



Taking a JAB at How Gastroenterologists Can Increase Vaccination Rates in Patients with Inflammatory Bowel Disease

Mazen Almasry¹ · Freddy Caldera²

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The development of new biologic agents including anti-tumor necrosis factor (TNF) inhibitors, interleukin (IL)-23 antibodies, anti-integrin antibodies, and small molecules is associated with higher rates of clinical remission and mucosal healing than for conventional therapies, revolutionizing the treatment of IBD [1]. Although these agents have proven benefit in controlling disease activity, some of them increase the risk for infections, including some vaccine-preventable diseases (VPD) such as influenza, invasive pneumococcal disease, and herpes zoster [2]. Furthermore, immunological dysregulation by the disease itself increases infection risk [1]. Since patients with IBD admitted for VPD had higher rates of intensive care unit stay, shock, and acute kidney injury [3], patients with IBD should receive age-appropriate immunization based on the adult immunization schedule per the Advisory Committee on Immunization Practices (ACIP). Despite their increased risk for infections and preventive care guideline recommendations, patients with IBD historically have suboptimal rates of vaccine uptake [4].

In this issue of *Digestive Diseases and Sciences*, Patel et al. conducted a systematic review and meta-analysis comparing several interventions intended to increase vaccination rates among patients with IBD and those with rheumatoid arthritis (RA) [5]. They subclassified interventions into four groups: (1) patient-oriented, (2) physician-oriented, (3) combined patient + physician-oriented, and (4) barrier-oriented

(i.e., navigator systems, which are defined as persons whose primary responsibility is to provide personalized guidance to patients as they navigate through the health system) (Table 1). Their primary outcome was to determine if any of the interventions increased pneumococcal vaccine uptake [either pneumococcal polysaccharide vaccine (PPSV23) or pneumococcal conjugate (PCV 13)]. The study focused primarily on pneumococcal vaccine given that it is the most studied vaccine based on the descriptive review of the studies included. A secondary outcome was to determine if any of the four interventions increased influenza vaccine uptake.

Fifteen studies evaluating interventions to improve vaccine uptake among patients with IBD met the inclusion criteria, of which 14 were included in the meta-analysis. There were 508 patients in the pre-intervention and 1224 patients in the post-intervention arm. All interventions (patient-oriented, physician-oriented, combined patient + physician-oriented, or barrier-oriented) were associated with higher pneumococcal vaccine uptake compared with no intervention (OR 4.74; 95% CI 2.44–6.56, $I^2 = 90%$). Eight studies evaluating vaccine intervention in patients with RA met the inclusion criteria of which six were included in the meta-analysis. There were 3215 patients in the pre-intervention arm and 4399 patients in the post-intervention arm. Similarly, all interventions (patient-oriented, physician-oriented, combined patient + physician-oriented, or barrier-oriented) were associated with higher pneumococcal vaccine uptake compared with no intervention (OR 2.74; 95% CI 1.80–4.17, $I^2 = 95%$). On the other hand, influenza vaccination was the second-most studied vaccination. Similarly, all intervention types increased influenza vaccination uptake among patients with IBD.

The results of this study suggest that any intervention (patient-oriented, physician-oriented, or barrier-oriented) can help increase rates of vaccine uptake among patients with IBD. Interventions that improved the uptake of a pneumococcal vaccine may be used to increase the uptake for other vaccines that are not provided on an annual basis but

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✉ Freddy Caldera
fcaldera@medicine.wisc.edu

¹ Department of Medicine, University of Wisconsin School of Medicine & Public Health, Madison, WI, USA

² Division of Gastroenterology and Hepatology, Department of Medicine, University of Wisconsin School of Medicine & Public Health, 1685 Highland Avenue, Madison, WI 53705-2281, USA

