Considerations for the Management of IBD in Older Adults

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These materials were created in conjunction with Pfizer Inc.

Contents

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Overview of IBD in Older Adults

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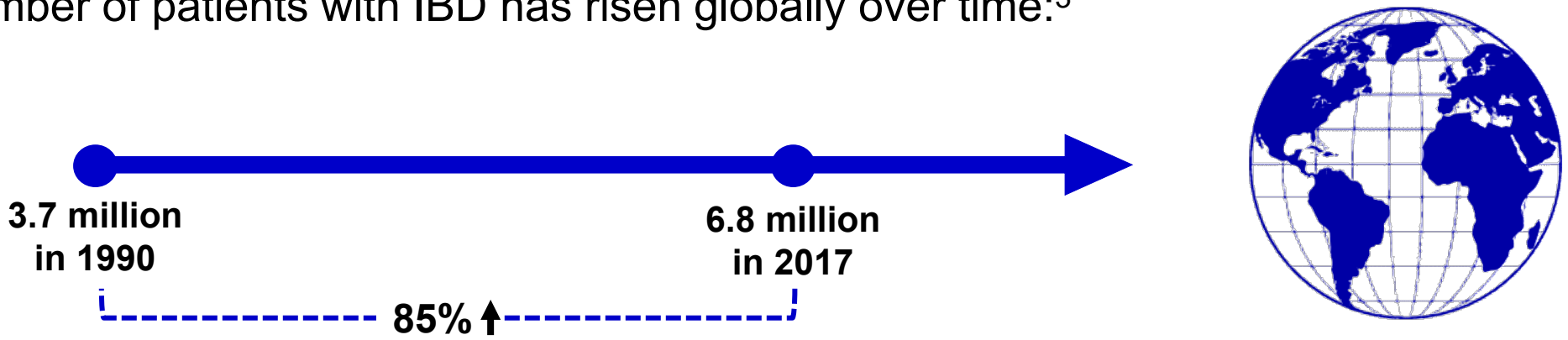
IBD in Older Adults

- IBD can present at any age[1]
  - There is no accepted cutoff age for older adults, and the definition varies between studies; previously published studies on IBD have defined older adults as either ≥60 or ≥65 years of age[1,2]
- The number of patients with IBD has risen globally over time:[3]



- As the world population continues to age, there will be an increase in older patients with IBD; it is critical to understand the epidemiology of this chronic disease among an older population[4]

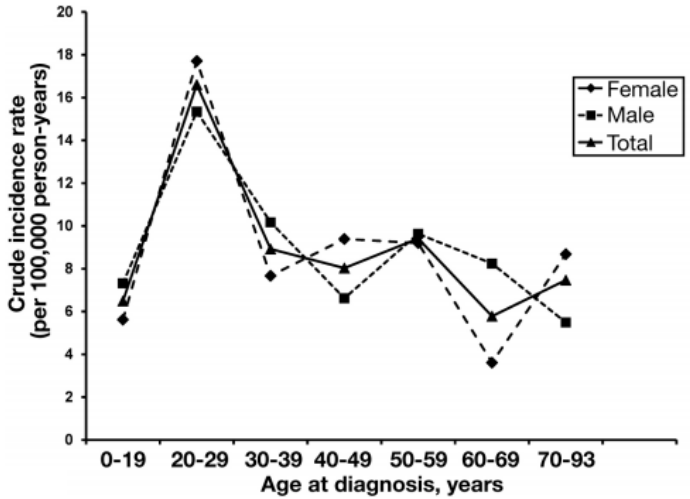
IBD=inflammatory bowel disease.

1. Ananthakrishnan AN, et al. *Gastroenterology*. 2021;160(1):445-451. **2.** Arnott I, et al. *Inflamm Intest Dis.* 2018;2(4):189-199. **3.** Collaborators GBDIBD. *Lancet Gastroenterol Hepatol*. 2020;5(1):17-30. **4.** Xu F, et al. *MMWR Morb Mortal Wkly Rep*. 2021;70(19):698-701.

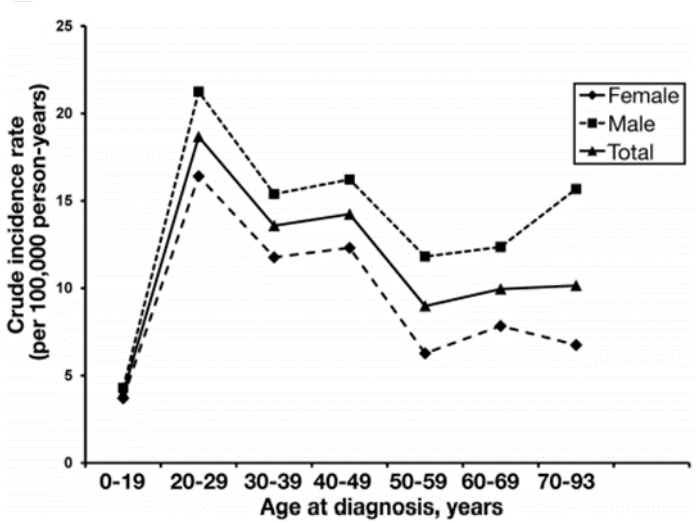
Epidemiology of IBD in the US

- Irrespective of age at diagnosis, epidemiologic studies have estimated that about 25% to 35% of individuals with IBD are >60 years of age[1]
- About 10% to 15% of patients with IBD will receive their diagnosis at >60 years of age[2]

Incidence of CD by Age Group in Olmsted County, Minnesota (1970-2010; N=410)[3]



Incidence of UC by Age Group in Olmsted County, Minnesota (1970-2010; N=483)[3]



Note: In this population-based study, there may be limited follow-up in some cases, especially in those instances when patients moved out of the county. The county has a relatively small population and is not as racially and ethnically diverse as much of the US.

