 6.Vaccination of individuals with chronic inflammatory diseases on immunosuppressive vaccine drugs . Planned immunosuppression. Low-level immunosuppression. High-level immunosuppression. Recommendations. the quality of the evidence. Recommendations. Strength, quality of evidence. Recommendations. Strength, quality of evidence. Hemophiline Influenza b Conjugation U Strong, Moderate U Strong, Low U Strong, Low Hepatitis Hepatitis Moderate U Strong, Low U Strong, Low Hepatitis B U Strong, Moderate U Strong, Low U Strong, Low Toxic Diphtheria, Tetanus Toxoid, Acellular Pertussis; tetanus toxoid, decreased diphtheria toxoid; tetanus toxoid, decreased diphtheria toxoid, and decreased whooping cough U Strong, moderate U Strong, Low U Strong, Low Human Papilloma Virus U: 11-26 y Strong, Moderate U: 11-26 y Strong, Low U: 11-26 u Strong, Very Low Influenza Inactivated (Inactivated Flu Vaccine) U Strong, Moderate U Strong, Moderate U Strong, Moderate Influenza-Live Attenuated (Live Flu Vaccine) X Weak, Very Low X Weak , very low X Weak, very low X Weak, very low mumps, and rubella-live Ub Strong, moderate X Weak, Very Low X Weak, Very Low Measles, Epidemic Mumps, and Rubella-varicella-Live Ub Strong, Low X Weak, Very Low X Strong, Very Low Meningococcal Conjugation U Strong, Moderate U Strong, Moderate U Strong, Low Pneumococcal Conjugation (PCV13) Rc Strong ≥: , low, very low U: zlt;6 yR: ≥6 yc Strong, low, very low pneumococcus polysaccharide (PPSV23) R: age ≥2 years Strong, Low R: Age ≥2 in Strong, Low R: Age ≥2 y Strong, Very Low Polio Inactivated (Inactivated Vaccine Against Poliovirus) U Strong, Moderate U Strong, Moderate U Strong, Low Rotavirus-Live U Strong, Moderate X Weak, Very Low X Weak, Very Low Varicella-Live Ub Strong , Moderate Xd Weak, very low X Strong, moderate zoster-live R: age 50-59 years: age ≥60 in weak, Low, low R: age 50-59 years: age ≥60 years Weak, very lowStrong, very low X Weak, very low Table 7.Vaccination of individuals with asplenia or sickle cell disease, cochlear implants, or cerebrospinal fluid vaccine leakage . Aspiles or sickle cell disease. Cochlear implants or cerebrostail fluid leakage. Recommendations. Strength, quality of evidence. Recommendations. Strength, quality of evidence. Haemophilus influenzae b conjugation U: Age of 5 yR: Age ≥5 Years Strong, Moderate, Low U Strong, Moderate Hepatitis U Strong, Moderate U Strong, Moderate Hepatitis B U Strong, Moderate U Strong, Moderate Diphtheria Toxoid, Tetanus Toxoid, A cellulular whooping cough; tetanus toxoid, decreased diphtheria toxoid; tetanus toxoid, reduced diphtheria toxoid, and reducing

acellular whooping cough U Strong, moderate U Strong, moderate human papillomavirus U Strong, Moderate U Strong, Moderate Influenza Inactivated (Inactivated Influenza Vaccine) U Strong, Moderate U Strong, Moderate Influenza Live attenuated (Live Attenuated Influenza Vaccine) X Weak, Very Low U Strong, Moderate, Moderate низкий U Сильный, умеренный менингококковый полисахарид R: возраст >55 yb Сильный, низкий U Сильный, умеренный пневмококковый конъюгированный (PCV13) U: <6 ycr:= age= ≥6= yd strong,= moderatestrong,= very= low u:= age=></6> <6 ycr:= age= ≥6= yd strong,= moderatestrong,= low pneumococcal= polysaccharide= (ppsv23) r:= age= ≥2= ye strong,= low r:= age= ≥2= ye strong,= moderate polio-inactivated= (inactivated= poliovirus= vaccine) u strong,= moderate u strong,= moderate rotavirus–live u strong,= moderate u strong,= moderate varicella–live u strong,= moderate u strong,= moderate zoster–live u strong,= moderate u strong,= moderate = general= principles= definitions= of= high-= and= low-level= immunosuppression= the= degree= of= immune= impairment= in= patients= with= primary= or= secondary= immunodeficiency= is= variable.= for= this= guideline,= certain= generalizations= have= been= made.= patients= with= high-level= immunosuppression= include= those := with= combined= primary= immunodeficiency= disorder= (eg,= severe= combined= immunodeficiency),receiving= cancer= chemotherapy,within= 2= months= after= solid= organ= transplantation,with= hiv= infection= with= a= cd4= t-lymphocyte= count=></6> <200 cells/mm3= for= adults= and= adolescents= and= percentage=></200> <15 for= infants= and= children,receiving= daily= corticosteroid= therapy= with= a= dose= ≥20= mg= (or=>возраст 2 мг/кг/день для пациентов, которые весят <10 kg) of prednisone or equivalent for ≥14 days, andreceiving certain biologic immune modulators, that is, a tumor necrosis factor-alpha (TNF-α) blocker or rituximab [14]. After HSCT, duration of high-level immunosuppression is highly variable and depends on type of transplant (longer for allogeneic than for autologous), type of donor and stem cell source, and posttransplant complications such as graft vs host disease (GVHD) and their treatments. Patients with low-level immunosuppression include: asymptomatic HIV-infected patients with CD4 T-lymphocyte counts of 200–499 cells/mm3 for adults and adolescents and percentage 15–24 for infants and children,those receiving a lower daily dose of systemic corticosteroid than for high-level immunosuppression for ≥14 days or receiving alternate-day corticosteroid therapy, andthose receiving methotrexate (MTX) ≤0.4 mg/kg/week, azathioprine ≤3 mg/kg/day, or 6-mercaptopurine ≤1.5 mg/kg/day [10]. Safety of Vaccination of Immunocompromised Persons Vaccines are categorized as live or inactivated (ie, nonlive vaccines include toxoids and other purified proteins, purified polysaccharide, protein–polysaccharide conjugate or oligosaccharide, inactivated whole or partially purified viruses, and proteins in virus-like particles). Limited evidence indicates that inactivated vaccines generally have the same safety profile in immunocompromised patients as in individuals [11]. However, the magnitude, breadth, and persistence of the immune response to vaccination may be reduced or absent in kg)= of= prednisone= or= equivalent= for= ≥14= days,= andreceiving= certain= biologic= immune= modulators,= that= is,= a= tumor= necrosis= factor-alpha= (tnf-α)= blocker= or= rituximab= [14].after= hsct,= duration= of= high-level= immunosuppression= is= highly= variable= and= depends= on= type= of= transplant= (longer= for= allogeneic= than= for= autologous),= type= of= donor= and= stem= cell= source,= and= posttransplant= complications= such= as= graft= vs= host= disease= (gvhd)= and= their= treatments.= patients= with= low-level= immunosuppression= include:= asymptomatic= hiv-infected= patients= with= cd4= t-lymphocyte= counts= of= 200–499= cells/mm3= for= adults= and= adolescents= and= percentage= 15–24= for= infants= and= children,those= receiving= a= lower= daily= dose= of= systemic= corticosteroid= than= for= high-level= immunosuppression= for= ≥14= days= or= receiving= alternate-day= corticosteroid= therapy ,= andthose= receiving= methotrexate= (mtx)= ≤0.4= mg/kg/week,= azathioprine= ≤3= mg/kg/day,= or= 6-mercaptopurine= ≤1.5= mg/kg/day= [10].= safety= of= vaccination= of= immunocompromised= persons= vaccines= are= categorized= as= live= or= inactivated= (ie,= nonlive= vaccines= include= toxoids= and= other= purified= proteins,= purified= polysaccharide,= protein–polysaccharide= conjugate= or= oligosaccharide,= inactivated= whole= or= partially= purified= viruses,= and= proteins= in= virus-like= particles).= limited= evidence= indicates= that= inactivated= vaccines= generally= have= the= same= safety= profile= in= immunocompromised= patients= as= in= immunocompetent= individuals= [11].= however,= the= magnitude,= breadth,= and= persistence= of= the= immune= response= to= vaccination= may= be= reduced= or= absent= in=></10 kg) of prednisone or equivalent for ≥14 days, andreceiving certain biologic immune modulators, that is, a tumor necrosis factor-alpha (TNF-α) blocker or rituximab [14]. 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Safety of Vaccination of Immunocompromised Persons Vaccines categorized as live or inactivated (ie, nonlive vaccines include toxoids and other purified proteins, purified polysaccharide, protein–polysaccharide conjugate or oligosaccharide, inactivated whole or partially purified viruses, and proteins in virus-like particles). Limited evidence indicates that inactivated vaccines generally have the same safety profile in immunocompromised patients as in immunocompetent individuals [11]. However, the magnitude, breadth, and persistence of the immune response to vaccination may be reduced or absent in > </15> </15> Persons. Live vaccines are generally contraindicated in immunodeficient patients because attenuation is concerning. However, there are important factual exceptions, such as the introduction of the VAR or MMR vaccine to HIV-infected children with mild to moderate immunodeficiency (table 2-7). It is important to distinguish between contraindications based on clinical data and contraindications based on theoretical considerations. Oral polio vaccine (OPV) is not suitable for patients with severe combined immunodeficiency (SCID) because paralysed polio occurred after vaccination. In contrast, VAR is generally considered contraindicated for children with inflammatory bowel disease (IBD) who receive 6-mercaptopurine. In addition, a live, weakened, cold-adapted influenza vaccine is not administered to immunocompromised patients based on insufficient clinical data to support these judgments. The decision to administer or withhold a vaccine should be based on balancing the burden of vaccine-preventable disease and the risk of developing a severe or life-threatening infection with a wild pathogen and the risks of adverse effects of vaccination. It has been feared that antigenic stimulation of vaccination may trigger an outbreak or the onset of chronic inflammatory disease. The Institute of Medicine recently evaluated the relationship between vaccines (MMR, acellular pertussis-containing, DT, tetanus toxoid, influenza, hepb, hepa, and HPV vaccines) and adverse effects. The evidence was insufficient to establish or disprove the causal link between each vaccine and the onset or exacerbation of multiple sclerosis, systemic lupus erythematosis (SLE), vasculitis, rheumatoid arthritis (RA), or juvenile idiopathic arthritis. In general, the preponderance of clinical data indicates that vaccines are not important triggers for disease outbreaks in such patients and should not be withheld for this reason (see the Recommendation to Vaccinate Patients with Chronic Inflammatory Diseases of Immunosuppressive Drugs). There were concerns for SOT patients that vaccination could cause rejection. However, the preponderance of clinical data, in most cases related to the trivalent inactivated influenza vaccine (IIV), indicates that vaccines are not important triggers for rejection episodes and should not be withheld for this reason (see the recommendation to vaccinate recipients of hard organ transplantation). The effectiveness and efficacy of the vaccine There are several data on the effectiveness or effectiveness of the vaccine in patients with weakened immunity. In children with sickle cell disease, the rate of invasive pneumococcal disease caused by serotypes of the vaccine decreased by 93% after the regular introduction of the 7-valent pneumococcal conjugation vaccine (PCV7); the immunity of the herd type may have contributed to the contributed Other examples include demonstrated efficacy of IIV in HIV-infected adults and heart transplant patients, as well as the effectiveness of VAR against severe wind in renal and liver transplant recipients (16-18), children with leukemia and children with HIV. Evaluation of the effectiveness of most vaccines in immunocompromised patients is based on a surrogate marker, usually serum antibodies against the pathogen. However, there are restrictions on the use of antibody measurements to determine the adequacy of existing immunity or reaction to vaccination. For many pathogens, the concentration of antibodies in serum, which correlates with protection (e.g., the protective concentration of antibodies to ≥1 Bordetell whooping proteins), has not yet been established. Aspen patients may require a higher concentration of antibodies than immunocompetent individuals to protect against invasive streptococcal pneumonia infection and hemophilic influenza type b .23, 24. The correlation of antibody concentrations with protection may be imperfect because such analyses do not measure the functional activity of antibodies. Analysis of functional antibodies or antibody greed may be more predictable for protection. For the prevention of zoster, cellular immunity (CMI) is more closely related to protection than to the concentration of antibodies in the serum. The Guidelines and Conflicts of Interest All members of the group complied with IDSA's conflict of interest policy, which requires disclosure of any financial or other interests that may be construed as representing an actual, potential or obvious conflict. They were presented with an IDSA statement of conflict of interest and asked to identify links with companies that develop products that may be affected by the release of this guide. Information on employment, advice, stock ownership, fees, research funding, expert testimony and membership in company advisory committees was requested. On a case-by-case basis, the panel decides whether members should be restricted from participating in the conflict. Potential conflicts are listed in the Confessions section. The review dates of the year, the panel chairman, SPGC communications adviser, and SPGC chairman will determine the need to revise the guidelines by reviewing current literature. If necessary, the entire panel will be reconvened. If necessary, the team will recommend changes to IDSA SPGC, the board and other collaborating organizations for review and approval. WHO is responsible for vaccinating immunocompromised patients and their family members? Recommendation 1. Professionals caring for immunocompromised patients are responsible to the primary care provider to ensure that patients weakened immunity injected appropriate vaccinations low). Specialists caring for immunocompromised patients are responsible to the primary health care provider for recommending appropriate vaccinations for family members of immunocompromised patients (strong, very low). For example, vaccination rates for pregnant women offered by an obstetrician or other specialty provider were higher than those not offered by the vaccine (70.8% vs. 14.4%). Therefore, specialists are in a key position to ensure vaccination by introducing vaccines or providing specific advice to patients and primary health care providers. Specialists should inform patients and their families about the importance of vaccinating family members to protect a patient with weakened immunity. Recommendations ON TERM REVACINATION II. When should vaccines be administered to immunocompetent patients who are planning to administer immunosuppressive drugs? Recommendations 3. Vaccines should be administered prior to planned immunosuppression, if possible (strong, moderate).4. Real-time vaccines should be administered ≥4 weeks prior to immunosuppression (strong, low) and should be avoided for 2 weeks after the onset of immunosuppression (strong, low). Inactivated vaccines should be administered ≥2 weeks prior to immunosuppression (strong, moderate). Evidence Summary Some immunocompromised patients have a window of opportunity before the onset of immunosuppressive drugs, during which it is indicated vaccines may be administered while the patient is immunocompetent (or more immunocompetent than after the onset of immunosuppression). However, this treatment of the underlying disease should not be postponed in order to achieve the goals of vaccination. The response to vaccination and the safety of live vaccines is higher prior to immunosuppression. After the introduction of live viral vaccines, the period of virus replication and the development of immunological response is usually 3 weeks, so vaccination ≥4 weeks before immunosuppression (2 weeks before inactivated vaccines) is likely to be safe. Developing a reliable immune response may take longer than these intervals, however, especially if vaccination is for primary vaccination rather than as a booster.