Table 1 Interventions associated with higher vaccination uptake

Interventions associated with higher vaccination uptake	
Type of intervention	Examples
Patient-oriented	<ul style="list-style-type: none"> ❖ Patient reminders <ul style="list-style-type: none"> • Portal messages • Vaccination cards ❖ Patient Education <ul style="list-style-type: none"> • Questionnaire • Educational vaccination form • Educational session to review core quality measures
Physician-oriented	<ul style="list-style-type: none"> ❖ Physician reminders Electronic medical records interventions (note templates or order sets) <ul style="list-style-type: none"> • Oral and written reminders at staff meetings <ul style="list-style-type: none"> ❖ Physician Education Questionnaire
Barrier-oriented	<ul style="list-style-type: none"> ❖ Healthcare navigation (i.e., designated nursing/medical assistant) ❖ Outreach programs

are required for adults with IBD such as herpes zoster vaccine, tetanus-diphtheria-acellular pertussis (Tdap) vaccine, hepatitis B vaccine, and hepatitis A vaccine [6]. In contrast, the results of the influenza vaccine are generalizable to the coronavirus disease 2019 (COVID-19) vaccine since in the future it will likely be recommended annually. Though the results might be limited given that most studies included determined the vaccination status via patient self-report, the study by Smith et al. concluded that self-reported immunization status is an effective way to determine influenza immunization status and provides valuable information for the receipt of pneumococcal vaccine in patients with IBD [7]. Though the high heterogeneity of the results might suggest that they are due to multiple intervention effects rather than a single intervention, randomized controlled trials are needed to confirm this assumption.

Improving vaccine uptake among patients with IBD, especially those receiving immunomodulatory agents, can help decrease the morbidity and mortality associated with VPD. COVID-19 has increased the risk of VPD outbreaks given the substantial decrease in uptake for other adult vaccines that part of the adult immunization schedule [8]. Furthermore, more telemedicine visits were adopted by IBD providers to care for patients in response to the pandemic, a practice expected to continue post-pandemic as well. Therefore, vaccination status and compliance with current guideline recommendations must be assessed irrespective of whether the visit occurs in the office or via telemedicine [9].

Patients with IBD receive fewer preventive care services when compared with general medical patients [2]. The lack of consensus regarding whether IBD providers or primary care physicians should take responsibility for providing immunization is a primary reason for missing essential vaccinations [2]. Although most gastroenterologists perceive vaccinations as “extremely important”, only about 50% routinely collected vaccination status information from patients

with IBD [10]. Although almost half of the gastroenterologists felt that primary care physicians should take responsibility for vaccination administration, some primary care physicians felt that gastroenterologists should be responsible [10]. Given the hesitancy by both primary care physicians and gastroenterologists in taking ownership of vaccinations, the American College of Gastroenterology (ACG) preventive care IBD guidelines suggest that vaccination recommendations should be the responsibility of the IBD provider, whereas vaccine administration can be shared [2]. Hence, gastroenterologists should share equal responsibility with primary care physicians in order to ensure that patients are vaccinated [9]. Also, gastroenterologists should actively guide primary care providers about the unique vaccination needs of patients with IBD.

Ideally, vaccines should be administered by gastroenterologists and hepatologists when patients during clinic visits. Strategies described by Bhat et al. [9] can help implement a successful vaccination program in outpatient gastroenterology practices; the first step is to identify a “vaccine champion” whether a physician, advanced practice provider, pharmacist, or IBD nurse who promotes vaccination practices by educating health care providers on the following: new vaccine recommendations; why specific vaccines are recommended for patients with IBD (e.g., recombinant herpes zoster vaccine recommended for all adults 19 years of age and older due to their increased risk of infection); discussing common adverse events from specific vaccines; and correcting misperceptions that vaccines exacerbate underlying diseases. The “vaccine champion” can also implement delegation protocols in order to administer selected vaccines by a medical assistant or nurse without a provider’s order. Collaboration with pharmacy departments is essential since they can assist with purchasing and managing vaccine inventory in order to minimize waste. If vaccines cannot be provided in the clinic, a review of vaccination needs should be

conducted to determine where vaccines will be given. Vaccine orders can be sent to primary care providers or vaccines can be administered at infusion centers or endoscopy suits. Otherwise, if vaccines cannot be provided within the health system, patients should be referred to pharmacies with vaccination recommendations.

In conclusion, since the study by Patel et al., showed that many different types of interventions are useful in improving vaccine uptake, gastroenterology providers should strongly consider implementing an intervention based on the strengths of their clinic or health system to improve vaccine uptake among their patients with IBD.

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Declarations

Conflict of interest None for all authors.

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