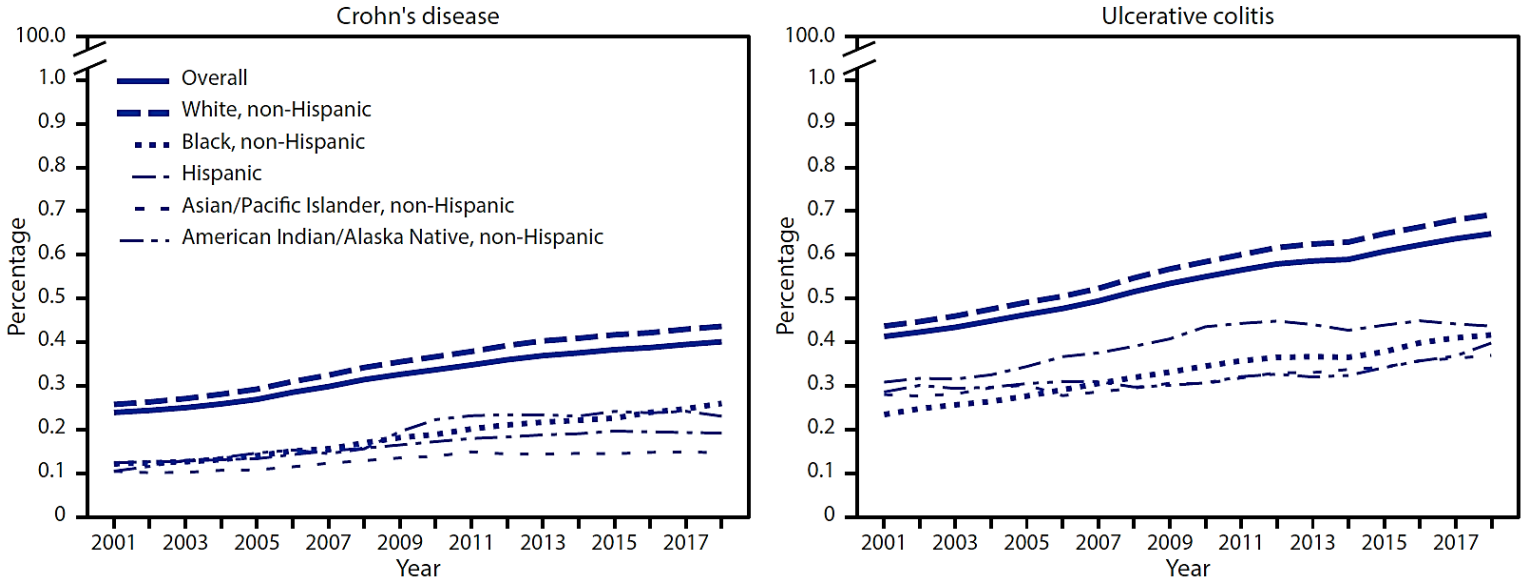
CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.

1. Arnott I, et al. *Inflamm Intest Dis.* 2018;2(4):189-199. **2.** Ruel J, et al. *Nat Rev Gastroenterol Hepatol.* 2014;11(2):88-98. **3.** Shivashankar R, et al. *Clin Gastroenterol Hepatol.* 2017;15(6):857-863.

Increasing Prevalence of IBD in Older Adults in the US

Medicare Fee-for-Service Data in Patients Aged ≥67 Years (~23 Million to 26 Million Patients per Year) by Age-Adjusted Prevalence[a] of CD and UC in US From 2001 to 2018[b]

- Among patients aged ≥67 years, prevalence of CD was higher in those aged 67 to 74 years, whereas the prevalence of UC was higher in those aged 75 to 84 years
- IBD prevalence is expected to increase as the US population ages and as the time to diagnosis continues to improve



Note: Based on reimbursement data, certain socioeconomic measures (eg, income and education) could not be assessed, and diagnosis codes might be subject to coding errors. Also, study population was limited to Medicare fee-for-service beneficiaries (67% of all Medicare beneficiaries), and findings might not be generalizable to all older adults in the US.

[a]Age adjusted to the 2000 US Census population aged ≥67 years based on 3 age groups (67-74, 75-84, and ≥85 years). Trends in age-adjusted prevalence were assessed in linear regressions weighted with the estimates-associated inversed standard errors. The estimated prevalence was natural logarithm transformed. [b]The conversion from the *International Classification of Diseases, Ninth Revision* diagnosis codes to the *International Classification of Diseases, Tenth Revision* diagnosis codes occurred on October 1, 2015.

CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.

Xu F, et al. *MMWR Morb Mortal Wkly Rep*. 2021;70(19):698-701.

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Diagnosis of IBD in Older Patients

- Diagnosis of older-onset IBD (age ≥60 years) may be delayed and misdiagnosis is common[1]
  - Delay in diagnosis of up to 6 years reported in older patients, compared with 2 years in younger adults with IBD[1]
  - Approximately 60% of older patients may be misdiagnosed, compared with approximately 15% of younger patients[2]
  - Several diseases (eg, ischemic colitis and motility disorders) may mimic clinical presentation of IBD[1]
- Accurate differentiation between IBD and other diseases is needed for appropriate management in this patient population[1]

Differential Diagnosis of IBD[1]

Disease	Clinical characteristics
Infectious gastroenteritis/colitis	Acute onset of diarrhea with possible blood, fever, dysentery
NSAID-induced colitis	Diarrhea with possible blood, abdominal pain, IDA, obstruction, perforation
Ischemic colitis	Acute onset of abdominal pain followed by bloody diarrhea, associated with food intake
Segmental colitis associated with diverticulosis	Bloody stools, diarrhea, abdominal pain
Radiation colitis	Bloody diarrhea, abdominal pain, urgency, tenesmus; symptoms occur weeks to years after abdominal/pelvic radiation
Microscopic colitis	Non-bloody diarrhea, predominant in females
Diversion colitis	Occurs in surgically diverted bowel loop, mostly asymptomatic but can have abdominal pain and bloody/mucous discharge
Solitary rectal ulcer syndrome	Bloody diarrhea with straining, rectal bleeding, straining, pelvic fullness

IBD=inflammatory bowel disease; IDA=iron deficiency anemia; NSAID=nonsteroidal anti-inflammatory drug.