RECOMMENDATIONS FOR HOUSE MEMBERS OF IMMUNOCOMPROMISED PATIENTS Reducing the impact of vaccine-preventable infections is essential to reduce risk. This can be achieved by educating immunocompromised patients and their families on infection control practices, as well as by vaccinating household members and health contacts to ensure a range of protection. For example, the flu medical staff at a long-term care facility for elderly patients reduced mortality more than vaccination patients .30, 31. All family members of a immunocompromised patient, as well as all medical contacts, must be vaccinated. Requiring annual vaccination of medical personnel against influenza may lead to an increase in vaccination rates. However, evidence of the effectiveness of adult vaccination to protect young children from whooping cough is limited. Household members should be aware of all regularly recommended vaccinations, including the annual influenza vaccine. III. Which vaccines can be safely administered to households of immunocompromised patients, and what precautions should be taken against immunocompromised patients after family members are vaccinated? Recommendations (table 8) 6. Immunocompetent individuals who live in a family with weakened immunity patients can safely receive inactivated vaccines based on the annual updated recommended CDC-ACIP vaccination schedules for children and adults (further, CDC annual schedule; strong, high) or for travel (strong, moderate).7 Individuals who live in a family with weakened immunity of patients at the age of ≥6 months should receive the flu vaccine annually (strong, high). They should receive either: an inactivated flu vaccine (IIV; strong, high) or a low-end flu vaccine (LAIV) provided they are healthy, not pregnant, and aged 2-49 (strong, low). Exceptions include individuals who live in a family with weakened patient immunity who has been a hemathoetic stem cell transplant (HSCT) recipient for 2 months after transplantation or with a transplant against the host disease (GVHD) or a patient with severe combined immunodeficiency (SCID). Very low).8. Healthy immunocompetent people who live in a family with weakened immunity patients should receive the following live vaccines based on the CDC's annual schedule: combined measles, mumps and rubella (MMR) vaccine (strong, moderate); rotavirus vaccine in children between the ages of 2 and 7 months (strong, low); chickenpox vaccine (VAR; strong, moderate); and the zoster vaccine (AIA; strong, moderate). In addition, these people can safely receive the following travel vaccines: yellow fever vaccine (strong, moderate) and oral typhoid (strong, low).9. OPV should not be administered to persons who live in a family with patients with weakened immunity (strong, moderate).10. Patients with high immunocompromised should avoid the treatment of diapers of infants who have been vaccinated with rotavirus vaccine for 4 weeks after vaccination (strong, very low).11 Patients with weakened immunity should Contact with persons, persons, skin lesions after receiving VAR or AIA until the lesions are clear (strong, low). Summary of evidence When a live vaccine is transmitted from a vaccine recipient, the disease from a sprawling vaccine strain is likely to be less severe than from a wild-type virus or bacteria. Studies of the vaccine virus shed after vaccination with LAIV have shown that 80% of healthy recipients between the ages of 8 and 36 months shed strains of the virus vaccine for an average duration of 7.6 days (35-40). Among 345 patients between the ages of 5 and 49, 30% were found to have the virus in nasal secretions after receiving LAIV. The duration and amount of shedding back correlate with age, and the maximum shedding occurred within 2 days after vaccination (36, 41). The LAIV virus was transferred to the Children's Center 1 healthy baby, which remained imptomic. Based on this single case, it is estimated that the transmission rate is 0.6%-2.9% among children attending a children's center. Transmission of the LAI virus to immunocompromised individuals has not been demonstrated, despite non-oprostive recommendations for managing LAIV family members. Although the data are limited, it is considered safe to administer LAIV to individuals who live with weakened immunity individuals, with the exception of HSCT recipients in protected environments with positive air pressure and hepa-filtered air. HSCT patients within 2 months of transplantation or with GVHD and patients with primary SCID are likely to be severely weakened by immunity; therefore, according to the group, family members should not receive LAIV. Table 8.Security Administration Of Live Vaccines for Contact Immunocompromized Persons Live Vaccine. Shedding the agent? (site). A transmission from a vaccinated immunocompetent person? . Recommendation for administering vaccines (when indicated) for healthy immunocompetent contacts of immunocompromised patients. Influenza, live, faded nasal Yes (nasal secretions) Rare (from 1 vaccinated baby) Administrator (strong, low); vaccinated individuals to avoid close contact with individuals with hemathopetic stem cell transplantation or severe combined immune deficiency for 7 d (weak, Very low) Measles, mumps and measles rubella: noMumps: noRubella: yes (nasopharynx, in low titer; breast milk) No, except from mother to baby transmission of rubella vaccine virus through breast milk Administer (strong, moderate) Polio, oral yes (chair) Yes , with rare cases of vaccine-related paralytic polio do not administer (strong, moderate) Polio, high) Rotavirus, oral yes (chair) Yes, but there are no reported cases of symptomatic infection in contacts administer (strong, low) Typhoid, oral No Administrator (strong, low) Varicella Yes (skin lesions) Rare, limited by vaccines Skin Administer (strong, moderate); If skin lesions develop, avoid close contact with immunocompromised individuals of yellow fever, except perhaps shed in Yes milk (at least 3 cases of encephalitis in infants exposed to the vaccine through care) administer (strong, moderate), except for women who are fed a zoster yes (rarely recovered from vesicles injection) Is not reported to administer to those aged ≥60 years (strong, moderate); If skin lesions develop, avoid close contact with people with weakened immunity The only report on transmission of MMR viruses from immunocompetent vaccines associated with the transmission of the infant rubella virus vaccine through breast milk. Yellow fever encephalitis has developed in at least three nursing children after their mothers were vaccinated against yellow fever. Transmission of chickenpox virus from immunocompetent individuals was limited to vaccines that developed the rash, and the risk appears to have been low. Therefore, receptive members of the household should receive a VAR to protect those with weakened immunity from the potential effects of wild disease. Family members aged ≥60 who are eligible for okoster vaccination must be vaccinated. Individuals with a VAR- or AIA-associated rash may be contagious and should avoid close contact with people with weakened immunity until the damage is resolved. Children receiving rotavirus vaccines can shed a live virus in their stools for 2-4 weeks and transmit the virus to the vaccine, but the symptomatic disease is rare. In the study, 110 pairs of twin infants in which one twin received a 2-dose monovalent rotavirus vaccine (RV1; Rotarix, GlaxoSmithKline series and other placebo, transmission rate was 18.8% (95% confidence interval (CI), 10.9% - 29.0%), but none of the affected infants became symptomatic. than the risk of an unimmunized infant developing rotavirus diarrhoea with a wild virus with rotavirus disease as a result of contact with immunity. , VAR, MMR and Tdap or provide immunity documentation to minimize the impact of immunocompromised individuals in health facilities. Mandatory annual influenza vaccination, recommended by several professional organizations, has been introduced in some health facilities, resulting in very high coverage of influenza vaccination (36, 51-53). OPV, which is administered internationally but not in the United States, is associated with the risk of transmission to household members with a low risk of vaccine-related paralytic polio (VAC) in members of these households. The risk is higher in immunocompromised people living with the vaccine (54, 55). Vaccine Administration Most Vaccine Doses and Routes Are For immunocompromise and immunocompetent individuals. doses vs. 3 10- or 20-mcg doses for immunocompetent adults receiving Recombivax (Merck) or Engerix (GlaxoSmithKline), respectively, or for some HIV-infected patients who do not meet standard regimens (see HIV section). Some immunocompromised patients may have thrombocytopenia, which may be a relative contraindication to intramuscular injection. Clinical experience shows that intramuscular injections are safe if the number of platelets is ≥30,000-50,000 cells/mm3, a needle ≤23 caliber is used, and constant pressure is maintained at the injection site for 2 minutes. An inactivated poliovirus vaccine (IPV) and pneumocococ pc polysaccharide vaccine-23 (PPSV23) may be administered subcutaneously. Intradermal IIV is licensed. Several of these vaccines can be administered at the same time with the same recommendations as for immunocompetent individuals. Recommendation 12. Physicians may administer inactivated vaccines specified for travel based on the CDC's annual schedule for immunocompetent adults and children (strong, low).13 The yellow fever vaccine should not be administered to immunocompromised individuals (strong, moderate). If travel to an endemic area is not avoided, vaccination may be considered in the following minimally immunocompromized human immunodeficiency virus (HIV)-infected individuals: aritamptomatic HIV-infected adults with CD4 T-cell lymphocytes count ≥200 cells / mm3 (weak, low) aritemptonic HIV-infected children aged 9 months-5 years with CD4 T-cell lymphocytes percent ≥15 (weak, very low).14. With a few exceptions (e.g., the yellow fever vaccine and the PMD vaccine in some HIV-infected patients (see recommendation 13 and section 1 OF HIV), and in some patients with HPT (see HSCT) live vaccines should not be given to persons with weakened immunity (strong, low-evidence Summary Of human immunization status should be evaluated and vaccinated as needed. 61). Useful information can be found on the CDC Travelers' Health website and in the yellow book-CDC Information for International Travel (both in . Individuals with weakened immunity should avoid traveling to areas where yellow fever is endemic. including RA, SLE and spondyloarthropathies, which were treated with immunosuppressive drugs. Mild side effects (e.g. rash, myalgia, elevated liver 22.5 per cent of vaccines, indicating a sufficient safety profile. However, the sample size was insufficient to identify rare serious and cases of yellow fever vaccine associated with vissertropic disease have been reported in this population. The yellow fever vaccine was safely administered to a limited number of patients after HSCT (64-66) and more than 200 HIV-infected adults, most of whom had CD4 T-cell lymphocytes, counts zgt;200 cells/mm3 (62, 67, 68). An increase in multiple sclerosis recurrence was observed in 7 recipients of the yellow fever vaccine.

RECOMMENDATIONS FOR VAR AND AIA IN IMMUNOCOMPROMISED PATIENTS VAR V. Should immuno-immuno-impaired patients or patients scheduled to receive immunosuppressive therapy receive VAR? Recommendations 15. VAR should be applied to immunocompetent patients without signs of varicella immunity (e.g., age-appropriate vaccination against wind varicella, serological immunity evidence, doctor-diagnosis or -proven history of chickencap or oster, or laboratory-proven wind or zoster; strong, moderate) if it can be administered ≥4 weeks before the onset of immunopressive therapy (strong, low). A 2-dose VAR schedule, divided into 4 weeks for patients aged ≥13 years and ≥3 months for patients between the ages of 1 and 12, is recommended if there is enough time before the onset of immunosuppressive therapy (strong, low).17. VAR should not be administered to immunocompromised patients. However, some categories of patients (e.g. patients with HIV infection without severe immunosuppression or with primary immunodeficiency disorder without defective T-cell immunity, such as primary deficiency of supplement components or chronic granulomatous disease (CGD)) should receive VAR by adhering to a 2-dose schedule divided by a 3-month interval (strong, moderate). VAR can be considered for patients without evidence of wind cup immunity (defined in recommendation 16) who receive long-term, low-level immunosuppression (weak, very low). VAR should be administered to immunocompromised patients as the only antigenic product, not VAR in combination with the MMR vaccine (strong, low). Evidence Summary of varikela severity and mortality increases in children and adults for many conditions associated with immune compromise and immunosuppressive therapy (70, 71). VAR, which contains a live weakened V'V (Oka strain), is not licensed for use in patients with weakened immunity because of its potential to cause severe disease in patients who do not have sufficient T-cells mediated immune responses (72-74). Vaccination of varicella with sufficient time before immunosuppression is useful for patients without signs of varicellla immunity (defined in recommendation 16). The immune response is almost optimal in 2 to 3 weeks, and The WVD should be cleaned in 3 weeks. A vaccine associated with a rash that occurred up to 42 days after vaccination is rare after 21 days in immunocompetent vaccines (46, 75). Vaccine virus a week before the start of the therapy, malignancies were linked to 1 death and led to the reactivation of VVD, which subsequently became resistant to antiviral drugs (73, 76, 77). For maximum protection, a two-dose timetable is desirable, which is divided into ≥28 days for those aged ≥13 years and ≥3 months for children aged 12 months to 12 years. Most VAR studies of immunocompromised children used a given dose; therefore, the potential for protection is probably greater than what has been reported so far. Some immunocompromised patients had a lower immune response to VAR than immunocompetent individuals (78, 79). Malignancy. Leukemia children on supporting chemotherapy were vaccinated within a specific window for chemotherapy time and lymphocyte concentration threshold. Two doses induced by either VAV-specific humoral immunity or CMI, or both, in the vaccines (19, 80, 81) and resulted in a 85% efficacy after exposure to households. VAR has been safely administered to 50 Japanese children with non-lymph tumors with clinical and immunological outcomes similar to those for acute leukemia (82, 83). The results of another study of vaccination in about 150 children with solid tumors closely reproduced the Japanese experience. Vaccination against varikella in children with leukemia was often complicated by systemic reactions (e.g. fever and a common rash of 40%). which affected the chemotherapy schedule and required treatment with acyclovin (73, 82, 84). Severe reactions occurred in children with other malignancies. Additional arguments against the use of VAR in children with malignancies include: (1) children, who received VAR prior to immunosuppression can maintain protective immunity, (2) The risk of exposure to chickencaps decreased, (3) antiviral drugs available for treatment, (4) chemotherapy regimens often change and are often more immunosuppressive than those under which vaccination against wind varicella has been studied, and (5) protection is likely will be higher if vaccination occurs after a significant recovery of the immune system. CDC ACIP recommends that patients suffering chemotherapy or radiation from hemathoetic malignancies receive live viral vaccines during remission and outside therapy for ≥3 months with evidence of significant CMI recovery (11, 45). Hsct. Safety and immunogenicity were satisfactory when VAR injected a small number of HSCT recipients (allogeneic and autologous) in 12-24 months after transplantation when they were not immunosuppressed and met criteria similar to those for other immunocompromised children. More than 30 additional allogeneeres received 2 doses of VAR through 24 after the transplant, when they were out of therapy, had no GVHD, had a normal phytogemagglutinin or mitogenic response, and had a number of CD4 T cells ≥200 cells/mm3. At least the least developed specific antibodies, usually due to V'V-specific CMI. Similarly, VAR was safely administered ≥2 years after HSCT 46 children who were off immunosuppression, had CD4 T-cell lymphocytes count ≥200 cells/mm3, and responded to ≥1 another vaccine. VAR is usually safely administered ≥24 months after a successful HSCT. The clinical effectiveness of VAR in this situation has not been established. The presence or absence of antibodies against varikella is hardly an accurate predictor of protection, as HPV-specific CMI is essential for recovery from HPV infections. Patients receiving VAR should not receive prophylactic anti-herpes viral therapy or immune therapy for globulin because these treatments interfere with the vaccine effect. Kidney transplant. Vaccination by varicella after kidney transplantation, within the carefully controlled limits of maintaining immunosuppression and immunological specifications, has been well tolerated. In the 6-12 months after vaccination, 75%-85% had V'V antibodies. The cute wind farm occurred two to four years after vaccination in 3 out of 34 patients. Liver transplant. VAR was introduced after liver transplantation of 15 varikella-naive children and 7 previously vaccinated children who lost their V'V antibodies. These patients ≥6 months after the transplant, were on limited doses of immunosuppressive drugs, and were not treated for rejection episodes during the previous month. No security issues were identified. Immune reactions were good, and 10 effects of the wind cup occurred without subsequent wind varicella (16, 18). HIV infection. Approximately 100 children under the age of 8 years of age with HIV safely received VAR without changes in the percentage of CD4 T-cell lymphocytes or in their plasma viral load (79, 88). They had a baseline percentage of CD4 T-≥15 T cells, and most of them were on combined antiretroviral therapy (CART). Two doses administered with the exception of 3 months led to good immune responses similar to those of HIV-infected children recovering from natural wind varicella, which does not appear to pose a risk for re-infection. The effectiveness of VAR in HIV-infected children is offered by several long-term follow-up studies with efficacy in the prevention of wind varicella (82%) and oster (100%) [20, 89]. The optimal time to vaccinate ≥3 months of successful ART. Other immunosuppressive conditions. Patients with cellular immunodeficiency, patients receiving immunosuppressive drugs similar in type and dose to those used for the conditions mentioned above, and patients receiving high-dose steroid therapy should not receive VAR (90, 91). VAR was safe and immunogenic in 25 pediatric patients with rheumatic diseases who received MTX, and no outbreaks were vaccination (92, 93). Six pediatric patients with IBD on immunosuppressive therapy who received VAR tolerated tolerated had good immune responses; however, 5 of them received their initial dose of VAR prior to immunosuppression. There is no data on VAR in patients receiving biological immunosuppressants, patients receiving drugs that deplete B-cells or antagonism costimulatory molecules, or wind varicella-naive immunocomprom prompromissing adults. Since adults are less responsive to VTH antigens and more susceptible to chickencap complications than children, there is additional uncertainty about the timing of adult vaccination, which has been severely weakened by immunity. Most advisory groups indicate that adult vaccination should be guided by recommendations for children; however, VAR should be administered only when an adult with weakened immunity has significantly recovered from immunosuppression. The MMRV vaccine has not been evaluated in immunocompromised patients and should not be administered to individuals with primary or secondary immunodeficiency, as it contains ≥7 times more HPV than monovalent VAR. When administered as the first dose to immunocompetent children aged 4 years, it is significantly more likely to cause fever and feverish cramps than the MMR and VAR vaccine administered separately (94, 95). Herpes zoster vaccine Incidence and severity of herpes shingles (H) increases with age as well as with a degree of immune compromise. AIA is not licensed to use in immunocompromised patients for the same reasons as against the introduction of VAR to these patients. The two differences that may be relevant are that AIA contains 14 times more (after) live VHW than VAR and most patients with weakened immunity are at risk for HS (except for allog patients HSCT) have previously developed primary V'V immunity and must have residual V'V-specific immune memory, even with immunosuppression.VI. , getting AIA? Recommendations 20. AIA should be administered to patients aged ≥60 years if it can be administered ≥4 weeks before the onset of high immunosuppressive therapy (strong, low).21. AIA should be considered for wind-positive patients (i.e., individuals with a history of wind or ash infection or who are a chickencap virus (V'V) seropositive without previous doses of VAR) at the age of 50-59 years, if it can be administered ≥4 weeks prior to the onset of immunosuppressive therapy (weak, low). AIA should be used in patients aged ≥60 years, who receive therapy, which is thought to cause low levels of immunosuppression (strong, low).23. AIA should not be administered to patients with weakened immunity (strong, very low). Evidence Summary of Individuals With Immunity of Wind Varicella That Was Caused by VAR are at a lower risk for CH than those with a history of the disease varicella and should not receive AIA. In some clinical situations, immunosuppression, which leads to an increased risk of oster, may be delayed значительный период времени (например, до трансплантации органов, химиотерапии, использования биологических модификаторов); однако не следует откладывать срочное лечение. ACIP предлагает вводить зоС ≥2 недели до иммуносупрессии; Группа предлагает 4 недели для всех живых вакцин. Сильный V'V-специфический ответ на ЗОС происходит в течение 2 недель у иммунокомпетентных лиц . ЗОС следует рассматривать у варикелла-положительных пациентов (то есть, лиц с историей ветряной или зостерной инфекции или ВЗВ серопозитивных без предыдущих доз VAR), которые будут проходить иммуносупрессивную терапию и в возрасте 50-59 лет. Некоторый иммунитет, пораженный вакциной, может сохраняться во время иммуносупрессии и атенуатировать, если не предотвращать, последующий ГЦ. ЗОС, скорее всего, будет хорошо переносится у пациентов, получающих низкие дозы иммуносупрессивной терапии определяется ACIP как недостаточно иммуносупрессивных вызвать озабоченность по поводу безопасности вакцины , таких, как низкие<2 mg/kg;= maximum= ≤20= mg/day),= mtx= (≤0.4= mg/kg/week),= azathioprine= (≤3= mg/kg/day),= and= 6-mercaptopurine= (≤1.5= mg/kg/day).= zos= was= well= tolerated= in= a= cohort= of= 62= adults= with= hematological= malignancies,= including= 31= with= stem= cell= transplant= (autologous,= 26;= allogeneic,= 5),= except= for= 1= patient= who= experienced= trigeminal= zoster= 3= weeks= after= vaccination= [97].= vaccine= efficacy= in= these= patient= populations= is= unknown.absence= of= safety= and= efficacy= data= precludes= zos= in= patients= on= biological= immunosuppressants.= however,= clinical= features= of= hz= that= developed= in=>дозы преднизона (100 пациентов , получающих TNF-α модуляторы для РА привело к приемлемой тяжести, предполагая, что такие пациенты могут терпеть менее патогенных ВЗВ в ЗОС. Риск остера выше для пациентов, получающих анти-TNF-α антитела, чем для тех, кто получает TNF-α-антагонистов . Данные о зостерной вакцинации больных <50 years are limited. Preliminary results of zoster vaccination in 286 HIV-infected adults on stable antiretroviral therapy showed safety and immunogenicity.

