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Immunizations

Prior to vaccination

Titers

Check immunization history at diagnosis.

- Hepatitis B, hepatitis A, MMR, and varicella titers are helpful to check for adequate antibody level, especially if vaccine history is unclear.
  - If titers for hepatitis B are negative, a 3-dose booster series is recommended. Titer can be rechecked 1 month after first dose. If adequate response (≥ 10 mIU/ml) after first booster, no further vaccination is needed. If inadequate response (<10 mIU/ml), provide up to 3 total boosters, as needed (Brenner Jhaveri, Kappelman, & Gulati, 2019); (Moses et al, 2012); (Phatak, Rojas-Velasquez, & Pashankar, 2018).
  - If titers for MMR (measles, mumps and/or rubella) or varicella are negative, consider revaccination. See section on live virus vaccines below (Lu & Bousvaros, 2014).

Special testing

- Epstein-Barr virus (EBV): Before starting thiopurines, obtaining EBV titers may have some utility.
  There is possibly an increased risk of hemophagocytic lymphohistiocytosis (HLH) in patients with Crohn's disease who have not had a prior infection with EBV, especially if using thiopurines (Defilippis, Sockolow, & Barfield, 2016).

Inactivated vaccines

Should be administered as per the CDC vaccination schedule. Inactivated vaccines are safe for those on immunosuppression (Defilippis, Sockolow, & Barfield, 2016).

Vaccines should be given prior to planned immunosuppression, if possible (Rubin et al., 2014).

Inactivated influenza vaccine	Yearly (Difilippis et al., 2016)	
Pneumococcal vaccine	**If immunocompromised:** Pediatric patients (>6-18) with IBD who have not received PCV13 (Prevnar) should: • Receive a single dose of PCV13 • Be followed at least 8 weeks later by PPSV23 (Pneumovax) A second PPSV23 dose should be administered 5 years later for children ages >6 to 18 (Difilippis et al., 2016).	
HPV vaccine	Recommended to be given routinely for both males and females at age 11 to 12 years, regardless of whether or not they are receiving immunosuppressive therapy (Difilippis et al., 2016). HPV vaccine can be given at any time beginning at ages 9 years to 26 years of age. • A 2-dose schedule is recommended if patient is vaccinated before 15th birthday.	**Why:** To help prevent cervical, vulvar, and vaginal cancer in females, penile cancer in males, and oropharyngeal and anal cancer in both (Difilippis et al., 2016)

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	• A 3-dose schedule is recommended for those who are immunosuppressed or who start the series after their 15th birthday (Centers for Disease Control and Prevention, 2017)	

Live virus vaccines

- Should be administered at least 4 weeks prior to immunosuppression (Rubin et al., 2014).
- Should be avoided within 2 weeks of starting immunosuppression (Rubin et al., 2014).
- Immunosuppressive therapy should be discontinued for at least 3 months before administering live vaccines except corticosteroids, which should be discontinued for at least 1 month (Lu & Bousvaros, 2014).

Vaccination of immunocompetent household members of immunocompromised patients

Immunocompetent household members of immunocompromised patients:

- Can safely receive inactivated vaccines as recommended by CDC schedule.
- Should receive the influenza vaccine yearly, starting at 6 months of age.
- Are recommended to receive MMR, rotavirus, varicella, and zoster vaccines.
  - Those who are highly immunocompromised should avoid handling infant diapers for 4 weeks after infants receive the rotavirus vaccine.
- Immunocompromised patients should avoid contact with those who develop skin lesions after varicella or zoster vaccine, until lesions are clear (Rubin et al., 2014).
- Yellow fever and oral typhoid vaccines for travel are safe.
- Oral polio vaccine should not be given (Rubin et al., 2014).

Cancer Prevention

Colon Cancer	Colon cancer screening via colonoscopy: • Should be performed starting 8 years from the time symptoms/diagnosis started in those with ulcerative colitis and Crohn's colitis involving at least one third of their colon, and repeated every 1-2 years* (Clarke & Feuerstein, 2018). • Those with both UC and primary sclerosing cholangitis (PSC) require annual to bi-annual colonoscopy with biopsies for colon cancer surveillance (Difilippis et al., 2016).	*frequency is variable according to different practices and extent of disease. See page 6 for link to another pediatric checklist for more guidance.
Skin Cancer	All children and adolescents with IBD should use sun protection. • Wear sun-protective clothing • Use sunscreen with SPF of 15 or higher • Seek shade • Limit activities outdoors between 10am and 4pm	**Why**: Due to increased risk with IBD and some medications used in treatment (Difilippis et al., 2016)

	• Avoid indoor tanning (Difilippis et al., 2016)	
Cervical Cancer	The recommendations for the pediatric IBD population are unclear and often conflicting. • General recommendations are to start screening females in the general population at 21 years of age and then every 3 years. • There are no recommendations for earlier screening for immunocompromised women without HIV (Committee on Practice Bulletins-Gynecology, 2016). AGA recommends: Yearly cervical cancer screening for sexually active females with IBD if on immunosuppressive therapy (Reich, Wasan, & Farraye, 2017).	**Why**: Due to increased risk of high-grade cervical dysplasia and cervical cancer in patients with IBD on immunosuppressive therapy (Reich, Wasan, & Farraye, 2017)