1. Arnott I, et al. *Inflamm Intest Dis.* 2018;2(4):189-199. **2.** Katz S, Pardi DS. *Am J Gastroenterol*. 2011;106(11):1889-1897.

Clinical Characteristics in Older Patients With IBD

- Patients with older-onset IBD may present with more benign phenotypes than those with younger-onset IBD; however, it is unclear whether these patients have more favorable clinical outcomes[1]
- In CD, those with older-onset:
  - May be more likely to have isolated colonic disease and less likely to have penetrating disease or perianal disease[1]
  - May present with more rectal bleeding and less diarrhea, abdominal pain, and weight loss[2]
- In UC, those with older-onset:
  - May be more likely to have left-sided disease[1]
  - May experience less rectal bleeding and abdominal pain[2]
- Family history of IBD and extraintestinal manifestations may be less common in older patients with IBD[3]

Location and Disease Phenotype at Diagnosis in Patients With IBD Across Different Age Groups of Onset[4,a]

Location and phenotype	Adult-onset	Older-onset
Crohn's disease		
Location	L3>L2>L1	L2>L3>L1
Phenotype	B1>B2>B3	B1>B2>B3
Ulcerative colitis		
Location	E1 & E2>E3	E2>E1>E3

Table adapted from Ruel et al. *Nat Rev Gastroenterol Hepatol.* 2014;11(2):88-98.

L1=terminal ileum; **L2**=colon; **L3**=ileocolonic disease

B1=inflammatory phenotype without stricture formation and penetrating disease; **B2**=stricturing disease; **B3**=penetrating disease

E1=proctitis; **E2**=left-sided disease; **E3**=extensive disease

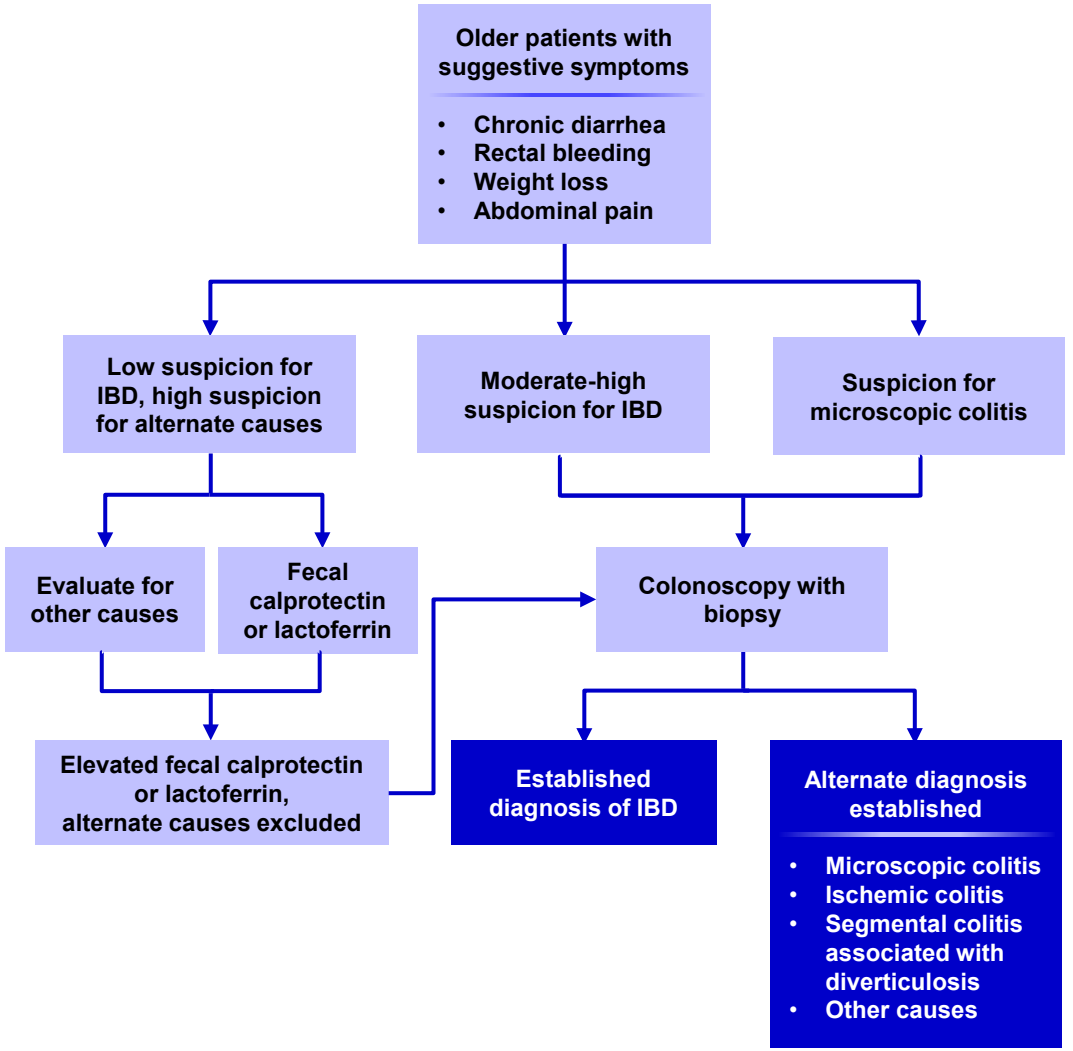
[a]Diagnosis according to the Montreal classification.

CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.

1. Ananthakrishnan AN, et al. *Gastroenterology*. 2021;160(1):445-451. **2.** Tran V, et al. *Curr Gastroenterol Rep.* 2019;21(11):60-69. **3.** Nimmons D, Limdi JK. *World J Gastrointest Pharmacol Ther.* 2016;7(1):51-65. **4.** Ruel J, et al. *Nat Rev Gastroenterol Hepatol.* 2014;11(2):88-98.