RECOMMENDATIONS FOR INFLUENZA VACCINE IN THE IMMUNOCOMPROMISED HOST VII. Should Immunocompromised Patients Receive Influenza Vaccine? Recommendations 24. Annual vaccination with IIV is recommended for immunocompromised patients aged ≥6 months (strong, moderate) except for patients who are very unlikely to respond (although unlikely to be harmed by IIV), such as those receiving intensive chemotherapy* (strong, low) or those who have received anti–B-cell antibodies within 6 months* (strong, moderate).25. LAIV should not be administered to immunocompromised persons (weak, very low). Evidence Summary IIV can be safely administered to and is indicated annually for all immunocompromised patients aged ≥6 months including patients receiving immunosuppressive therapy for inflammatory disease, oncology patients years= are= limited.= preliminary= results= of= zoster= vaccination= in= 286= hiv-infected= adults= on= stable= antiretroviral= therapy= showed= safety= and= immunogenicity.= recommendations= for= influenza= vaccine= in= the= immunocompromised= host= vii.= should= immunocompromised= patients= receive= influenza= vaccine?= recommendations= 24. annual= vaccination= with= iiv= is= recommended= for= immunocompromised= patients= aged= ≥6= months= (strong,= moderate)= except= for= patients= who= are= very= unlikely= to= respond= (although= unlikely= to= be= harmed= by= iiv),= such= as= those= receiving= intensive= chemotherapy*= (strong,= low)= or= those= who= have= received= anti–b-cell= antibodies= within= 6= months*= (strong,= moderate).25. laiv= should= not= be= administered= to= immunocompromised= persons= (weak,= very= low).= evidence= summary= iiv= can= be= safely= administered= to= and= is= indicated= annually= for= all= immunocompromised= patients= aged= ≥6= months= including= patients= receiving= immunosuppressive= therapy= for= chronic= inflammatory= disease,= oncology= patients=></50 years are limited. Preliminary results of zoster vaccination in 286 HIV-infected adults on stable antiretroviral therapy showed safety and immunogenicity.

RECOMMENDATIONS FOR INFLUENZA VACCINE IN THE IMMUNOCOMPROMISED HOST VII. Should Immunocompromised Patients Receive Influenza Vaccine? Recommendations 24. Annual vaccination with IIV is recommended for immunocompromised patients aged ≥6 months (strong, moderate) except for patients who are very unlikely to respond (although unlikely to be harmed by IIV), such as those receiving intensive chemotherapy* (strong, low) or those who have received anti–B-cell antibodies within 6 months* (strong, moderate).25. LAIV should not be administered to immunocompromised persons (weak, very low). Evidence Summary IIV can be safely administered to and is indicated annually for all immunocompromised patients aged ≥6 months including patients receiving immunosuppressive therapy for chronic inflammatory disease, oncology patients > с ослабленным иммунитетом в возрасте от ветряной терапии</2> терапии</2> chemotherapy, immunosuppressant patients, HIV-infected and patients with primary immunodeficiency (e.g. General Variable Immunodeficiency (CVID) (CVID) (100-104). Patients aged 9 years who have never received an influenza vaccine or received only 1 dose in the previous season should be vaccinated with 2 doses, taking into account 1 month apart. generalized in other parts of this guide, emphasize the safety of IIV in immunocompromised populations. The immune response to IIV is good in most children with IBD or rheumatological inflammatory diseases, except for those who receive anti-TNF-α antibodies. The immune response is often bad in patients with chemotherapy cancer; adults receiving azathioprine, infliximab or rituximab; and in soT recipients receiving mycophenolat. One study of patients with antibody deficiency in immunoglobulin therapy showed poor immunogenicity, but found no safety problems. LAIV is not suitable in immunocompromised patients because the risks are unknown in most populations. It was studied in HIV-infected patients and 28 children with malignancies, among which no safety problems were found (38, 39, 106, 107). LAIV and IIV were compared in 243 pediatric patients with HIV age aged 5-17 years on stable cART regimen. The safety and immunogenicity of both vaccines are similar to those reported in children with immunocompetence.

RECOMMENDATIONS FOR VACCINATION OF PATIENTS WITH PRIMARY IMMUNODEFICIENCY DISORDERS Primary immunodeficiency disorders are a heterogeneous group that includes genetic congenital disorders that affect the functioning of either the congenital or adaptive immune system. Defects of the adaptive immune system are divided into defects in the production of antibodies alone or defects in T-cells, which lead to a combined (cellular and antibody-mediated) immunodeficiency. Depending on the type of disorder, impaired immune response can lead to vaccine failure or, with live vaccines associated with vaccine-related diseases. However, vaccination can be safe and effective in many situations. Vaccination of aspen patients is considered in the issue of XXII. VIII. Which vaccines should be administered to patients with primary (congenital) deficiencies? Recommendation 26. Patients with primary supplement deficiencies should receive all conventional vaccines based on the CDC's annual schedule; none of them is contraindicated (strong, low).27. Patients with the deficiencies of the primary supplement and who: at the age of 2-5 years should receive 1 dose of pneumococcal conjugal vaccine (PCV)13 if they received 3 doses (either 7-valent PCV7 or PCV13) up to 24 months and 2 doses of PCV13 (8 weeks apart) if they received an incomplete schedule ≤2 doses of PCV7 (PCV7 or PCV13) up to 24 months months low). between the ages of 6 and 18 with a classic pathway (C1, C2, C3, C4), an alternative pathway, or heavy mannan-binding lectin (MBL) deficiency that did not get PCV13 should receive one dose of PCV13 (≥ strong, very low). Very low). For those who received PPSV23, PCV13 should be administered ≥1 year after the last dose of PPSV23 (weak, low).28. Patients aged ≥2 years with an early classical pathway, alternative pathway, or severe MBL deficiency should receive PPSV23 ≥8 weeks after PCV13, and a second dose of PPSV23 should be given 5 years later (strong, low).29. Patients with primary supplement deficiencies should receive conjugated meningococcal vaccine. 4-dose series of bivalent meningococcal conjugic vaccine and conjugation of type B hemophilic influenza (HibMenCY) vaccine; MenHibrix, GlaxoSmithKline) should be introduced at the age of 2, 4, 6, and 12-15 months for children between 6 weeks and 18 months (strong, low) or 2-dose of the primary series of meningococcal conjugal vaccine, quadrivalent (MCV4) should be administered to patients with primary component deficits at age 9 months-55 years (MCV4-D Menactra, Sanofi Pasteur) for persons aged 9 to 23 months; MCV4-D or MCV4-CRM (Menveo, Novartis) for persons between the ages of 2 and 54; strong, low). For those aged 55, MPSV4 must be managed if they have not received an MCV4 and an MCV4 should be introduced if they have received an MCV4 (strong, low). For patients between the ages of 9 and 23 months, doses should be administered 3 months apart; For patients aged ≥2 years, doses should be administered 2 months apart. MCV4-D should be administered ≥4 weeks after the dose of PCV13 due to reduced antibody response to some pneumococoс pdms when MCV4-D and PCV7 are administered simultaneously (strong, low).30. Patients with a deficiency of primary supplement components should be revaccinated with MCV4 (or MPSV4 for those aged 55 years who have not received MCV4) every 5 years (strong, low). Evidence of mpSV4 immunogenicity summary has been demonstrated in patients with supplement deficiencies (110-116). Revaccination is necessary to maintain antibody levels to both MPSV4 (113, 115) and MCV4 (117-119). Accidental reports of poor or abnormal antibody reactions in patients with early classical deficiency of supplement components (120-123) support the potential (uninset) importance of

monitoring antibody reactions in this subset. ACIP CDC recommends regular use of PCV13 for immunocompromised individuals (109, 124). MCV4-D can interfere with the reaction to some PCV7 serotypes when both are injected simultaneously. Since influenza can predispose to invasive bacterial respiratory infection (125, 126), annually vaccination is important in this group. The flu vaccine has not been studied in patients with supplement deficiencies, but safety is probably similar to safety in immunocompetent people. IX. What vaccines should be administered to patients with phagocytic cell deficiencies (e.g., CGD, white blood adhesive deficiency, Chediaca-Higashi syndrome)? Recommendation 31. Patients with phagocytic cells should receive all inactivated vaccines based on the CDC's annual schedule (strong, low). Children between the ages of 2 and 5 should receive PCV13 as in recommendation 27a (weak, very low).32. Patients aged ≥6 years with phagocytic cell deficiencies other than CGD (if a patient with CGD receives immunosuppressive medication) should receive PCV13 as in recommendations 27b and 27c (weak, very low).33. Patients aged ≥2 years with phagocytic cell deficiencies other than CGD (if a patient with CGD receives immunosuppressive medication) should receive PPSV23 ≥8 weeks after receiving PCV13, and a second dose of PPSV23 should be given 5 years later (weak, low).34. Vaccines against live bacteria, such as calmette-Guerin bacillus (BCG) or oral typhoid fever, should not be administered to patients with a defect in phagocyte cells (strong, moderate).35 Real-time viral vaccines should be used in patients with CGD and patients with congenital or cyclical neutropenia (weak, low).36. Live viral vaccines should not be administered to patients with adhesive adhesive white blood cells deficiency, defects in cytotoxic release pellets such as Chedjak-Higashi syndrome (see section on combined immunodeficiency), or any other unspecified defect of phagocyte cells (strong, low). Evidence Summary For Inactivated Vaccines, but Not for Live Viral Vaccines, With the exception of CGD patients, patients with phagocytic cell defects should have normal immune responses and the same adverse effects as immunocompetent individuals. Patients with CGD are not at increased risk of pneumococcal infections (127, 128), and there is limited data on the risk of invasive pneumococcal infection in patients with other phationic cell defects. There is no data on which to base the recommendation on live, oral rotavirus vaccine in patients with IBD. Staphylococcurure is the main pathogen in people with phagocytic defects. Since influenza infection can predispose to a respiratory infection with this body, annual flu vaccination is important. Patients with white blood cell deficiency or cytotoxic defects of pellets (e.g., Chediac-Higashi syndrome) should avoid live vaccines or defects in cytotoxic pellets (e.g., Chediaka-Higashi syndrome), as defective cytotoxia T and natural killer cells (NK) lead to an abnormal immune response (130, 131). As some defects that affect neutrophil function may influence the function of lymphocytes and potentially depress the response to live vaccines, vaccines, living vaccines should not be received at the molecular level with phagocytic defects that are uncertain at the molecular level. The spread of BCG may occur in patients with CGD (132-135). There are no reported cases of vaccine-related diseases caused by live oral typhoid vaccine in CGD patients. However, non-vaifoidal salmonella infection is the most common cause of bacteriology, confirming poor control over this group of organisms. Thus, live oral typhoid vaccine should be avoided in CGD patients.X. Which vaccines should be administered to patients with congenital immune defects leading to cytokine-generation/reaction defects or cellular activation (e.g., defects in interferon-gamma/interleukin-12)? Recommendation 37. Patients with congenital immune defects that lead to cytokines generation/reaction defects or cell activation should receive all inactivated vaccines based on the CDC's annual schedule (strong, very low).38 For patients with congenital immune defects that lead to cytokines generation defects/reactions or cellular activation, PCV13 should be administered as in 27a-c recommendations (weak to strong, very low to low).39. Specialist consultations should be addressed regarding individual conditions relating to the use of live vaccines in patients with congenital immune defects that lead to defects in the generation/reaction of cytokines or cellular activation/infection generation (strong, low).40. Live bacterial vaccines should not be administered to patients with interferon-gamma/interleukin-12 (IFN-γ/IL-12) pathways (strong, moderate).41. Live viral vaccines should not be administered to patients with defects produced by IFN (alpha or gamma) (strong, low). Evidence Summary There is a group of heterogeneous birth defects in the birth immunity in which the cytokines generation or reaction and the resulting cellular activation and inflammation are abnormal. In some cases, the functioning of an adaptive immune response may be affected. Inactivated vaccines often cause adequate immune responses without serious side effects in patients with cytokines-generated/reaction defects or cell activation (e.g., DEFECTs of the IFN-γ/IL-12 axis). However, given the growing variety of newly recognized disorders, an immunologist should be consulted. Many of them increased susceptibility to mycobacterial infections, including the spread of BCG (136-140). Many molecular defects can lead to defects in antiviral immunity (141, 142), which contradicts the use of live viral vaccines. XI. Which vaccines should be administered to patients with minor antibody deficiencies? Recommendations 42. Patients with immunoglobulin (Ig)Deficiency or specific deficiency of polysaccharide antibodies (SPAD) should receive all routine vaccinations at CDC's annual schedule, provided that other components of their immune system are normal (strong, low).43 Children with SPAD or or or should receive PCV13 as described in the 27a-c recommendations (weak to strong, very low to low). Persons aged ≥2 years should receive PPSV23 ≥8 weeks after these doses of PCV13, and the second dose should be given 5 years later (strong, low).44. Monitoring vaccine response may be useful for assessing immunodeficiency in patients with minor antibodies and protection levels (weak, moderate).45 OPV should not be administered to patients with IgA deficiency (strong, low). Evidence Summary of patients with minor antibody deficiencies is likely to be able to mount at least partial antibody responses to vaccines that may help in assessing the degree of immunodeficiency. In some cases, apparently minor antibody deficiencies are associated with a CMI defect (e.g., DiGeorge syndrome (143, 144), which is an important consideration before providing live vaccines. In ataxia-telangiaectasia the response to PPSV23 is in most cases poor. In small studies, PCV7 was immunogenic in most patients, although not comparable to immunocompetent control (147-149). 12. Which vaccines should be administered to patients with the main antibodies that receive immunoglobulin therapy? Recommendation 46. Inactivated vaccines, in addition to IVS, are not usually administered to patients with the main deficiencies of antibodies during immunoglobulin therapy (strong, low). For patients suspected of serious antibody deficiencies, all inactivated vaccines can be administered as part of an immune response assessment to immunoglobulin therapy (strong, low).47. IIV can be administered to patients with major antibody deficiencies and some residual antibody production (weak, low).48 Live OPV should not be administered to patients with severe antibodies (strong, moderate).49. Real-time vaccines (except OPV) should not be administered to patients with major antibody deficiencies (weak, low) Evidence Summary Most patients with major antibod deficit disorders will be on immunoglobulin replacement therapy in order to obtain permanent passive immunity. Vaccination with live or inactivated vaccines is rarely performed in patients receiving immunoglobulin for full agammaglobulinemia. These patients will not have an antibody response, although a T-cell response that helps recover from some viral infections is possible. IIV can be useful for patients with incomplete antibody deficiency who receive immunoglobulin replacement therapy. In these patients, it is possible that immunoglobulin does not contain antibodies against circulating strains of influenza, and T-cell-mediated responses are likely help protect against serious diseases. Some patients with CVID responded to polysaccharide and protein vaccine antigens; The magnitude of the reaction may correlate with the clinical severity of immunodeficiency (153-155). Adults with major humoral immunodeficiency, mainly on immunoglobulin therapy, had a very bad response to IIV, especially those with CVID, but had some response to component A (H1N1). VAPP is a recognized complication of the main antibody deficiency syndromes (156-158), but the absence of chronic OPV secretors among 2 significant cohorts of patients with antibody deficiency indicates that the disease is rare. There is no published evidence of harm from inactivated vaccines unique to this patient population. Live viral vaccines should be avoided because the risk is unknown and they are unlikely to lead to protection due to existing neutralizing antibodies from injected immunoglobulin. What vaccines should be administered to patients with combined immunodeficiency? Recommendations 50. For patients with suspected combined immunodeficiencies, all inactivated vaccines can be administered as part of an immune response assessment prior to the onset of immunoglobulin therapy (strong, low). Patients with combined immunodeficiency receiving immunoglobulin therapy, inactivated vaccines should not be regularly administered (strong, low).51 Patients with combined immunodeficiency and residual antibody production potential can administer IIV (weak, very low).52. Children with partial DiGeorge syndrome (PDGS) should undergo an immune system assessment with a subset of lymphocytes and mitogeneous responsiveness to determine whether they should be given live viral vaccines. Those ≥500 CD3 T cells/mm3, ≥200 CD8 T cells/mm3, and the normal mitogen response should get the MMR and VAR vaccine (weak, low). Patients with SCID, DGS with CD3 T cell lymphocytes count 500 cells /mm3 and normal mitogen response, MMR and V'V vaccines are safe and produce qlt;500 cells/mm3, other ' combined immunodeficiencies' with q similar q cd3' t-cell' lymphocyte' counts, wiskott-aldrich' syndrome, or x-linked' lymphop The disease and familial disorders that are the predispose' them' to' hemophagocytic' lymphohistiocytosis' should have to avoid all of the live vaccines (strong, moderate). 