Table 2. Key concepts

1. Adults with IBD should follow the ACIP recommendation and should not receive a live vaccine if on immune-modifying therapy
2. Adults with IBD should receive age-appropriate vaccinations before initiation of immune-modifying therapies when possible
3. All adult patients with IBD should receive annual influenza vaccine
4. Adult patients with IBD receiving immune-modifying therapies and their household contacts should receive the nonlive trivalent inactivated influenza vaccine but not the live inhaled influenza vaccine
5. All adult patients with inflammatory bowel disease 75 yr and older should receive a respiratory syncytial virus vaccine
6. All adult patients with inflammatory bowel disease aged 50–74 yr with certain chronic medical conditions or other risk factors for severe RSV disease should receive a respiratory syncytial virus vaccine
7. Adults with IBD should be evaluated for varicella immunity before initiating immune-modifying therapy, through either a documented history of chickenpox infection or completion of a 2-dose varicella vaccine series. Serologic testing is not recommended in previously vaccinated individuals because of the high false-negative rates. If nonimmune status is confirmed, vaccination should be completed before initiating immune-modifying therapy when possible
8. Household members of patients receiving immune-modifying therapies can receive live vaccines with certain precautions
9. Vaccinations against Tdap, HAV, HPV, and meningococcus should be administered according to the ACIP Recommendations
10. Adults with IBD should receive vaccination against hepatitis B if not immune
11. All patients with Crohn's disease and ulcerative colitis should be screened for depression and anxiety at baseline and annually. Patients who screen positive for anxiety and/or depression should be referred for counselling/therapy

ACIP, Advisory Committee on Immunization Practices; HAV, hepatitis A virus; HPV, human papillomavirus; IBD, inflammatory bowel disease; RSV, respiratory syncytial virus.

recommend that specialists share the responsibility for recommending and administering appropriate vaccines (9). Therefore, gastroenterologists should be aware of the necessary vaccines for their patients with IBD and play an active role in ensuring that their patients are up to date with the adult immunization schedule.

Simple office measures can easily be implemented to improve vaccination rates in clinical practice (10). In 1 study, vaccination rates for a high-risk IBD population were significantly improved by using a checklist as part of a quality improvement intervention (11). In other studies, making influenza and pneumococcal vaccinations available in the gastroenterologists' office increased vaccination rates significantly (12–14). As gastroenterologists typically prescribe drugs that alter the immune system, it is incumbent that providing vaccination and health maintenance recommendations are part of the high-quality complete care offered in our practices (15). Other checklists that review vaccination and general health maintenance recommendations for patients with IBD are also available (16,17).

Principles of vaccination

Vaccines are used to stimulate the immune system to produce a response that prevents or reduces the severity of vaccine-preventable diseases. They contain antigens that result in an immune response similar to that observed after a natural infection without morbidity from the disease. Currently, several types of vaccines are available.

Key concept

1. Adults with IBD should follow the Advisory Committee on Immunization Practices (ACIP) recommendation and should not receive a live vaccine if on immune-modifying therapy.

LIVE ATTENUATED VACCINES

Live vaccines contain weakened or attenuated versions of viruses or bacteria that undergo limited replication upon administration and induce an immune response without causing disease. The vaccine-induced immune response to a live vaccine is similar to that observed after natural infection. The vaccine is usually effective after a single dose and the protection is of a longer duration. For example, a second dose of measles, mumps, and rubella (MMR) vaccine and varicella vaccines are used to provide an additional opportunity to induce a protective immune response that provides sustained immunity rather than as a booster after the first dose (18,19). Live vaccines are generally contraindicated in patients with IBD on immune-modifying therapy because of concerns that they may result in serious infections by attenuated viruses or bacteria. Emerging evidence suggests that certain live vaccines may be safe in some immunosuppressed patients depending on the type of immunosuppressive regimen and the live vaccine. A study of 17 children with IBD or autoimmune hepatitis receiving immunosuppressive therapy showed that varicella vaccination was safe and well tolerated (20). Furthermore, a systematic review of live vaccinations on immunosuppressive therapy in patients with immune-mediated inflammatory diseases, solid organ transplantation, or after bone marrow transplantation found that serious adverse events and infections related to varicella-zoster virus (VZV) vaccines were rare (21). While the review evaluated the safety of 8 live vaccines, more than 95% of the doses administered were of the live attenuated herpes zoster (HZ) vaccine. This is a limitation because the goal of the live HZ vaccine is to boost VZV specific cell-mediated immunity and not to induce primary protection against VZV such as the varicella vaccine and other live vaccines. In the review, 202 doses of varicella vaccine were administered to people with immune-mediated diseases on different types of immunosuppressive therapy resulting in 2 cases of varicella. Despite these limitations, disseminated infections have been reported in immunosuppressed