Bone Health

DEXA	**When:** There is no true consensus on DEXA for every pediatric IBD patient. The international Society for Clinical Densitometry recommends that DEXA be considered (when feasible): **At baseline:** • DEXA of total body minus head (TBMH) should be considered for children and adolescents with IBD who are at risk <u>at baseline,</u> and should be repeated at no less than 6-month intervals for those found to have abnormal results (DeFilippis et al., 2016). **For those at risk:** • DEXA of total body minus head (TBMH) or spine should be considered for children and adolescents who are **at risk** every 1–2 years for those with z score (< -1) at any point (Breglio & Rosh, 2013; Pappa et al., 2011).	**Who is at risk:** Children and adolescents with: • Suboptimal growth velocity • Height z score <-2SD • Decline in height across percentiles • Poor weight gain • Weight or BMI <-2SD • Decline in weight or BMI across percentiles • Amenorrhea (Primary or Secondary) • Pubertal Delay • Severe IBD course (with hypoalbuminemia (<3) • Continuous steroid use for > 6 months • History of low-trauma fractures

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Eye Health		
Optometry/Ophthalmology Examination including visual acuity, slip lamp exam, intraoclular pressure (IOP), & anterior and posterior chambers (Difilippis et al., 2016)	**How often:** Every 1–2 years (DeFilippis et al, 2016)	**Why:** Due to risk of uveitis, conjunctivitis, episcleritis, and risk of increased IOP from corticosteroids (Difilippis et al., 2016)
Skin Health		
Skin examination • Self-exam • Provider exam • Dermatology referral*	**How often:** Annual surveillance (Difilippis et al., 2016) *Dermatology referral: • Those with any new or suspicious skin lesions (Rufo, 2017). • Those on immunosuppression should be followed by a dermatologist annually. • For those with a history of skin cancer, they should be seen every 4–6 months (Farraye, Melmed, Lichtenstein & Kane, 2017; Mir & Kane, 2018).	**Why:** Due to the risk of skin cancer and other skin manifestations of IBD. (DeFilippis et al, 2016)
Mental Health		
At routine office visits, it is important to inquire about: • changes in mood • behavior changes • performance	It is recommended that routine assessment of depression and anxiety in IBD patients be performed annually, and when depressive or anxiety symptoms appear (Farraye, Melmed, Lichtenstein & Kane, 2017; Mir & Kane, 2018).	Those found to be affected should be referred for mental health counseling (Szigethy et al., 2004).

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Vital Signs

Blood pressure: Should be monitored at routine visits and annual health maintenance visits. (Rufo et al, 2012)	**Why:** To monitor for evidence of hypertension. Children and adolescents with IBD are at increased risk of hypertension due to: • Use of corticosteroids. It often improves with their discontinuation. • Renal disease from medications

Height, weight, and BMI: There are no absolute guidelines for monitoring growth parameters. Recommendations often followed include:
• Measurements during routine office visits
• Measurements based on status of disease
  • Quiescent disease — Every 4–6 months
  • Active disease — More frequently
  • For those with (More frequently):
  • Nutritional risks
  • Nutritional failure
  • Growth delay
  • Growth failure
(Rufo et al., 2012)	

Tanner staging: Should be done annually for: • Girls starting at age 9 • Boys starting at age 10 (Rufo et al., 2012)	

Special Considerations

TB screening • PPD (TST) • Quantiferon TB Gold (IGRA) • T spot (IGRA) • CXR (if + get CXR) TB screening is recommended to be done: • At the time of diagnosis and • Prior to the initiation of immunosuppression and/or use of biologics *Consider using both TST and IGRA to improve sensitivity of testing (Ardura et al., 2016).. There is currently no consensus for routine TB screening thereafter. Consider repeat assessment for: • Those with TB risk factors (Ardura et al., 2016).	**TB risk factors** Birthplace Travel to endemic regions Disease exposure Exposure to high-risk populations • Those who are homeless, HIV positive, and/or living in shelters • Those with foreign travel to endemic areas **Those who are symptomatic** • Fever • Fatigue • Poor weight gain • Night sweats • Weight loss • Persistent cough for >2 weeks

• Those on immunosuppression and/or biologics Assessment includes: • Performance of a risk factor assessment. • If positive, consider repeat TB screening test. Type of testing and frequency of testing is currently unknown.	
Tobacco smoking: Obtaining a smoking history should be considered at annual health maintenance visits as appropriate. • If positive, patients should be encouraged to stop smoking (Reich, Wasan, & Farraye, 2017). Anticipatory guidance about the risk of tobacco smoking and IBD should be provided during health maintenance visits and as needed.	
Alcohol: Obtaining an alcohol use history should be considered at health maintenance visits as appropriate. • If positive, patients should receive anticipatory guidance on the risks of alcohol abuse and IBD flares, interactions with IBD medication, and overall health effects (Kane, 2017).	
Marijuana: Obtaining a marijuana use history should be considered at health maintenance visits as appropriate.	**Why:** Marijuana use among adolescents and young adults with IBD is common (Hoffenberg et al., 2018).

Please visit the Foundation's one-page pediatric checklist:
https://www.crohnscolitisfoundation.org/science-and-professionals/education-resources/health-maintenance-checklists

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Acknowledgement:

Developed by: Whitney Gray MSN ARNP (lead), Teri Jackson MSN ARNP, and Maureen Kelly DNP ARNP. Reviewed by the Crohn's & Colitis Foundation's Nurse & Advanced Practice Committee. January 2020.