'diagnosis' of the combined immune deficiency.' inactivated vaccines' do't cause' significant' adverse' effects,' whereas live's vaccines' (eg,'rotavirus)' may' produce chronic' infection' infection' in patients' with ' combined' immune deficiency' -163.immunity in dgs' patients' varies from ' normal' to complete' athymia.' with q q q cd3 q t-cell' lymphocyte's lymphocyte's high rates of seroconversion (164-166); However, antibody levels can be significantly after 1 year (finding an obscure clinical clinical Нет опубликованных данных о живой вакцинации вирусов при других частичных дефектах Т-клеток. Экстраполяция ВИЧ-инфицированных лиц позволяет предположить, что количество Т-клеточных лимфоцитов CD4 ≥200 клеток/мм3 (взрослые) или процент ≥15 (дети) является разумным критерием, но имеет неопределенную силу. Дети с дефицитом Т-клеток, получающие живые вирусные вакцины, разработали VAPP (168), распространили инфекцию кори, включая пневмонит (169-171), и хроническую ротавирусную инфекцию (161-163, 172) после получения соответствующих вакцин. При нарушениях, предрасполагающих к гемофагоцитару лимфохистиоцитозу (например, дефицит перфорина), иммунный ответ на вирусы является ненормальным из-за дефектной цитотоксии Т и НК-клеток. Таким образом, живых вакцин следует избегать. Распространенная BCG может быть особенностью SCID или она может развиться во время трансплантации стволовых клеток. РЕКОМЕНДАЦИИ ПО ВАКЦИНАЦИИ ВИЧ-ИНФИЦИРОВАННЫХ ВЗРОСЛЫХ, ПОДРОСТКОВ И ДЕТЕЙ XIV. Какие инактивированные вакцины следует применять ВИЧ-инфицированным пациентам? Рекомендации (таблица 2) 54. ВИЧ-инфицированные пациенты должны быть вакцинированы в соответствии с годовым графиком CDC для следующих инактивированных вакцин: IIV (сильный, высокий); PCV13 у пациентов в <2 years= (strong,= moderate);= h.= influenzae= type= b= conjugate= (hib)= vaccine= (strong,= high);= diphtheria= toxoid,= tetanus= toxoid,= acellular= pertussis= (dtap)= vaccine= (strong,= moderate);= tetanus= toxoid,= reduced= diphtheria= toxoid,= and= reduced= acellular= pertussis= (tdap)= vaccine= (strong,= very= low);= tetanus= toxoid,= reduced= diphtheria= toxoid= (td)= vaccine= (strong,= low);= hepatitis= b= (hepb)= vaccine= (strong,= moderate);= hepatitis= a= (hepa)= vaccine= (strong,= moderate);= inactivated= poliovirus= (ipv)= vaccine= (strong,= moderate);= and= quadrivalent= human= papillomavirus= (hpv4)= vaccine*= in= females= and= males= aged= 11–26= years= (strong,= very= low)= with= additions= noted= below.55. pcv13= should= be= administered= to= hiv-infected= patients= aged= ≥2= years= as= in= recommendations= 27a–c= (table= 2;= strong,= low= to= moderate).56. ppsv23= should= be= administered= to= hiv-infected= children= aged= ≥2= years= who= have= received= indicated= doses= of= pcv= (strong,= moderate),= hiv-infected= adults= with= cd4= t-lymphocyte= counts= of= ≥200= cells/mm3= (strong,= moderate),= and= hiv-infected= adults= with= cd4= t-lymphocyte= counts= of=></2> <200 cells/mm3= (weak,= low).= ppsv23= should= be= given= ≥8= weeks= after= indicated= dose(s)= of= pcv13,= and= a= second= dose= of= ppsv23= should= be= given= 5= years= later= (strong,= low).57. hiv-infected= children= who= are= aged=>возрасте 59 месяцев и не получили Hib вакцины должны получить 1 дозу вакцины Hib (сильный, низкий). Вакцина против Hib не рекомендуется для ВИЧ-инфицированных взрослых (слабых, HIV-infected children between the ages of 11 and 18 should receive 2 doses of primary MCV4 series with the exception of 2 months (strong, moderate). One dose of the booster (third dose) must be given at the age of 16, if the main series is 200.gt; at the age of 11 or 12 years and at the age of 16-18 years, if the primary series was given at the age of 13-15 years (strong, low). If MCV4 is administered to HIV-infected children between the ages of 2 and 10 years due to risk factors of meningococcal infection, a 2-dose primary series of MCV4 should be administered at a 2-month interval between doses, and a booster dose should be given 5 years later (strong, very low).59. HIV-infected patients should receive a series of HepB vaccines (strong, moderate) given the high-dose Hepb vaccine (40 micrograms/dose) for adults (weak, moderate) and adolescents (weak, low). 1-2 months after completion, patients should be tested for anti-HBs (antibodies to the antigen surface of Hepb; strong, low). If post-vaccination against HB concentration ≥10 MEU/ml is not achieved, a second 3-dose series of Gepb vaccine (strong, low; alternative: 1 dose of HEP vaccine, after which anti-GBS is tested), using a standard dose (strong, moderate) or a high dose (40 micrograms; weak, low) for children and a high dose for adolescents and adults (high). The Hepb vaccine containing 20 micrograms of HBsAg surface antigen (HBsAg) combined with the HepA (HepA-HepB) vaccine; Twinrix, a 3-dose series, can be used for primary vaccination of HIV-infected patients aged ≥12 years (strong, moderate). Internationally adopted HIV-infected children who have received doses of OPV should receive a total of 4 doses of the combined opV and IPV vaccine (strong, low).62. The HPV4 vaccine is recommended for the bivalent vaccine against the human papillomavirus (HPV2) because the HPV vaccine prevents genital warts (strong, low), although there is no evidence of differences between vaccines to prevent cervical dysplasia in HIV-infected women. A brief description of inactivated vaccines for HIV-infected people seems safe, as no increase in side effects or side effects associated with HIV has been recognized. However, there is not enough data to comment on rare side effects. Concerns about accelerating the progression of HIV infection are unfounded. A transient increase in the viral load on HIV in plasma may occur after vaccination in children who do not receive ART, but this is allowed within 2-6 weeks (102, 175, 176). Patients receiving ART do not experience significant changes in viral load or concentrations of T cells after the introduction of live or inactivated vaccines (79, 177-181). Live vaccines are generally not suitable for HIV-infected people with low CD4 T-cell lymphocytes or as a percentage. The guidelines for vaccinating HIV-infected adolescents and adults were published by the CDC, the National Institutes of Health (NIH) and the HIV Medical Association (HIVMA) IDSA; Guidelines for The children were published by the CDC, NIH, HIVMA IDSA, Pediatric Infectious Diseases Society, and AAP. HIV-infected children often have lower low and CMI responses to vaccines than immunocompetent individuals, although these responses may still be protective (79, 88, 177-180, 182). Reactions caused by the vaccine correlate with the adequacy of CD4 T-cell pool and plasma load on HIV during vaccination, each of which is an independent predictor of the magnitude of the immune response (79, 177, 178, 180, 183). In some, but not all studies, the percentage of CD4' T cells at the time of vaccination in children at a stable CART regimen is a better predictor of the reaction than the nadir percentage prior to the start of CART (79, 177-179). Antibody levels from previous vaccinations may increase after CART even if the vaccine is not increased. The response to vaccines is significantly better in patients who have been on CART ≥3 months, particularly after an improvement in CD4 T-cell lymphocytes percentage (optimally ≥15) and a reduction in the plasma viral load of HIV (optimally up to 1000 copies/ml), suggesting that vaccinations should be delayed until THE CART has been carried out. Influenza vaccination with IIV Antibody responses to IIV are blunted in patients who do not treat HIV (185-187) and improve in patients who do not have progressive HIV infection and/or receive cART (188). The effectiveness of IEDs in HIV-infected adults has been established in 5 controlled studies; efficiency and clinical efficacy ranged from 27% to 78% (13, 189). In HIV-infected adults, IIV has not been associated with elevated or unusual side effects, although rare side effects may not have been detected. Unlike previous reports (190, 191), subsequent prospective studies found no significant long-term difference in HIV RNA levels between vaccinated influenza and unvaccinated HIV-positive patients (192, 193). The 2009 A (H1N1) pandemic was immunogenic in HIV-infected children but less immunogenic in HIV-infected adults than in HIV-infected adults. No safety issues were identified, although the presence of adjuvant Adjuvant System 03 (ASO3) was associated with a small increase in RNA OF HIV plasma in 1 study. Pneumocococged vaccination PCV is safe and effective (196-199) in HIV-infected children and is more immunogenic than PPSV23 (200-202). However, the antibodies produce decays faster than those of uninfected children, has lower functional activity, and the anamintic response is dulled. Two doses of PCV7 were safely administered to HIV-infected children aged 18 years on CART, followed by 1 dose of PPSV23 .178. The antibody response was excellent, and the persistence was similar to that seen in uninfected children. Although PCV13 was not studied in HIV-infected children, PCV13 replaced PCV7 in the vaccination schedule (124, 204). Randomized controlled study of PCV7 HIV-infected adults in Malawi, most of whom not on antiretroviral therapy, showed that the vaccine was safe and was effective 75% in preventing recurrent invasive pneumococcal infection (205). ACIP CDC recommends regular use of a single dose of PCV13 for immunosused adults. PpSV23 efficacy has been studied primarily in adults/adolescents with CD4 T-lymphocytes ≥200 cells/mm3. Most studies have shown that PPSV23 reduces pneumococoс pdimology and reduces mortality among HIV-infected adults (206-208). However, one study conducted in Uganda found an increase in pneumococcal infection in vaccine recipients (209). Although the effectiveness is uncertain for persons with CD4 counts qlt;200 cells/mm3,' ppsv23' should be ' offered to such patients' with ' consideration of the recinvacation' once ' antiretroviral therapy' has resulted in a cd4 q count ≥200' cells/mm3.haemo Influenzae's type of vaccination' hiv-infected' children' not on a cart' are less and less likely to respond to a hib's vaccine, and theirs' antibody responses' often fall below levels associated with long-term protection q (≥0.15' qg/ml)' Hib's vaccination was highly effective over a 2-year period in a two-year period in a hiv-infected' children's in south africa. The people who are not preferred over the mpsv4' for the hiv' patients' patients are aged for 9 months and can't be given to the immunocompetent' adults' without concern for the hyporesponsiveness' if the recipient has received the mpsv' If mcv4' is' administered to' hiv-infected' children' ≥2's years, a 2-dose' primary series' of mcv4' should have a 2-month interval between doses q 215, q 216. The 11-year-old's child has aged 11 years on cart with CD4 T-cell lymphocytes percentage ≥15 (215) and for children aged 2-11 years with CD4 T-cell lymphocytes percentage ≥25. Antibodies against ≥1 serotype showed a 4-fold increase to 1 or more antigens in 88% of vaccines and 50%-70% of individual serotypes. Although antibody levels were significantly lower than in HIV-infected children, protective titers were present at 55%-90% (depending on serotype) after vaccination. Antibody levels dropped by about 50% within 6 months of vaccination. The two-dose MCV4 regimen was administered to 59 HIV-infected children between the ages of 2 and 10 with a good safety profile and generally good immunogenicity, which varied according to the serogroup. The reaction after one dose of MCV4 was high to serogroup A (92%) and W-135 (98%); responses improved after the second dose for serogroup C (43% to 80%; P < .0001) and serogroup Y (from 76% to 84%; P = .38). Diphtheria, Tetanus, Pertussis Vaccination Children with often have low to undetectable levels of antibody against pertussis, diphtheria, and tetanus [179, 217–221] after receiving 3 or 4 doses of Diphtheria toxoid, whole cell pertussis, tetanus toxoid .0001)= and= serogroup= y= (from= 76%= to= 84%;= p=.38). diphtheria,= tetanus,= pertussis= vaccination= children= with= hiv= often= have= low= to= undetectable= levels= of= antibody= against= pertussis,= diphtheria,= and= tetanus= [179,= 217–221]= after= receiving= 3= or= 4= doses= of= diphtheria= toxoid,= whole= cell= pertussis,= tetanus= toxoid=></ .0001) and serogroup Y (from 76% to 84%; P = .38). Diphtheria, Tetanus, Pertussis Vaccination Children with HIV often have low to undetectable levels of antibody against pertussis, diphtheria, and tetanus [179, 217–221] after receiving 3 or 4 doses of Diphtheria toxoid, whole cell pertussis, tetanus toxoid > </200> </200> (DPT) or diphtheria toxoid, tetanus toxoid, acellular whooping cough (DTaP) vaccine. Booster vaccination of HIV-infected children with DTaP is safe and does not affect the number of CD4 T lymphocytes or HIV RNA levels (179, 221). Although the booster dose of the DTaP vaccine significantly increases the level of antibodies against whooping cough (179) and antitanus, they remain significantly lower than in uninfected children after the primary series or booster dose at 4-6 years. The effectiveness of primary or booster DTaP vaccination in HIV-infected children is unknown. Tdap vaccination has not been studied in HIV-infected children or adults. Hepatitis B infection is usually purchased by infants born to mothers, the twenties infected with the GEB virus (HBV) and HIV. The effectiveness of child prevention against HBV, HepB and Hepb immune globulin (HBIG) within 12 hours of birth in the presence of HIV infection is unknown. However, prevention is likely to minimize, but not completely prevent, mother-to-child transmission (222). Children born to HIV-infected mothers should receive the first dose of the Gepb vaccine before being discharged from the hospital. The Gepb vaccine is shown and can be safely given to HIV-infected patients, but immunogenicity is lower than in HIV-negative adults. Only 18%-72% of HIV-positive people develop protective concentrations of antibodies to the surface antigen Heb's (HBsAg), which tend to be lower in size and weaken faster than in adults without HIV infection (56, 224-226). Low CD4 levels and continued HIV virumy are associated with poor vaccine responses (57, 225-228). In patients who do not receive ART, only 30%-50% develop a protective antibody response (anti-HBs concentration ≥10 MIE/ml in immunocompetent individuals). However, protective levels are achieved in 60%-70% of the vaccines receiving ART, with responsiveness proportional to the percentage of CD4 T lymphocytes and the degree of virus suppression (230-234). The frequent failure of a series of primary vaccines is the reason for testing for anti-HBs after the third dose of the vaccine. When antibodies were absent after the standard primary series, the subsequent dose of one booster significantly increased the number of vaccines with protective antibody levels in 2 studies (230, 235), but resulted in only a slight increase in another study. A repeat of the 3-dose series of induced protective antibody levels in the 75% of patients who failed the original series. However, this response also declined rapidly after the increase, even when vaccines containing higher HBsAg content were used (230, 233, 236). Doubling the dose of the Gepb vaccine from 20 micrograms to 40 micrograms significantly increased the rates of seroconversion (57, 58). In the era before ART, the dose of HBsAg was successfully doubled for HIV-infected children. All strategies are more successful in patients are on cART. HIV-infected patients between the ages of 12 and 20 who received primary vaccination with a 3-dose series of high-dose GEB Vaccine (40 micrograms HBsAg; as Engerix-B, as is done for patients with dialysis) or the combined hepA-HepB vaccine (Twinrix), the response rate (73%-75% of serorespons) was higher than with the standard HepB vaccine containing 20 micrograms of HBsAg (Engerix-B; 60% serponsse). A similar result occurred with a 3-dose series of high-dose Gepb vaccine among 267 adult HIV-infected patients with cd4 T-lymphocytes counts the 200 cells/mm3, most of which received antiretroviral therapy. Serorversion is also common. Approximately 30% of HIV-infected children who were vaccinated during ART did not have seroprotective