Diagnostic Algorithm for Older Patients with IBD

- IBD should be considered in older patients (aged ≥60 years) who present with diarrhea, rectal bleeding, urgency, abdominal pain, or weight loss
- First diagnostic step should involve laboratory investigations that include a complete blood count and serum albumin, serum ferritin, and C-reactive protein levels
- Cross-sectional imaging with CT is appropriate in older persons who present with acute symptoms because it can also rule out other diagnoses (eg, ischemic colitis, diverticular disease)
- Colonoscopy with histologic confirmation remains a cornerstone of diagnosis



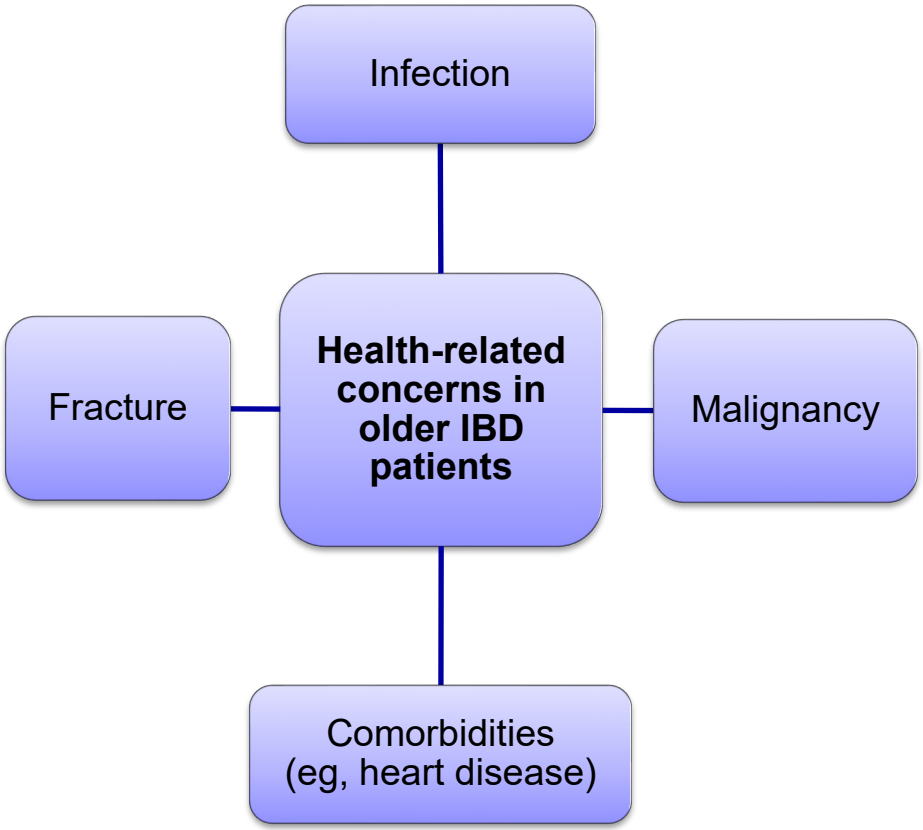
CT=computed tomography; IBD=inflammatory bowel disease.

Ananthakrishnan AN, et al. *Gastroenterology*. 2021;160(1):445-451.

Disease Management Considerations

Disease Management Considerations for Older Patients With IBD

- Older patients with IBD have different health-related issues to consider compared to younger patients with IBD, such as
  - Comorbid conditions including heart disease, diabetes, cancer, psychiatric disorders, and arthritis[1]
  - Increased risk of infection, which may be due to age-related immunosenescence, higher risk of disease progression, and prolonged immunosuppressive drug exposure[2,3]
  - Higher risk of malignancy[4]
  - Increased risk of fractures[5]



IBD=inflammatory bowel disease.

1. Arnott I, et al. *Inflamm Intest Dis.* 2018;2(4):189-199. **2.** Khan N, et al. *Inflamm Bowel Dis.* 2020;26(3):462-468. **3.** LeBlanc FJ, et al. *World J Gastroenterol.* 2019;25(30):4158-4171. **4.** Ananthakrishnan AN, et al. *Gastroenterology.* 2021;160(1):445-451. **5.** Oh H, et al. *J Bone Metab.* 2018;25(4):213-217.

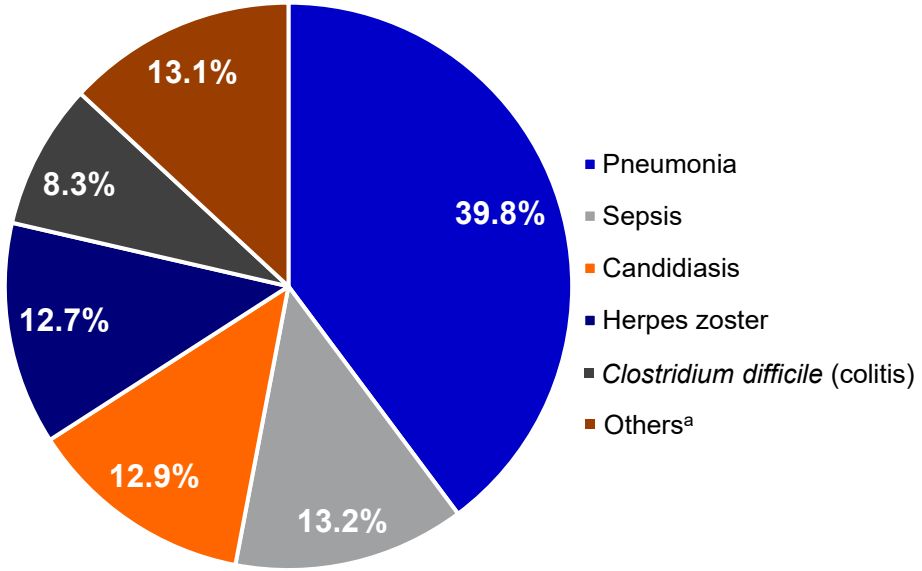
Infection in Older Patients With IBD

Relative immunodeficiency in older patients, as well as an altered drug metabolism, raises concerns for increased risk of infection with immunosuppressing agents[1]