antibodies 3 years after vaccination, but 82% had an an anaamine reaction to one additional dose of the Gepb vaccine. The importance of permanent anti-HBs is unclear. In HIV-infected children, there is no evidence that the loss of antibodies after successful vaccination leads to a subsequent clinically significant infection or chronic infection. For HIV-infected patients who are negative for HBsAg and anti-HBs, but anti-HBc (antibodies to Hepb's main antigen) are positive, there is the possibility of past recrudescence, occult HBV infections and vaccination recommendations vary. Some evidence suggests that these patients are not hbV immune and should receive a full series of vaccines (241, 242), while others offer a single dose of the vaccine followed by anti-HBs testing 2 weeks later. Current guidelines from the CDC, NIH, and HIV Medicine Association IDSA for the Prevention and Treatment of Opportunistic Infections in HIV-infected adolescents and adults recommend giving a full series in patients with positive isolated HBV nuclei antibodies and a negative HBV DNA test. Hepatitis A vaccination is immunogenic in HIV-infected patients, and more than 300 vaccines (177, 243, 244) have not identified any safety issues. Nearly 100% of HIV-infected children on cART with CD4 T-cell lymphocytes percentage ≥20-25 seroconverted . Younger HIV-infected children have antibodies similar to those of uninfected vaccines, but responses are 10-50 times lower in older children with longer duration of HIV infection. HIV-infected individuals should be vaccinated against Hep before reducing CD4 to increase the likelihood of an adequate response. Although the answers are better in patients who respond to CART, vaccination should not be delayed in at-risk patients. Seroversia occurs in 10% of HIV-infected vaccines within 2 years, but the third dose of the Hepa vaccine is safe and generates high-size antibodies that are similar in size, 2 doses in uninfected individuals. antibodies from 6 to 10 years after 2 doses of vaccine. The concentration of polio antibodies after IPV vaccination is lower in HIV-infected children who do not receive ART than in uninfected children. In addition, the booster response in untreated HIV-infected adults is significantly dulled. The HPV HPV HPV vaccine HPV4 was safe and immunogenic when 126 HIV-infected children between the ages of 7 and 11 were administered with CD4 T lymphocytes percentage ≥15.180). However, there is no data on the safety and efficacy of any vaccine in HIV-infected adolescents. The HPV4 vaccine was safe and immunogenic in 109 HIV-infected adult men. For HIV-infected patients, the HPV4 vaccine is preferable to the HPV2 vaccine because of the protection of the HPV4 vaccine against genital warts, which are more common and more prone to recurrence in HIV-infected patients than in HIV-infected people. XV. Recommendation (table 2) 63. HIV-infected or infected infants should receive rotavirus vaccine as scheduled for uninfected infants (strong, low).64 HIV-infected patients should not receive LAIV (weak, very low).65 The MMR vaccine should be applied to clinically stable HIV-infected children between the ages of 1 and 13 without severe immunosuppression (strong, moderate) and HIV-infected patients aged ≥14 years without measles immunity and with CD4 T cells ≥200/mm3 (weak, very low).66. HIV-infected children with CD4 cell percentage (strong, moderate) or patients aged ≥14 years with CD4 cell T-cell counts should not receive MMR (strong, moderate) vaccine.67 HIV-infected patients should not receive the quadrivalent MMR-varicella (MMRV) (strong, very low).68 Varikella-norimmun, clinically stable HIV-infected patients between the ages of 1 and 8 with ≥15% CD4 T-lymphocytes percentage (strong, high), at the age of 9-13 years with ≥15% CD4 T-lymphocyte percentage (strong, very low), and at the age of ≥14 years with CD4 T-lymphocytes calculates ≥200 cells / mm3 should get VAR (strong, very low). 2 doses should be divided into ≥3 months (strong, moderate). Evidence of rotavirus vaccination with HIV infection is neither a contraindication nor a precautionary measure for two licensed rotavirus vaccines for HIV-infected or HIV-infected infants. To date, rotavirus vaccine trials in under-resourced settings, which have consistently linked to the use of HIV-infected infants, have not identified unusual or serious adverse events. Monovalent live rotavirus vaccine (RV1; Rotarix; GlaxoSmithKline) was safe and immunogenic in 178 HIV-infected including 13 with CD4 T-lymphocytes percentages of 25 (252, 253). Pentavalent live rotavirus vaccine (RV5; RotaTeq; Merck) has been linked to persistent, severe diarrhoea in the with SCID (162). There is no data on the effectiveness of rotavirus vaccines in HIV-infected children. LAI LAIV Vaccination is not licensed for administration for immunocompromised patients and is not recommended by the CDC for immunocompromised patients. LAIV was safely introduced to 188 HIV-infected children and adults who met certain clinical and immunological criteria (38, 39, 106). The immune response to LAIV in HIV-infected patients was comparable to that of uninfected people (38, 39, 106). MMR Vaccination Prevalence and titer of antibodies to measles is low in hiv-infected children vaccinated with measles, even if they receive CART (218, 254-257). Rubella antibody titers are also reduced in HIV-infected children with significant suppression of the immune system (258, 259). The MMR vaccine has been safely administered to HIV-infected children with ≥15% CD4 T lymphocytes in 1,200 patients (260, 261). However, some severe complications have occurred in children with a lower percentage of CD4 T cell or counts. MMR antibody titerers increased after ART in previously vaccinated patients, but ≥50% remained seronegative. Administration of an additional dose of MMR vaccine for children on CART who have had ≥15% CD4 T lymphocytes induced measles antibodies in 75%-90% (218, 257, 260), rubella antibodies in qgt;90%, and epidemic mumps antibody in qgt;60% (260). No significant side effects have been associated with the introduction of the vaccine in adults with CD4 zgt;200 cells /mm3 .263. Varicella Vaccination ACIP recommends chickencap vaccination for HIV-positive children with mild to moderate immune suppression based on safety data (45, 79, 256). There is no data on the safety or efficacy of vaccines in HIV-infected adults (see Varicella). zoster Vaccination Preliminary data on okoster vaccination in HIV-infected adults on stable antiretroviral therapy have shown safety in 286 patients and immunogenicity (see section of the vaccine zooster). What vaccines should cancer patients give? Recommendations (table 3) 69. Patients aged ≥6 months with hematological malignancies (strong, moderate) or solid malignancies of tumors (strong, low), except those who receive anti-B-cell antibodies (strong, moderate) or intensive chemotherapy, such as induction or excluding chemotherapy of acute leukemia (weak, low), should receive IIV annually. PCV13 should be administered to newly diagnosed adults with haematological (strong, very low) or solid malignancies (strong, very low) and children with malignancies (strong, very low), as described in the 27a-c recommendations. PPSV23 should be introduced by adults and at the age of ≥2 years (strong, low) at least 8 weeks after the specified dose (s) RSV13.71. Inactivated vaccines (except IIV) recommended for immunocompetent children in can be considered for children who receive supportive chemotherapy (weak, low). However, vaccines administered during cancer chemotherapy should not be considered valid doses (strong, low) unless there is documentation of the level of protective antibodies (strong, moderate).72. Live viral vaccines (strong, very low and moderate) should not be administered during chemotherapy. Three months after cancer chemotherapy, patients should be vaccinated with inactivated vaccines (strong, very low and moderate) and live chickenpox vaccines (weak, very low); measles, mumps and rubella (strong, low); measles, mumps and rubella (weak, very low) according to the CDC's annual schedule, which is commonly indicated for immunocompetent individuals. Evidence Summary of Cancer Therapy is becoming more intense and includes immunosuppressive monoclonal antibodies. Since many vaccination studies were conducted in an era when weaker immunosuppressive treatments were used, the results of such studies may not accurately represent the current risks and benefits of vaccinating cancer patients today. Inactivated vaccines in children. Children with cancer can safely receive inactivated vaccines. In general, vaccines should not be administered during induction or consolidation therapy due to low response during these periods. While vaccines administered during less intense phases of chemotherapy are less immunogenic than those administered from chemotherapy, they are not harmful and appear to provide seroprotectory for some pathogens for some patients (266-269). Many children have protective serum antibodies against some preventable ≥6 months after stopping chemotherapy. The usual schedule of vaccination of children should be restored 3 months after the completion of chemotherapy, when cellular and humoral immunity has recovered. Regular revaccination with a single dose of each vaccine antigen can be considered 270, 275, but it is unknown if it is necessary. Another management plan that can be considered for patients who have received intensive chemotherapy is serological testing for vaccine-preventable diseases with recognized serological correlate protection (e.g. diphtheria toxoid, Hib, HepA, HepB, IPV, rubella, influenza, measles, tetanus toxoid, chickenpox vaccines) and vaccination of those with inadequate concentrations. Influenza vaccine. Influenza vaccination with IIV is recommended for immunocompromised patients (41, 276). Patients with colorectal cancer who received the influenza vaccine had fewer breaks in the and higher survival rates for one year. Study results in patients with hematological hematologic have been variable and are probably related to the type of malignancies and treatment. In patients with multiple myeloma, the immune response to 1 dose of the vaccine was only 19%. Similar results were seen in patients with lymphoma (279-281), although a more recent study showed higher seroprotestation. The two-dose schedule is a possible strategy, but has not been more immunogenic in some studies and has not been recommended by the ACIP. Adults with lymphoma who received a 2-dose schedule showed responses of about 30% after 1 dose and approximately 45% after 2 doses of the vaccine. Two doses of pandemic vaccine A (H1N1) in patients with chronic myeloid leukemia and B-cell malignancies resulted in higher seroconversion than 1 dose; however, seroconversion was still lower than after one dose in immunocompetent controls. No patient who received rituximab care responded to vaccination. Similarly, none of the 67 lymphoma patients responded to the adjuvant A vaccine (H1N1) within the first 6 months after rituximab therapy. The reaction to IIV was impaired in patients with lymphoma who completed the rituximab-containing regimen ≥6 months ago. Patients receiving intensive chemotherapy are likely to be less responsive to influenza vaccination; however, the seasonal nature of influenza may require the timely introduction of ERIs to induce immunity. Effectiveness is likely to be low in those with the highest risk of severe illness. Most viral influenza infections in acute leukemia patients undergoing chemotherapy were acquired sockoomically; family members and hospital staff should therefore be strongly encouraged or required to be vaccinated against influenza. Data on the effectiveness of IIV in adult patients with solid tumors are limited. In lung cancer patients, the vaccination response was similar to the one observed in immunocompetent control (287). Similarly, the humorous response was adequate in the group of women with breast cancer (288, 289). In a study of patients with different solid tumors, the response to vaccination was better than in patients with lymphoma. Breast cancer patients with ongoing chemotherapy had poorer answers. Influenza vaccination was cost-effective in working-age patients with cancer. Pneumococoс the vaccine. Antibodies responses to PPSV23 are often impaired in patients with hematologic malignancies, including patients with multiple myeloma (278) or Hodgkin's lymphoma (293, 294). In contrast, a good answer can be received before the start of antitumor therapy (295, 296). Antibody responses can be caused in splenectomized patients with non-Hodgkin's and Hodgkin's lymphomas (297). Repeated PPSV23 vaccinations, before and after splenectomy, repeated antibodies and were not associated with serious side effects when administered approximately 600 doses of doses 380 patients (298, 299). A single dose of PCV7 gave suboptimal responses in patients who were treated for Hodgkin's lymphoma (300) or chronic lymphocystic leukemia. Priming with PCV7 improved the response to PPSV23 in patients with previously treated Hodgkin's lymphoma, including spleen-ectomized patients (302, 303). These patients do not have data on the safety or immunogenicity of PCV13, but the ACIP CDC recommends regular use of PCV13 for immunocompromised individuals (109, 124). Patients with mixed solid tumors have been reported to respond well to PPSV23 vaccination. Vaccine against diphtheria tetanus and whooping cough. Hammarstrom et al. showed that 41% of patients with acute leukemia were not protected from tetanus. In contrast, Nordoy et al reported that the treatment of low-grade patients with non-Hodgkin's lymphoma with radiation immunotherapy does not affect tetanus immunity. The reaction to DT vaccinations in adult patients with hematological malignancies has not been systematically studied. Six months or more after completing chemotherapy for leukemia, all 59 children had protective antibody titers against tetanus, and all responded to one dose of booster vaccination. Vaccine against Hepb. Patients with hematologic malignancies, especially B-cell lymphomas, which are treated with anti-CD20 monoclonal antibody therapy, are prone to reactivation of The Hepb infection during therapy. The percentage of vaccination response against Hepb is low in patients who received therapy for haematological malignancies (306, 307). Although there is no data, it may be prudent to vaccinate unvaccinated patients with the HepB vaccine either before or after discontinuation of therapy against their malignancy. Preliminary data show that immune responses for patients who received monoclonal antibodies for lymphoma are poor for at least the first 6 months after treatment is completed. A recent study shows that responses to recall antigens are better than primary responses against antigens that have not previously been seen. Patients who received autologous HSCT and then rituximab responded well to vaccination with Hib and tetanus vaccines, but no PPSV23 was given 6 and 9 months after the last infusion of rituximab (310). Contradictions to live viral vaccines. Live viral vaccines are not recommended during chemotherapy because of the risk of the disease spreading. The administration after 3-6 months seems to be safe (266, 269). Although VAR was administered to children with acute lymphoblastic leukemia, which receives chemotherapy, it is generally not administered during these therapies (81, 83). RECOMMENDATIONS for VACCINATION patients with GEMAPOOETIC STEM 17. Should HSCT donors and patients be vaccinated before transplantation? Recommendations 4) 74. The HSCT donor should now be with recommended vaccines based on age, vaccination history and history of exposure according to the CDC's annual schedule (strong, high). However, administering MMR, MMRV, VAR and AIA vaccines should be avoided within 4 weeks of stem cell collection (weak, very low). Vaccination of the donor in the benefit of the recipient is not recommended (weak, moderate).75 Prior to HSCT, candidates should receive vaccines indicated for immunocompetent individuals based on age, vaccination history, and exposure history according to the CDC's annual schedule if they are not yet immunosuppressed (strong, very low and moderate), and when the interval for the start of the conditioning regimen is ≥4 weeks for live vaccines (strong, low) and 2 weeks for inactivated vaccines (strong, moderate).76 Non-immunized HSCT candidates aged ≥12 months should get a VAR (as a 2-dose regimen if there is enough time) if they are not immunosuppressive and when the interval to start conditioning regimen is ≥4 weeks (strong, low). Evidence of a summary of donor immunity can be passed on to the HSCT recipient (311-318), and it has been shown that donor vaccination improves immunity after transplantation (315, 319-321). However, there are logistical problems with donor vaccination and ethical considerations if the vaccine is administered solely for the benefit of the HSCT recipient. Only vaccines should be administered, which are indicated and recommended based on the age of the donor, vaccination history and history of exposure. It is not known whether vaccination of donors with MMR, MMRV, VAR or AIA vaccines causes safety concerns for the HSCT recipient within 4 weeks of stem cell collection. In most patients with HSCT, antigen-specific antibody titers gradually decrease over time after HSCT, and patients may become susceptible to infections such as tetanus (314, 322), poliovirus (323-325) and measles (326, 327). The clinical significance of reducing antibodies to vaccine-preventable diseases is difficult to assess among recipients because, with the exception of pneumococcal and influenza-related infections, a limited number of vaccine-preventable diseases have been reported among ERC recipients, and patients after HSCT should generally be treated as never vaccinated patients, regardless of the history of HSCT or donor. The HSCT vaccination guidelines have been adapted from the Guidelines for the Prevention of Infectious Complications among hemathopoetic cell transplant recipients: A Global Perspective that has been prepared in collaboration with several international organizations. Based on the available data, there is no difference in recommendations for autologous and allogeneic HSCT patients. It has been shown that the recipient's existing immunity persists for several months after HSCT (316, 326). Patients do not respond well to early after HSCT. By vaccinating a seronegative patient before HSCT, it is likely that some protective persists. There is no data on the interval between vaccination against a chicken cup and the onset of air conditioning; however, the 4-week interval is likely to be safe. In patients with cancer undergoing chemotherapy, and in children with acute leukemia, which is in remission, was marked rash up to 60 days after vaccination (329, 330). The strategy of pre-transplant vaccination of patients with the seronegative system was not tested in the clinical study. However, this strategy is likely to be safe because children with acute leukemia who received VAR subsequently underwent allogeneic HSCT without developing clinical manifestations of wind varicella. What vaccines should adults and children introduce after HSCT? Recommendations (table 4) 77. One dose of IIV should be administered annually (strong, moderate) to those aged ≥6 months, starting 6 months after HSCT (strong, moderate) and starting 4 months after if there is an outbreak of influenza in the community, as defined by the local health department (strong, very low). For children between the ages of 6 months and 8 years who receive the flu vaccine for the first time, 2 doses should be administered (strong, low).78. Three doses of PCV13 should be administered to adults and children from 3-6 months after HSCT (strong, low). 12 months after HSCT, 1 dose of PPSV23 should be given provided that

the patient does not have chronic GVHD (strong, low). For patients with chronic GVHD, a fourth dose of PCV13 can be given in 12 months after HSCT (weak, very low).   Three doses of the Hib vaccine should be administered 6-12 months after HSCT (strong, moderate).80.   Two doses of MCV4 should be administered 6-12 months after HSCT to those aged 11-18 years, with a booster dose given at the age of 16-18 years for those who received the initial dose of the vaccine after HSCT at the age of 11-15 years (strong, low).81.   Three doses of tetanus/diphtheria containing the vaccine should be administered 6 months after HSCT (strong, low). Children as young as 7 years of age should be given 3 doses of DTaP (strong, low). For patients aged ≥7 years should consider administering 3 doses of DTaP (weak, very low).   Three doses of the Gepb vaccine should be administered 6-12 months after HSCT (strong, moderate). If post-vaccination against HBs concentration ≥10 mIU/mL is not achieved, the second 3-dose series of the Gepb vaccine (strong, low; alternative: 1 dose of GEB vaccine, after which anti-HBs are tested), using a standard dose (strong, moderate) or high dose (40 g; low, low) for children and a high dose for adolescents and adults (strong, low), Three doses of the IPV vaccine should be administered 6-12 months after HSCT (strong, moderate).84 Consider administering 3 doses of HPV vaccine 6-12 months after HSCT for patients aged 11-26 years and HPV4 vaccine for men aged 11-26 years (weak, very low).85. Do not administer live vaccines to patients with HVHT with active HVD or permanent immunosuppression (strong, low).86. A 2-dose series of MMR vaccine should be administered for measles seronegative adolescents and adults (strong, low) and measles seronegative children (strong, moderate) 24 months after HSCT in patients with neither chronic GVHD, nor ongoing immunosuppression and 8-11 months (or earlier, if there is a measles outbreak) after the last dose of immune globulin intravenously (IGIV). The 2-dose VAR series should be administered 24 months after HSCT to patients with varicella-seronegative patients with no CVD, nor ongoing immunosuppression and 8-11 months after the last dose of IGIV (strong, low). Evidence Summary of the Flu Vaccine. Influenza, which is often a severe disease after HSCT, is associated with mortality of 10%-15% in people not treated with antiviral drugs. Patients infected with pandemic influenza A virus (H1N1) in 2009 had an increased risk of pneumonia and ventilator ventilation and had significant mortality despite oseltamivirus therapy (333, 334). Deadly flu disease can occur a few years after HSCT (332). Therefore, lifetime annual IIV vaccination is recommended for all HSCT recipients. The time when vaccination should be started after HSCT depends in part on the anticipation of influenza in the patient community, but is likely to be effective when the time interval after HSCT is longer, preferably ≥6 months (335-337). Even in cases where there is no serological response, T-cell reactions that prevent a serious disease can be caused (338, 339). During outbreaks in communities, HSCT recipients should be immediately vaccinated against influenza if it is zgt;4 months after HSCT. Children under the age of 9 years, who receive the first influenza vaccine, need 2 doses, ≥4 weeks from each other. For IIV, data on the effectiveness of the second dose in older children and adults are contradictory. However, studies have shown improvements in response to pandemic A vaccines in 2009 (H1N1) (H1N1) (335, 337, 340). LAIV should not be used because the safety and efficacy of this vaccine in HSCT patients is unknown and an alternative to IIV exists. Pneumocococ the vaccine. HSCT recipients are at a significantly higher risk for invasive pneumococcal infection than the general population (341-344). However, PPSV23 is generally ineffective when given within the first year of transplantation, patients with chronic GVHD (345-349). In 3 promising trials, PCV7, given after HSCT, was more PPSV23 (350-352). In a comparative trial of PCV7 and PPSV23 in adult HSCT recipients, PCV7 given to donors and recipients was more immunogenic than PPSV23 given to donors and recipients. In 1 of these trials there were similar and significant antibody reactions to vaccination with a 3-dose PCV7 series whether started in 3 months (early) or 9 months (late) post-transplant. Thus, early vaccination may be preferable. However, early vaccination may result in shorter duration of protective antibody concentrations, and a fourth dose of booster can be indicated if vaccination is performed early after HSCT. It is probably useful to administer PPSV23 for the fourth dose of the vaccine, starting 12 months after HSCT, to provide immunity to additional serotypes (350, 354). However, a fourth dose of PCV13 may be preferable in patients with chronic GVHD who are unlikely to respond to PPSV23 (346, 349, 355). ACIP CDC recommends regular use of PCV13 for immunocompromised individuals (109, 124). Hib conjugation vaccine. Vaccination with Hib can cause protective immune responses after allogene HSCT (347, 348, 356). Timing after HSCT is important because the immune response to the Hib vaccine early after HSCT, that is, zlt;6 months, the result is in the poor' responses in the children' who's received transplants' (diphtheria-tetanus-pertussis) vaccine.' Diphtheria' toxoid' in combination with tetanus' toxoid (dt)' and those' containing a' reduced ' quantity of diphtheria' toxoid (td). ,dt' vaccine is not approved for persons' age'6 years due to adverse consequences. However, experience with adult HSCT recipients indicates a lower risk of side effects than previously vaccinated immunocompetent adults (358), suggesting that an adverse DT exposure profile may be acceptable in this population. It has not yet been determined whether the immune response to Td is equivalent to the response to the DT vaccine. HSCT recipients may be vulnerable to complications from whooping cough, although there is very limited published data (359, 360). For immunocompetent people, the acellular whooping cough vaccine that is administered as DTaP is recommended in young children, and a single dose booster vaccine containing Tdap is recommended in children starting at age 10 and for adolescents and adults (replace the dose of adult Td booster). Ideally, post-transplant patients are treated as never vaccinated and therefore should receive full doses of toxoids, DT, and DTaP. However, DTaP is 7 years old. Tdap is less likely than DTaP vaccine to cause local side effects in immunocompetent adults. Preliminary data in autologous recipients [361, 362] show that the response to pertussis (and tetanus) years.= tdap= is= less= likely= than= dtap= vaccine= to= cause= local= side= effects= in= immunocompetent= adults.= preliminary= data= in= autologous= hsct= recipients= [361,= 362]= show= that= the= response= to= pertussis= (and= tetanus)=></7 years. Tdap is less likely than DTaP vaccine to cause local side effects in immunocompetent adults. Preliminary data in autologous HSCT recipients [361, 362] show that the response to pertussis (and tetanus) > указывается только для детей в возрасте</6> возрасте</6> Tdap is poor, regardless of the timing of the vaccination after HSCT (361), suggesting that this vaccine should be used as a booster and not as part of the primary series. A three-dose vaccine series high in tetanus and whooping cough, i.e. DTaP, may be more immunogenic in HSCT recipients and should therefore be considered for initial vaccination regardless of the patient's age. Vaccine against Hepb. There is limited evidence on the effectiveness of GSB vaccination in HSCT recipients. In a study of autologous HSCT recipients, 69% of seroconvert after a series of vaccines (363). Similarly, in the study of allogeneied recipients of HSCT, 64% of seroconvert; this figure was lower than in age controls (364). Thus, to determine the need for additional doses of the vaccine, the definition of concentration of post-vaccination anti-HBs is specified. MMR vaccine. Most HSCT patients are seronegative to measles during advanced follow-up activities (326, 327). Severe and fatal measles was reported in HSUT recipients (365, 366). The administration of the MMR vaccine can be considered 2 years after transplantation in allogeneous HSCT patients without chronic GVHD or ongoing immunosuppression. In Brazil, 34 patients who did not receive immunosuppressive drugs were safely vaccinated 1 to 2 years after HSCT (367). Since adults who experience a natural measles infection prior to transplantation tend to retain immunity for several years after HSCT, it is recommended to conduct measles serology, with vaccination only to seronegative patients. Responses to the measles vaccine varied, with adults with higher response rates than children (367-370). To achieve protective and long-term immunity, a second dose is recommended for children who have undergone HSCT. Vaccination against rubella is shown in women who may become pregnant. The presence of measles antibodies from IGIV or other blood products may interfere with the reaction to the measles vaccine and possibly some other live vaccines, such as chickenpox. Therefore, it is advisable to postpone the introduction of these vaccines for 8 months (after a dose of IGIV 400 mg/kg of body weight) or for 11 months (after a dose of IGIV 2 g/kg of body weight). However, if the risk of exposure to measles is high, the MMR vaccine may be given earlier, but the dose should be repeated after the interval noted above. Varicella vaccine. VAR can be considered for seronegative HSCT recipients who meet the criteria for live vaccination of viruses outlined above for the measles vaccine. One centre required CD4 T-lymphocytes ≥200 cells/mm3 and documentation of the response to ≥1 to another vaccine as a prerequisite for the introduction of VAR (85, 87, 371). AIA should not be introduced because there is no data on safety or effectiveness. Other vaccines. Data on There are no VGT recipients with HPV The use of the BCG vaccine is contraindicated because it is a live bacterial vaccine with a potential risk of serious side effects. The same applies to live rotavirus vaccines, which are licensed by the U.S. Food and Drug Administration only for young children. Patients with chronic GVHD can mount responses to protein vaccines. The risk of aggravation of HVHD is low based on experience in several hundred patients (325, 348, 350, 358). However, vaccine-based polysaccharide vaccination is often ineffective, and PCV13 is preferable to PPSV23 in patients with GVHD (349, 355). Although there is no evidence, it would be prudent to delay vaccination of patients, treatment with high doses of corticosteroids or recent therapy with immunosuppressive monoclonal antibodies such as rituximab or alemtusumab, because the antibody response may be low. Live vaccines are not recommended because their safety is not guaranteed given the immunosuppression of GVHD and its therapy. Recommendations ON THE WARNING OF THE RECEMENT RECEMENTING ESSION 19. For adults and children, solid organ transplants for candidates and living donors, which vaccines should be administered during pre-transplant assessment? Recommendations (table 5) 88. According to the CDC's annual schedule (strong, high); MmR, MMRV, VAR and zoS vaccine administration should be avoided for 4 weeks after organ donation (weak, very low). Vaccination of donors solely for the benefit of the recipient is generally not recommended (weak, low).89 Adults and children with chronic or end-stage kidney, liver, heart or lung, including solid organ transplantation (SOT) candidates, should receive all age-related, impact history, and immune status of appropriate vaccines based on the CDC's annual schedule for immunocompetent individuals (strong, moderate).91 Adult SOT candidates; Adults with kidney disease at the end of the stage; and pediatric patients who are SOT candidates; aged 6 years and have kidney, heart or lung disease at the end of the stage; or at the age of 6-18 years and have end-stage kidney disease should receive PCV13, as in the recommendations of 27a-c (strong, very low).92. Adults and children aged ≥2 years, who are SOT candidates or have end-stage kidney disease, should receive PPSV23 if they have not received a dose within 5 years and have not received 2 life doses (strong, moderate). Patients with kidney disease at the end of the stage should receive 2 life doses with separation (strong, low). Adults and children aged ≥2 years with end-stage heart or lung disease, as well as adults with chronic liver disease, including cirrhosis of the liver, should receive a dose of PPSV23 if they have never received a dose (strong, low). With both PCV13 and PPSV23 specified, PCV13 must be completed in 8 to PPSV23 (strong, moderate). Anti-HBs-negative SOT SOT should receive a series of HepB vaccines (strong, moderate) and if for hemodialysis and at the age of ≥20, they should receive high doses (40 micrograms) of the series of hep vaccines (strong, moderate). If post-vaccination against HBs is not achieved concentration ≥10 MIE/ml, the second 3-dose series of the Hepb vaccine (strong, low; alternative: 1 dose of the Hepb vaccine, after which anti-HBs is tested) should be administered using a standard dose (strong, moderate) or high dose for children (weak, low) and high dose for adolescents and adults (strong, low). Hepa-unvaccinated, -unvaccinated, or -seronegative SOT candidates (especially candidates for liver transplantation) aged 12-23 months (strong, moderate) and ≥2 years (strong, moderate) should receive the hepA series.93. The combined HepA-HepB vaccine can be used for SOT candidates aged ≥12 years of age who have both vaccines (strong, moderate).94. A series of HPV vaccines should be applied to soT candidates between the ages of 11 and 26 (strong, low moderate).95. SOT candidates between the ages of 6 and 11 months can receive the MMR vaccine if they do not receive immunosuppression and if the transplant is not expected within 4 weeks (weak, very low). If the transplant is delayed (and the child does not receive immunosuppression), the MMR vaccine must be repeated within 12 months (strong, moderate).96 VAR should be administered to SOT candidates without signs of varikella immunity (as defined in recommendation 16) if they do not receive immunosuppression and if transplantation is not expected within 4 weeks (strong, moderate). VAR can be administered to VARicella-naive SOT candidates between the ages of 6 and 11 months who are not immunosuppressive provided that the timing ≥4 weeks prior to transplantation (weak, very low) Optimally, 2 doses should be administered ≥3 months apart (strong, low).97. SOT candidates aged ≥60 years (strong, moderate) and varicella-positive candidates (as defined in recommendation 22) aged 50-59 years (weak, low) who do not have serious immunodeficiency, should receive AIA if transplantation is not expected within 4 weeks. Evidence Summary SOT candidates should receive these vaccinations prior to transplantation, preferably in the early stages of their disease (372-374). As a rule, live vaccines are not administered immediately before or after transplantation. Vaccination guidelines for SOT candidates and recipients (373, 374), including information on travel-related vaccines and pandemic