- A retrospective study of 63,759 patients with IBD (Truven database) initiating corticosteroids, immunomodulators, or biologic therapy from January 2010 to December 2014 aimed to determine risk of infections among an older IBD patient population (≥65 years)[2]
  - Age was an independent risk factor for infection in patients with IBD, with the older cohort having a 27% higher risk of infection compared with the younger cohort (HR: 1.27, *P*<0.0001)
  - Steroid use (HR: 1.40, *P*<0.0001), biologic use (HR: 1.64, *P*<0.0001), immunomodulator therapy (HR: 1.32, *P*<0.0001), and polypharmacy (HR: 1.32, *P*<0.0001) were also associated with higher risk of infection

Note: In this population-based study, the database comprised only commercially insured individuals; the database also lacked information on certain confounders. The study was also limited by having only a partial measure of the length of time patients had lived with IBD before entering the study. In addition, JAKis were not included in this study, because the data were collected between 2010 and 2014, prior to FDA approval of JAKis for the treatment of patients with moderately to severely active UC.[2,3]

Distribution of Infection Types in Patients Aged 65 Years or Older[2]



[a]Remaining infection distribution: abscess of intestine (4.5%); herpes simplex (4.2%); bacteremia (1.2%); acute pyelonephritis (1.1%); primary tuberculosis (0.6%); other (1.5%; includes histoplasmosis, cytomegaloviral disease, coccidioidomycosis, disseminated mycobacterium avium complex, aspergillosis, toxoplasmosis, cryptosporidiosis, infectious mononucleosis, and pneumocytosis).

FDA=US Food and Drug Administration; HR=hazard ratio; IBD=inflammatory bowel disease; JAKi=Janus kinase inhibitor; UC=ulcerative colitis.

1. Rozich JJ, et al. *Clin Gastroenterol Hepatol.* 2020;18(11):2437-2447. **2.** Khan N, et al. *Inflamm Bowel Dis.* 2020;26(3):462-468. **3.** Pfizer Inc. Accessed August 2, 2021. https://www.pfizer.com/news/press-release/press-release-detail/pfizer_announces_u_s_fda_approves_xeljanz_tofacitinib_for_the_treatment_of_moderately_to_severely_active_ulcerative_colitis-0.

Malignancy in Older Patients With IBD

- Older patients with IBD may have an increased risk of malignancy compared with younger patients and the general population[1]
  - Retrospective cohort study found older patients with IBD aged ≥65 years (N=7338) had a higher rate of malignancy on follow-up compared with younger patients (N=52,578) regardless of IBD treatment

  IR of 3.56 cancers per 100 PY for ≥65 years
  IR of 0.93 cancers per 100 PY for <65 years
- Baseline characteristics associated with an increased risk of cancer included male sex, time since IBD diagnosis, polypharmacy use (≥5 medications), a CCI[a] score of at least 1, solid organ transplant, hypertension, and COPD[1]

Distribution of Specific Cancers Among Younger and Older Age Groups[1]

Cancer[b]	Age 18–64 years [n = 52,578; 1717 events]	Age ≥ 65 years [n = 7338; 1093 events]
GI malignancies with an increased incidence in IBD		
Colorectal cancer	111 (6.5)	43 (3.9)
Small bowel adenocarcinoma	14 (0.8)	5 (0.5)
Anal cancer	5 (0.3)	2 (0.2)
Cholangiocarcinoma	8 (0.5)	1 (0.1)
Cancers possibly related to IBD medications		
Urinary tract malignancy	83 (4.8)	58 (5.3)
Melanoma	94 (5.5)	24 (2.2)
NMSC	700 (40.8)	529 (48.4)
Non-Hodgkin's disease	43 (2.5)	22 (2.0)
Other cancers unrelated to IBD		
Prostate cancer	104 (6.1)	100 (9.1)
Female breast cancer	164 (9.6)	77 (7.0)
Lung cancer	32 (1.9)	72 (6.6)
Pancreatic cancer	17 (1.0)	27 (2.5)
Acute myeloid leukemia	7 (0.4)	3 (0.3)
Others[c]	335 (19.5)	130 (11.9)

Data are expressed as number of events (%).

Note: In this population-based study, the database used for post hoc analysis comprised only commercially insured individuals; the study was also limited by the unavailability of some confounders and by having only a partial measure of the length of time patients had lived with IBD before entering the study.

[a]A method of predicting mortality by classifying or weighting comorbidities.[2] [b]Percentage of each cancer subtype in the first event of cancer. [c]All other cancers, comprising more than 120 specific subtypes.
CCI=Charlson comorbidity index; COPD=chronic obstructive pulmonary disease; GI=gastrointestinal; IBD=inflammatory bowel disease; IR=incidence rate; NMSC=nonmelanoma skin cancer.