influenza A (H1N1) 2009 (H1N1) vaccines have been published. A standard series of vaccines should be given to pediatric SOT candidates in order to complete the primary series and booster doses prior to transplantation. Vaccinated children with chronic renal failure had antibodies serum against measles, mumps, chicken cup, hepb, H. influenzae type B and S. pneumoniae in 1 study. In B study (379), early MMR vaccination led to protective credits in 88% of infants with chronic renal failure. The practice of monitoring specific antibody titers varies (380). It may be prudent to control the credits for some vaccine-preventable pathogens (e.g. HepB) (381, 382). However, with the exception of annual monitoring of anti-HBs titers in patients with hemodialysis and kidney recipients, there is no consensus on the interpretation of the results or the implications for revaccination. Since influenza can be severe in patients with end-stage organ disease, the annual CIV vaccination is recommended for all transplant applicants or recipients at the age of ≥6 months (373, 376, 383). Patients awaiting transplantation are at increased risk of developing invasive pneumococcal diseases. ACIP CDC recommends regular use of PCV13 for immunocompromised individuals, including those who have had SOT (109, 124). Protective titers can be achieved after pneumococcal polysaccharide vaccination in most patients (384, 385), although these titles may weaken within 2 years. Because most adults have protective titers for Hib, Hib pretransplant vaccination adults do not need. In addition, adult patients who require a splenectomy should receive MCV4. Less than 50% of patients with chronic kidney disease have tetanus protective titers. Five years after Td steering vaccinated a cohort of patients with hemodialysis, 71% had protective levels of antibodies to tetanus, but only 32% had protective titers for diphtheria. Tdap vaccination has not been studied in this population. Hepb can be transmitted through HBsAg-positive or HBsAg-negative/anti-HBc-positive donors (388, 389), blood transfusions, and, rarely, nosocomial outbreaks. Vaccination against Hepb is less effective in patients with hemodialysis than in patients at an earlier stage of kidney disease (390, 391). The hemodialysis guidelines recommend a high-dose vaccine (i.e., 40 micrograms), testing anti-HBs levels 1 to 2 months after the last dose of a series of vaccines, as well as annual revaccination, if anti-HBs levels are also less effective in patients with end-stage liver disease (372, 392, 392, 393). Vaccination strategies include a potency vaccine, accelerated schedules (if a transplant is inevitable) and adjuvants (394, 395). Seroconversion was better after re-administering a high-dose (80 microgram) vaccine in nonresponsive in 1 study. Despite the announcement of the transfer of immunity from vaccinated living liver donors (397), vaccination of these donors is not recommended. Vaccination of SOT candidates with the HepA vaccine is important because this vaccine can cause fulminant hepatitis in patients with major liver disease, especially HEPC. Patients with chronic diseases react to the Hep vaccine, albeit at a lower rate than immunocompetent people (398, 399). Vaccination before liver disease becomes likely to be more effective. The combined HepA-HepB vaccine is useful for pre-transplant vaccination. Transplant patients have a higher risk of developing genital warts associated with HPV, cervical cancer and other antogenous malignancies. Data are expected on the effectiveness of pre-transplant vaccination in the prevention of post-transplant HPV infection. Vaccines are alive. The risk of post-transplant disease as a result of pre-transplantation of live vaccines such as VAR, MMR or AIA vaccines has not been fully determined. The waiting period of 4 weeks was chosen based, in particular, on the external risk range of skin lesions after vaccination for most patients. Many patients receive post-transplant chemoprophylaxis for herpes simplex and cytomegalovirus infections, which is active against HPV, which helps prevent infection but also reduces the effectiveness of the vaccine. Most transplant centers will not administer live vaccines to candidates scheduled for transplantation within 3-4 weeks; however, more data are needed to determine the optimal time for vaccination. Rotavirus vaccines should be administered to pre-transplant infants starting at 2 months (6 weeks is acceptable) with the completion of the series at the age of 8 months. Although viral shedding may occur within ≥15 days of administration, it is not known whether adverse effects will occur if the transplant occurs shortly after vaccination (table 5). VAR should be considered in SOT candidates due to the severity of the disease after transplantation. Less than 5% of adult kidney transplant candidates were wind-seronegative. Children with nephrotic remission syndrome who were not significantly weakened by immunity were safely vaccinated, but long-term efficacy remains unknown. VAR was safely administered to uremic children, including pending transplants (17, 402-404), as well as 11 adults awaiting a kidney transplant. Almost all children's vaccines are sero-converted after 2 doses, and VTH antibodies are stored at 75%-100% within ≥2 years after transplantation. The incidence of chickenpox in vaccines was reduced by about 75% after transplantation compared to the incidence of unvaccinated kidney transplant recipients; The severity of the disease is usually milder in vaccines that have developed chickenpox. VAR has been safe and effective in 704 pediatric kidney transplant candidates (17, 402), with 42% retaining V'V antibodies in the 10 years after transplantation. Vaccinated patients had a lower risk of developing a chicken cup, less severe disease and less CG than unvaccinated patients. Pediatric liver transplant candidates had a seroconversion rate of 95% in 1 study, but only 3 out of 11 were seroconverted in another study. 29 children with chronic liver disease who did not receive immunosuppressive drugs led to seroconversion, although the level of antibodies was lower than .406. Some authors recommend monitoring varicella titles and administering a third dose of pretransplant if the titers weakens, however, commercially available analyses exhibit low sensitivity to detect VAR-induced antibodies. AIA should be applied to pretransplantanic candidates who meet the ACIP criteria (aged ≥60 years old and do not have severe immunosuppression) or at the age of 50-59 years, are varicella-positive (defined in recommendation 22), and do not have serious immunocompany treatment if transplantation is not expected within 4 weeks. This recommendation is based on post-transplant oster incidence, not evidence of AIA effectiveness in this environment. What vaccines should SOT recipients introduce? Recommendation 98. Vaccination should be denied from SOT recipients during intense immunosuppression, including the first 2-month period after transplantation, due to the likelihood of an inadequate response (strong, low). However, the IIV may be ≥1 month after the transplant during the flu outbreak in the community (weak, very low).99. Standard age-appropriate inactivated vaccine series should be administered 2-6 months after SOT based on the CDC's annual schedule (strong, low to moderate), including IIV (strong, moderate; Table 5.100. PCV13 should be introduced 2-6 months after SOT, if you do not enter up to SOT, with terms based on the degree of immunosuppression of the patient, as described in the recommendations 27a-c (strong, very low to moderate; Table 5.101. For SOT patients aged ≥2 years, 1 dose of PPSV23 should be administered 2 to 6 months after SOT, with durations based on the degree of immunosuppression of the patient, and ≥8 weeks after the specified PCV13 if not given for 5 years, and if the patient received no more than 1 previous dose of life (strong, moderate).102. The vaccine against Hepb should be considered for chronic hep-infected recipients 2-6 months after liver transplantation in an attempt to eliminate the lifetime requirement for Hepb immune globulin (HBIG; weak, low). The MMR and VAR vaccine should generally not be administered to SOT recipients due to insufficient safety and efficacy (strong, low), except for chicken pox in children without signs of immunity (as defined in recommendation 15), who are recipients of kidney or liver transplants, receive minimal or no immunosuppression, and do not have a recent rejection of the graft (weak, moderate). Vaccination should not be denied due to concerns about organ rejection (strong, moderate). Evidence Summary The optimal time to start vaccination after transplantation is not defined, but many centers wait ≥2 months to avoid high doses of anti-prescription medications that will prevent The degree of immunosuppression varies from patient to patient, and some patients are unable to mount an adequate vaccine vaccine 2 months after the transplant. An exception may be administering IIV 1 month after SOT during a flu outbreak in the community based on expert opinion. Influenza can cause severe disease in patients with SOT (276, 383). Seroconversion varied depending on the vaccine and between types of transplantation (103, 104, 408-419). Effectiveness and efficacy varied depending on the epidemic strain and between influenza A and influenza A (103, 104) viruses, as well as immunosuppressive regimen (e.g. micophenolat mofetil) or recent rejection (409, 416, 419, 420). Some studies have shown an increase in the response with repeated doses of influenza vaccine (410). The effectiveness of the influenza vaccine was demonstrated against influenza-like diseases in 29% and 33% of heart recipients who received 1 in 2 influenza vaccines compared to 63% of recipients of unvaccinated heart transplants. In two studies, cellular immune responses to the influenza vaccine (415, 421) were disrupted. In a recent study of 51,730 adult kidney transplant recipients, influenza vaccination in the first post-transplant year was associated with a lower risk of alotransplantation loss and death. A recent randomized controlled trial of a high-dose intradermal (15 microgram) against a standard dose of intramuscular flu vaccine in organ transplant recipients found no significant difference in response, suggesting that an intradermal vaccine may be an acceptable alternative. ACIP recommends PCV13 for adults and children with SOT and PPSV23 for adults and children ≥2 years with SOT (109, 124). PpSV23 pneumococcten vaccination is associated with seroconversion rates of up to 94% in some but not all studies (411, 424-427). In adult kidney transplant patients, antibody levels and perseverance after PCV7 were not higher compared to levels and perseverance in those receiving PPSV23 (427, 428). Adult liver recipients do not have an increased response to PPSV23 after the previous dose of PCV7 (prime enhancement strategy), and the authors concluded that 1 PPSV23 dose remains the standard for post-transplant recipients. Two doses of PCV7 raised serotype-specific antibodies after the first dose of PCV7 in pediatric SOT recipients, albeit at lower credits than in control; antibody levels did not rise further after the second dose of PCV7 or when a subsequent dose of PPSV23 was administered. Barton et al studied the administration of 3 doses of PCV7 followed by PPSV23 in pediatric SOT recipients. Average concentrations doubled in all organ groups after 2 doses of PCV7; However, heart and lung recipients appear to benefit from a third dose of PCV7. PPSV23 has resulted in significantly higher antibody to some PCV7 serotypes. Booster vaccination with Td produced good answers in recipients of kidney transplantation (432). Vaccination of hepb in children-recipients of the liver showed 70% 70% speed, with another 50% non-responders converting after an extra booster and double dose. Responses were higher in children receiving monotherapy rather than combination therapy for immunosuppression. To eliminate the need for long-term therapy with costly HBIG after liver transplantation for HepB, some centers vaccinated these recipients. However, seroconversion occurred in a small proportion of patients using the standard or high-dose HepB vaccine (434, 435). Some anti-HBs-positive liver recipients are transplanted for diseases other than the HepB infection lost their protective posttransplant (394) readers. Some liver recipients who were seropositive to the HepA pretransplant became seronegative post-transplantt. Vaccination with a 2-dose series of HepA vaccine was well tolerated in 37 liver transplant recipients, but only 26% of recipients were seropositive in 7 months after vaccination. In another study, satisfactory rates of seroconversion in kidney and liver recipients were followed by a rapid decline in hep antibody titers (437). There are no published data on the immunogenicity of the HPV vaccine in SOT recipients. SOT recipients have a significant incidence of HPV warts (438); therefore, the HPV4 vaccine is preferable to the HPV2 vaccine in this population. Safety associated with varikella after transplantation has been shown in a small series of pediatric recipients of liver, kidney and bowel transplants (16-18, 439). In contrast, a significant disease was reported after the unintentional introduction of VAR for transplantation of recipients (74, 440). In a recent report on the vaccination of 36 pediatric liver recipients with VAR, in which the vaccine was administered on average 3.0 years after transplantation, vaccination was found to be safe and seroprotective. There is no data on the safety of rotavirus vaccine after the transplant. Reports of cases and small episodes raised the question of whether vaccines cause the rejection of avlotransplant (417); almost increasingly large studies found no excessive rejection or clinically significant dysfunction of avlotransplant after vaccination (408, 409, 411-413, 418, 442-444, 407). In one study of 3601 heart transplant recipients, there were no differences in vaccine-related incidence or seasonality in the incidence or seasonality of rejection (444, 407). Kimball et al. found that influenza vaccination does not lead to either anti-HLA alloantibodies or an increase in the incidence of rejection in heart recipients (443). A recent study involving 17 recipients of kidney and lung transplantation showed an increase in cellular aloimmunity after influenza vaccination. However, the clinical implications are unclear. A study of 50,000 adult kidney transplant recipients found no detrimental effect It is important to note that influenza vaccination during the first year after transplantation has been associated with a reduced risk of loss of alotransplant and death. RECOMMENDATIONS PATIENTS WITH CHRONIC INFLAMMATORY DISEASES ON IMMUNOSUPPRESSIVE MEDICINES Patients with chronic inflammatory diseases (including immune-mediated and autoimmune disease) are often treated with immunosuppressive drugs, both single agents and in combination, for long periods of time. The onset of immunosuppression should not be delayed to facilitate vaccination if immediate treatment is required. XXI. What vaccines should be administered to patients with chronic inflammatory diseases supported by immunosuppressive therapy? Recommendation (table 6) 105.   Inactivated vaccines, including IIV, should be administered to patients with chronic inflammatory diseases (strong, low moderate) or are about to be treated with (strong, moderate) immunosuppressive drugs for immunosuppressive individuals based on the CDC.106 annual schedule.   PCV13 should be administered to adults and children with chronic inflammatory disease, which is treated with immunosuppression, as described in the standard chart for children and in the recommendations of 27a-c (strong, very low moderate; Table 6.107.   PPSV23 should be administered to patients aged ≥2 years of age with chronic inflammatory diseases with the planned onset of immunosuppression (strong, low), low-level immunosuppression (strong, low) and high-level immunosuppression (strong, very low). Patients should receive PPSV23 ≥8 weeks after PCV13, and a second dose of PPSV23 should be given 5 years later (strong, low).108.   VAR should be administered to patients with chronic inflammatory diseases with no signs of varikella immunity (defined in recommendation 15; strong, moderate) ≥4 weeks prior to the onset of immunosuppression (strong, low) if the onset of treatment can be safely delayed.109.   VAR should be considered for patients without signs of varicella immunity (defined in recommendation 15) treated for chronic inflammatory diseases with long-term, low-level immunosuppression (weak, very low).   AIA should be administered to patients with chronic inflammatory disorders from the age of ≥60 years to the onset of immunosuppression (strong, low) or treated with low-dose immunosuppression (strong, very low) and those who are aged 50-59 years and varikella positive before the onset of immunosuppression (weak, low) or treated with low-dose immunopression (weak, very low).   Other live vaccines should not be administered to patients with chronic inflammatory diseases while maintaining immunosuppression: LAIV (weak, very low), MMR vaccine in patients receiving low-level (weak, very low) and high-level immunosuppression (weak, very low); and the MMRV vaccine in patients receiving low-level (weak, very low) and high-level immunosuppression (strong, very low).112.   