1. Khan N, et al. *Drugs Aging*. 2017;34(11):859-868. **2.** Quan H, et al. *Am J Epidemiol*. 2011;173(6):676-682.

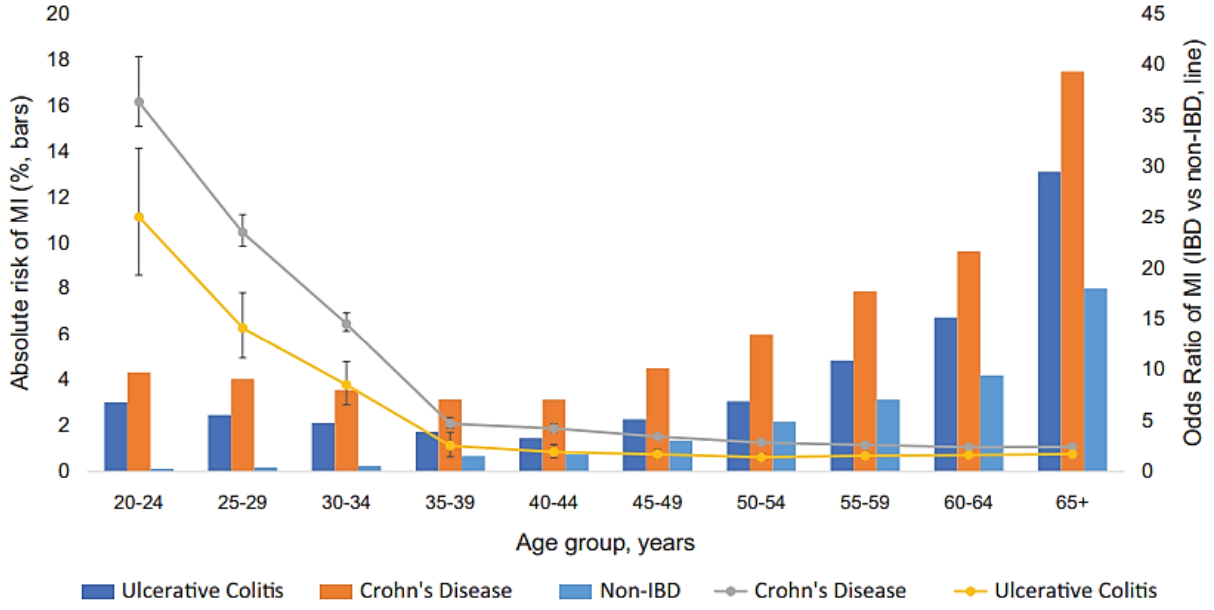
MACE in Older Patients With IBD

- Older patients with IBD are intrinsically at higher risk of cardiovascular events, and active IBD may contribute to this risk[1]
  - Chronic corticosteroid use has been associated with increased cardiovascular events

- Patients with CD or UC have a higher risk of MI than those without IBD, and IBD appears to be an independent risk factor for MI[2]
  - An underlying pro-inflammatory state is a potent stimulus for thrombogenesis and endothelial dysfunction and has been proposed to explain the increased risk of MI in patients with IBD
  - Increased risk of MI in patients with IBD persists even after adjustment for multiple confounding traditional CV risk factors, such as age, hypertension, diabetes, smoking, and hyperlipidemia

Note: This retrospective study was limited by the inability to verify the accuracy of the diagnoses, the validity of the diagnosis of MI, and the temporal relationships with IBD duration. Also, patients receiving care at institutions not part of the Explorys health care network were not included.

Retrospective Study (2013-2018) Using EMRs From 26 Nationwide Health Care Systems Investigated the Overall Odds of MI Stratified by UC vs CD (Prevalence [Bars] and Odds Ratios [Line])[2,a]



[a]Out of 29,090,220 patients, 131,680 patients had UC, 158,750 patients had CD, and 28,799,790 patients had non-IBD.

CD=Crohn's disease; CV=cardiovascular; EMR=electronic medical record; IBD=inflammatory bowel disease; MACE=major adverse cardiovascular events; MI=myocardial infarction; UC=ulcerative colitis.

1. Nguyen N, et al. *Inflamm Bowel Dis.* 2018;24(4):916-923. **2.** Panhwar M, et al. *Inflamm Bowel Dis.* 2019;25(6):1080-1087.

Thrombosis in Older Patients With IBD

- Patients with IBD may have a 1.5- to 3-fold increased risk of VTE compared with that in the general population[1,2]
  - VTE in patients with IBD is associated with considerable morbidity and mortality, with higher rates of death from PE[1]
  - The mechanism of VTE in IBD is multifactorial; it has been suggested to be related to a prothrombotic condition stimulated by increased acute-phase reactants and altered fibrinolytic activity, hypercoagulation, endothelial dysfunction, and immune alterations[2]
- Studies on VTE risk in patients aged ≥60 years are lacking; however, older age has been shown to be associated with increased risk of VTE and the development of post–hospital discharge VTE[3-5]

Retrospective Study From NRD (2010-2014) Using Multivariable Analysis Examined Factors Associated With a VTE Readmission in Those With an ICD Diagnosis of IBD[3]

Age, years	aRR (95% CI)		
	IBD (N=1160)	UC (n=522)	CD (n=638)
18-30	1.74 (1.06-2.86)	10.80 (2.62-44.49)	0.75 (0.42-1.33)
31-40	2.32 (1.42-3.8)	7.08 (1.69-29.64)	1.62 (0.95-2.77)
41-50	2.10 (1.28-3.43)	7.21 (1.73-30.09)	1.41 (0.82-2.41)
51-65	3.40 (2.12-5.47)	16.91 (4.15-68.88)	1.82 (1.08-3.05)
66-80	3.48 (2.12-5.73)	15.51 (3.73-64.44)	2.04 (1.18-3.55)
>80	2.39 (1.41-4.06)	12.52 (2.96-53.01)	1.14 (0.61-2.13)

Note: This retrospective study was limited by the inability to verify the accuracy of the outcomes and covariates via chart review, inability to address medication that may influence VTE risk, and readmitted patients counting more than once, up to a maximum of 5 times.

aRR=adjusted risk ratio; CD=Crohn's disease; CI=confidence interval; IBD=inflammatory bowel disease; ICD=International Classification of Diseases; NRD=Nationwide Readmissions Database; PE=pulmonary embolism; UC=ulcerative colitis; VTE=venous thromboembolism.

1. Scoville E, et al. *Inflamm Bowel Dis.* 2014;20(4):631-636. **2.** Danese S, et al. *Am J Gastroenterol.* 2007;102(1):174-186. **3.** Faye AS, et al. *Clin Gastroenterol Hepatol.* 2020;18(5):1133-1141. **4.** Cheng K, Faye AS. *World J Gastroenterol*. 2020;26(12):1231-1241. **5.** Ando K, et al. *Intest Res*. 2018;16(3):416-425.