Other recommended vaccines, including the IIV and HepB vaccine, should not be exacerbation of chronic immune mediated or inflammatory disease (strong, moderate). The summary results of two prospective IIV studies in children with IBD (446, 447) indicate that IIV is safe and effective, although immunogenicity may be reduced in patients treated with TNF-α antibodies. In both studies, children receiving 6-mercaptopurine or azathioprine had seroprosthetics comparable to immunocompetent control and non-immuno-depressive patients with IBD for all 3 strains of the vaccine. However, children α with TNF-α antibodies had normal rates of seroprosthetics of both type A strains and lower rates of seroprosthetics and seroconversion to the type B vaccine strain. In 1 study, the overall coverage of inactivated vaccines, including IIV, in patients with IBD was low, indicating the need for more advocacy and education for patients and health care providers. Uncontrolled studies of patients with rheumatic inflammatory chronic diseases receiving drugs that modify diseases have shown an adequate immune response to IV. In children with rheumatological diseases receiving anti-reumatic drugs that change diseases, the level of seroprotective vaccine ranged from 80% to 98%. In adults with RA or SLE, IIV had safe and induced protective antibody concentrations in most patients. However, immunogenicity was reduced in patients receiving azathioprine, infliximab, or rituximab in some studies (100, 101, 449-452). In addition, the antibody response to the vaccine was reduced in patients with RA who received rituximab compared to the response in immunocompetent individuals or RA patients receiving MTX. Immunogenicity of the inactivated H1N1 influenza vaccine has been reduced in patients with rheumatic diseases on various immunosuppressive circuits compared to immunogenicity in immunocompetent control. Patients receiving tocilizumab, an anti-interleukin-6 antibody receptor, for the treatment of RA or juvenile idiopathic arthritis had antibody responses to IIV that were similar to those of the comparator groups (454, 455). Patients carry IIV without serious side effects or outbreaks (456-458). There are several studies of inactivated vaccines besides IIV in chronic inflammatory diseases of the population treated with immunosuppression. In adults, responses to PPSV23 were similar among patients with RA treatment with TNF-α and Immunocompetent Control (459). However, patients with RA and psoriatic arthritis obtained by MTX had reduced responses regardless of anti-TNF-α treatment (459-461), and patients receiving rituximab reduced responses. Treatment with rituximab and MTX reduced antibody response PPSV23 compared to RA patients on MTX alone; however, both groups had similar reactions to tetanus toxicoid. The antibody reaction in 190 adults with RA there was no negative impact on the treatment of tocylsumab (463). The antibody response to some PCV7 serotypes has been reduced in 31 pediatric patients with juvenile rheumatic diseases on anti-TNF-α therapy compared with a reaction in immunocompetent administrations. ACIP CDC recommends regular use of PCV13 for immunocompromised individuals, including those receiving immunosuppressive drugs (109, 124). Immune responses to MCV4 were good, regardless of the degree of immunosuppression in 234 children and young adults with juvenile idiopathic arthritis in a multicenter open-label study. The Vaccine Against Gepb was safe and induced by the immune response in most of the 44 RA patients in a prospective study. Protection from the wind cup is important because of the potential severity of the chickencap infection. Unfortunately, the published data on vaccination against chicken cups in this population are limited (see Varicella). Although studies have not been published on oster vaccination in patients receiving immunosuppression, ACIP has concluded that vaccination is safe in adults receiving ≤20 mg per day of prednisone or other low-level immunosuppression. An expert group at the American College of Rheumatology endorsed these recommendations and stated that until additional studies are available, it may be appropriate to avoid zoster in patients actively receiving TNFH inhibitors. Vaccination zoster can be considered prior to the onset of immunosuppression for patients aged 13-49 years with chronic immune-mediated or inflammatory disorders that have a history of wind varicella or who are seropositive, despite the lack of previous chicken cup vaccination; however, there is a lack of data on safety and efficiency. MMR revaccination of patients with juvenile idiopathic arthritis resulted in a good immune response to all three viruses without serious adverse effects despite continued therapy with MTX or recent therapy with etanercept or anakinra (468, 469). However, there is no data on the safety of primary MMR vaccination and vaccination with other live vaccines in this population. There have been reports of an increase in autoimmune diseases temporarily associated with influenza vaccination, but prospective controlled studies do not support cause-and-effect (see The safety of vaccinating immunocompromised patients). In particular, influenza vaccination does not increase disease activity in patients with OCO or RA No.100, 101, 451, 453, 470-472. Vaccination against Hepb did not affect disease activity in patients with SLE or RA (466, 473). Similarly, pneumococcten vaccination was not associated with a deterioration in clinical disease activity or laboratory disease activity in patients with RA SLS (474). Vaccination of MMR did not affect the activity of diseases in patients with juvenile idiopathic arthritis (469). An increase in recurrence of the disease was observed in 7 7 с рассеянным склерозом, вакцинированным вакциной против желтой лихорадки. РЕКОМЕНДАЦИИ ПО ВАКЦИНАЦИИ ПАЦИЕНТОВ С АСПЛЕНИЯ ИЛИ СЕРПОВИДНО-КЛЕТОЧНЫХ ЗАБОЛЕВАНИЙ XXII. Какие вакцины следует вводить пациентам с аспленикам и больным болезнями клеток? Рекомендации (таблица 7) 113. Пациенты с серповидно-клеточными заболеваниями должны получать вакцины, в том числе PCV13 для <2 years,= as= recommended= routinely= for= immunocompetent= persons= based= on= the= cdc= annual= schedule.= no= vaccine= is= contraindicated= (strong,= moderate)= except= laiv= (weak,= very= low).114. pcv13= should= be= administered= to= asplenic= patients= and= patients= with= sickle= cell= diseases= aged= ≥2= years= based= on= the= cdc= annual= schedule= for= children= and= in= recommendations= 27a–c= (strong,= very= low-moderate).115. ppsv23= should= be= administered= to= asplenic= patients= and= patients= with= a= sickle= cell= disease= aged= ≥2= years= (strong,= low)= with= an= interval= of= ≥8= weeks= after= pcv13,= and= a= second= dose= of= ppsv23= should= be= administered= 5= years= later= (strong,= low).116. for= ppsv23-naive= patients= aged= ≥2= years= for= whom= a= splenectomy= is= planned,= ppsv23= should= be= administered= ≥2= weeks= prior= to= surgery= (and= following= indicated= dose(s)= of= pcv13;= strong,= moderate)= or= ≥2= weeks= following= surgery= (weak,= low).*117. one= dose= of= hib= vaccine= should= be= administered= to= unvaccinated= persons= aged= ≥5= years= who= are= asplenic= or= have= a= sickle= cell= disease= (weak,= low).118. meningococcal= vaccine= should= be= administered= to= patients= aged= ≥2= months= who= are= asplenic= or= have= a= sickle= cell= disease= (strong,= low),= as= in= recommendation= 29.= however,= mcv4-d= should= not= be= administered= in= patients= aged=></2> <2 years= because= of= a= reduced= antibody= response= to= some= pneumococcal= serotypes= when= both= mcv4= and= pcv= are= administered= simultaneously= (strong,= low).= revaccination= with= mcv4= (or= mpsv4= for= those= aged=>детей в возрасте 55 лет, которые не получили MCV4) рекомендуется каждые 5 лет (сильный, низкий). Доказательства Резюме Скорость инвазивных пневмококковых заболеваний, вызванных вакциной <5 years= with= sickle= cell= diseases= fell= by= 93%= after= implementation= of= vaccination= with= pcv7= [12];= however,= some= of= this= reduction= may= have= been= due= to= herd-type= immunity.= in= children= aged=>серотипов у детей в возрасте 2 лет с серповидно-клеточной болезни, которые были даны 2 дозы PCV7 следуют одной дозы PPSV23, уровни антител ко всем серотипам в PCV7 были больше, чем у детей, учитывая PPSV23 в одиночку . ACIP CDC рекомендует регулярное использование PCV13 для пациентов с аппеником (109, 124). Оптимальным сроком вакцинации PPSV23 является ≥2 недели до спленэктомии. Если вакцинация не может быть завершена к этому времени, ≥2 weeks after splenectomy is to be performed because this time leads to higher concentrations of antibodies or opsonophacyte titra compared to vaccination at a shorter interval before or after surgery (476-478). There are no such data. effect of Hib, MCV4 or MPSV4 vaccination on serological reactions in patients undergoing splenectomy. A study of children aged 5 years with sickle cell disease, vaccinated against Hib, demonstrated a safety and immunogenicity profile similar to the control profile. In a study of 23 patients between the ages of 9 and 23 who were splenectomized for Hodgkin's disease, the antibody response was smaller than in the control group, but most patients responded to the vaccination. A lower antibody response to some PCV13 serotypes was observed when babies were simultaneously vaccinated with PCV13 and MCV4-D. Thus, the MCV4-D should be introduced ≥4 weeks after PCV13 (481, 482). This was not observed when infants were simultaneously vaccinated with PCV7 and Hib-MenCY. RECOMMENDATIONS FOR VACCINATING PATIENTS WITH ANATOMICAL BARRIER DEFECTS AT RISK OF INFECTION WITH VACCINES BY PREVENTABLE PATHOGENS XXIII. What vaccinations should be given to individuals with cochlear implants or congenital internal ear dysplasia or constant CSF communication with oropharinx or nasopharynx? Recommendations (table 7) 119.   Adults and children with deep deafness are scheduled to receive a cochlear implant, congenital inner ear dysplasia, or persistent cerebrospinal fluid (CSF) association with oropharinx or nasopharynx should receive all vaccines recommended regularly for immunocompetent individuals based on the CDC's annual schedule. No vaccine is contraindicated (strong, moderate; Table 7.120. Patients with cochlear implant, deep deafness and planned to receive a cochlear implant, or constant connections between CSF and oropharynx or nasopharynx should receive PCV13, as described in the standard schedule for children and recommendation 27a-c (strong, low-moderate).121. Patients aged ≥24 months with cochlear implant, deep deafness and planned to receive a cochlear implant, or permanent connections between CSF and oropharinx or nasopharynx or nasopharynx should receive PPSV23 preferably ≥8 weeks after receiving PCV13 (strong, moderate).122.   PCV13 and PPSV23 should be administered ≥2 weeks prior to cochlear implant surgery if possible (strong, low). The Evidence Summary of the AARP Policy Statement includes recommendations for pneumococcal, Hib, and flu shots for children with cochlear implants (483). The CDC guidelines emphasize the importance of S. pneumoniae vaccination for these patients. ACIP CDC recommends regular use of PCV13 for adults and children with cochlear implants (109, 124). PCV13 replaced PCV7, and there is no data on the immunogenicity and safety of PCV13 in these patients. The second dose of PPSV23 may be considered for patients with cochlear implant, deep deafness, who should receive a cochlear implant, or constant CSF communication with or nasopharynx 5 years after the initial dose, although this is not recommended by ACIP or AAP. The immunogenicity of PCV7 compared to PPSV23 was evaluated in a prospective study of 174 patients with cochlear implants. For children between the ages of 2 and 5, PCV7 was more immunogenic than PPSV23. A review of invasive pneumococcal disease in children aged 24-59 months with a high risk of pneumococcal infection has identified 31 cases. Four (13%) of those who said so. were caused by serotypes covered by PPSV23, but not in PCV13, indicating the importance of PPSV23 in this patient population; however, 44% were caused by serotypes not covered by any of the vaccines. FUTURE DIRECTIONS AND GAPS IN THE KNOWLEDGE IN VACCINATION PATIENTS IMMUNOcompromISED listed below are areas that require future research. Generala) understanding the key aspects of vaccines in various categories of immunocompromised patients, including the epidemiology of vaccine-preventable infections, vaccine-proof mediators and adverse effects of vaccines, and the impact of vaccines containing new adjuvants on vaccine protection and adverse effects of vaccines.b) Creating a registry of recipients of immunocompromised vaccines, especially those receiving live vaccines, to ensure additional vaccines. proposed by subspecialists over primary health care providers and other strategies to increase vaccination in immunocompromised patients.d) Transmission of LAIV and rotavirus vaccine for immunocompromised patients.e) The effectiveness and safety of zoster vaccination in: Patients aged ≥60 years and zlt;60 years with planned immunosuppression, that increases the risk of zoster, patients receiving low-level immunosuppression, PATIENTS with HIV infection, patients with chronic inflammatory disorders that receive severe immunosuppression (e.g., tocilizumab anti-IL-6 antibody receptor) or cyclophosphiida, an immunocompromiss population whose immunity to the chicken chapel was caused by wind varicella, rather than infection from the wild-type virus, and the e-ification of preproplant zooster vaccination in order to prevent post-transplant zest vaccination in SOT. HIVf) The optimal time to start vaccination after the start of CART for HIV infection.g) Hepb vaccination of HIV-infected individuals, which are anti-HBs negative, but anti-HBc positive (e.g., no vaccination or 3-dose series or single dose followed by anti-HBs testing 2 weeks later).h) Indications and the effect of revaccination of patients vaccinated before the onset of cART.Malignancyi) Safety, immunogenicity, and the effectiveness of vaccines in patients with malignant new formations treated with modern regimen regimens (e.g. , immunogenicity and safety of whooping cough vaccine safety, immunogenicity

and efficacy of IIV, including vaccines with adjuvants during chemotherapy and the first months of the months need for a normal dose of booster after chemotherapy; Optimal time of inactivated and live vaccines after chemotherapy; and the duration of the reaction to vaccines after regimens that include anti-B-cell antibodies). HSCT/SOTj) Safety and immunogenicity of single and multiple doses of DTaP or Tdap following HSCT.k) Safety and immunogenicity of PCV13 in SOT candidates and recipients.l) HepB vaccine administration to chronic hepatitis B-infected recipients of posttransplant cookies to eliminate the lifelong requirement for HBIG, including the optimal dose, number of doses and the role of adjuvants.m) Immunogenicity and safety of vaccines at various levels of immunosuppression, as well as the effectiveness of vaccines in the prevention of clinical diseases in SOT.n patients) Optimal interval between live vaccination and transplantation, as well as optimal timing of vaccination after transplantation. Inflammatory Diseases) The effectiveness and safety of chickenpox vaccination in patients with chronic inflammatory diseases that are treated with treatments that cause mild immunosuppression.p) Immunogenicity and safety of the adjuvant influenza vaccine in patients with chronic inflammatory diseases are treated with biological agents such as antibodies against TNF.

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(pg. -) ABBREVIATIONs AAP, American Academy of PediatricsBCG, Bacillus Calmette-GerincART, CDC combined antiretroviral therapy, Centers for Disease Control and Prevention, chronic granulematosis, trust, cell-mediated immunityCSF, cerebrosal fluidCVID, general variable immunodeficiency, DiJorgeDPT syndrome, ditheria toxicoid, whole cell whooping cough vaccines, tetanus toxoid, acellular vaccine against whooping coughGVHD, vaccination against host diseaseanti-HBs, antibodies to EPB surface antigenHBIG, hepatitis B immune globulinHBsAg, hepatitis B surface antigenHBV, hepatitis B virusHepA, hepatitis A vaccineHepB, hepatitis B vaccineHib, Haemophlius influenza type B vaccine Human immunodeficiency virus quadrivalent vaccine against human papillomavirusHSCT, hemathopo-poetic stem cell transplantation, herpes lister, inflammatory bowel disease, Society of Infectious Diseases of America -γ/IL-12, interferon-gamma/interleukin-12IGIV, immune globulin intravenousinIIV, inactivated flu vaccine, inactivated polio vaccine, live influenza vaccineMBL, mannin-binding lectinMCV4, meningococcal conjugated vaccine, quadrivalent MMR, measles, mumps, and rubella vaccineMMRV, MMR-varicellaMTX vaccine, methotrexateNK, natural killerOPV, oral polio vaccine, n nevmococococative conjunctritic conjunctritic vaccinepDGS, partial DiGeorgePPSV syndrome, pneumococcharic polysaccharide vaccineRA, rheumatoid arthritis, severe combined immunodeficiency, systemic lupus erythematos, organ transplantation, specific deficiency of polysaccharide antibodies , Standards and Practice Guidelines, tetanus toxoid, decrease in diphtheria toxic vaccineTdap, tetanus toxoid, decrease in diphtheria toxoid, and decreased acellular whooping cough vaccineTNF, tumor necrosis factor, tetanus toxoidVAPP, vaccine-related paralytic polio, varic vaccineellaV siyavula physical science grade 11 pdf download. siyavula physical science grade 11 teachers guide pdf download. siyavula physical science grade 11 caps pdf download. siyavula physical science grade 11 answers. siyavula physical science grade 11 pdf