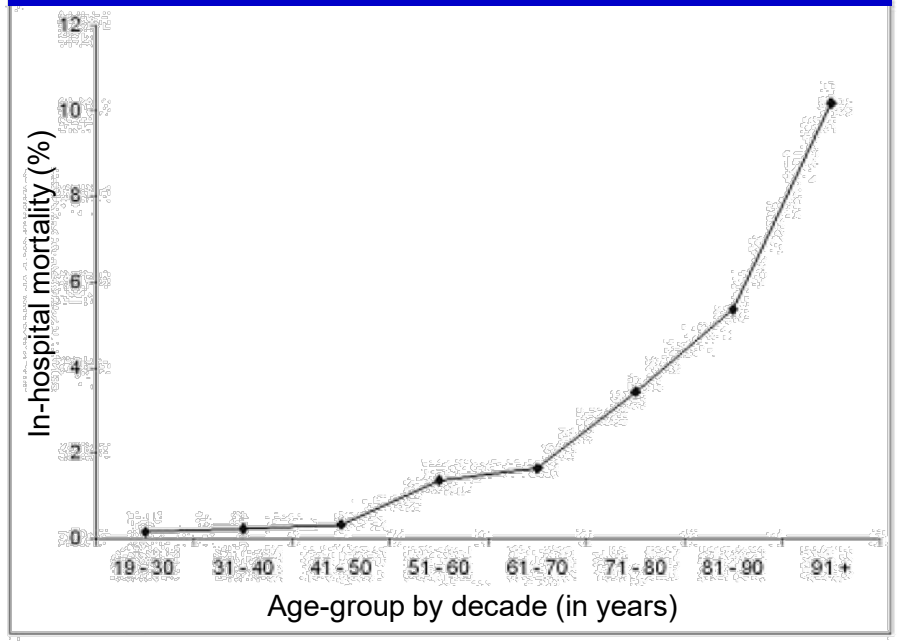
Mortality in Older Patients With IBD

Older age is an independent risk factor for in-hospital mortality among patients with IBD[1]

- A cross-sectional study investigated the frequency of complications and outcomes of IBD-related hospitalizations in older patients (aged ≥65 years, N=35,573)[2]
- Older patients with IBD-related hospitalizations had greater mortality than younger patients, even after adjustment for comorbidity and complications (OR: 3.91, 95% CI: 2.50-6.11)[2]
  - Older patients were more likely to present with systemic complications such as anemia, hypovolemia, electrolyte disturbances, and malnutrition

Note: In this cross-sectional study, only patients requiring hospitalization were included, and duration of disease was not adjusted for in the analysis. Administrative databases and ICD-9-CM codes are open to misclassification and incomplete adjustment of disease severity.

Age and Unadjusted In-Hospital Mortality for IBD-Related Hospitalizations[2]



CI=confidence interval; IBD=inflammatory bowel disease; ICD-9-CM=International Classification of Diseases, Ninth Revision, Clinical Modification; OR=odds ratio.

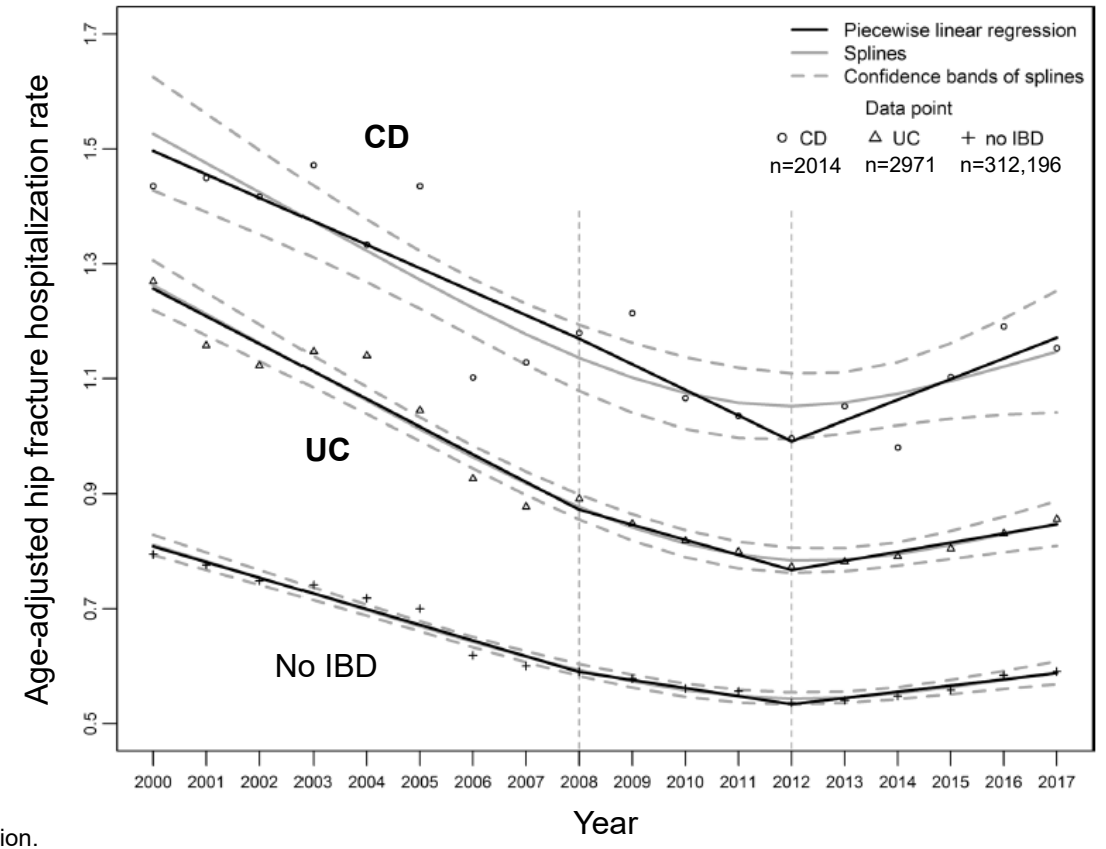
1. Gisbert JP, Chaparro M. *Aliment Pharmacol Ther.* 2014;39(5):459-477. **2.** Ananthakrishnan AN, et al. *Inflamm Bowel Dis*. 2009;15(2):182-189.

Bone Fracture in Older Patients With IBD

- Osteoporosis has a reported prevalence of 18% to 42% in patients with IBD regardless of age[1]
- Development of osteoporosis can be due to many factors, such as older age, chronic inflammation, malabsorption or poor diet, hypogonadism, and glucocorticoid therapy[1,2]
- Population-based study aimed to assess hip fracture–associated hospitalization and outcomes among older patients with IBD (aged ≥66 years) based on Medicare fee-for-service data between 2000 and 2017[3]
  - Hip fracture–associated hospitalization outcomes estimated were 30-day readmission, 30-day mortality, and length of stay
  - Hospitalization rates due to hip fracture were higher in older patients with IBD than in those without IBD

Note: Medicare data do not capture information about health-risk behaviors, demographic variables, and chronic conditions that were likely correlated with hospitalization outcomes. The population was limited to Medicare fee-for-service beneficiaries, limiting the generalizability of the data, and the diagnoses or procedures assessed might be subject to coding errors.

Age-Adjusted Hip Fracture–Associated Hospitalization Rate (per 100) in Patients Aged ≥66 Years by IBD Status From 2000 to 2017[3,a]



[a]The increasing trends of hospitalization rates after 2012 may warrant continuous follow-up and investigation.
CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.

1. Oh H, et al. *J Bone Metab.* 2018;25(4):213-217. **2.** Lima CA, et al. *World J Gastrointest Pathophysiol.* 2015;6(4):210-218. **3.** Xu F, et al. *Dig Dis Sci.* 2021;66(6):1818-1828.

Therapy-Related Considerations

Therapy Considerations for Older Patients With IBD

- **Special considerations for medical therapy in older patients with IBD[1]**
  - As older patients (aged ≥65 years) are typically excluded from clinical trials, efficacy and/or appropriate endpoints may not be clear
  - Multimorbidity increases treatment complexity, and polypharmacy elevates risk of noncompliance and drug interactions
  - Immunosuppressive therapies may increase the risk of infection and malignancy in an already vulnerable patient
- **Overall fitness and frailty should be considered when selecting a treatment[2]**
  - Interventions aimed at ameliorating physical and nutritional frailty, including physical therapy and nutritional support, may be an important part of care of older patients with IBD

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IBD=inflammatory bowel disease.

1. Taleban S, et al. *J Crohns Colitis.* 2015;9(6):507-515. **2.** Ananthakrishnan A, et al. *Gastroenterology.* 2021;160(1):445-451.

Drug Metabolism in Older Patients

- Specific pharmacokinetic and pharmacodynamic changes are associated with aging[1]
  - Drug distribution may be affected by decreased total body water, muscle wasting, increased body fat, and age-related changes in protein binding[1]
- It is important to consider the physiological changes associated with aging and the impact medications can have in creating adverse events, especially in older patients with IBD[2]
- Recommendations from the Prescribing Information of medications should be reviewed to determine if dose modifications are required for use in older patients

Age-Related Physiological Changes and Their Pharmacokinetic Consequences[3]

Physiological changes	Pharmacokinetic consequences
Increased gastric pH	Slightly decreased absorption (rarely clinically significant)
Delayed gastric emptying Decreased splanchnic blood flow, absorption surface, GI motility Increased body fat	Increased V and $t_{1/2}$ of lipophilic drugs
Increased α1-acid glycoprotein	Decreased free fraction of basic drugs
Decreased lean body mass, total body water	Increased plasma concentration of hydrophilic drugs
Decreased serum albumin	Increased free fraction in plasma of a few highly protein-bound acidic drugs
Decreased hepatic blood flow	First-pass metabolism can be less effective
Decreased hepatic mass	Phase I metabolism of some drugs might be slightly impaired
Decreased renal blood flow and glomerular filtration rate	Renal elimination of drugs can be impaired

GI=gastrointestinal; IBD=inflammatory bowel disease; $t_{1/2}$=half-life; V=volume.

1. Andres TM, et al. *Anesthesiol Clin*. 2019;37(3):475-492. **2.** Kim M, et al. *Curr Treat Options Gastroenterol*. 2015;13(1):90-104. **3.** Klotz U. *Drug Metab Rev*. 2009;41(2):67-76.

Polypharmacy in Older Patients With IBD

- Polypharmacy can potentially increase the risk of drug interactions, and drugs used in IBD treatment may contribute to either triggering or worsening concomitant disease[1]
  - 5-ASAs are first-line treatment for induction and maintenance of remission in mild to moderate UC; monitoring renal function is required due to a reduction in glomerular filtration in older patients[1]
  - Corticosteroids may be used to manage acute symptoms; however, extended usage predisposes older patients to cataracts and glaucoma or may precipitate or exacerbate pre-existing conditions (eg, diabetes, hypertension, osteoporosis)[1]
  - In older patients, TNFis were associated with higher rates of infection and mortality compared with younger patients and also exacerbated congestive heart failure, dermatological reactions, infusion reactions, and neurological sequelae[1]
  - Usage of immunomodulators remains low due to the risk of severe adverse effects such as leukopenia and transaminase increase, allergic reactions, mild or severe gastrointestinal adverse effects, and increased risk of nonmelanoma skin cancer[1]
  - Although serious adverse events were more common in older patients (≥65 years old) with IBD taking a JAKi, a similar effect was noted among placebo users, suggesting that events were related to age and not specifically to treatment[2]
- Using once-daily medication regimens and avoiding multiple concomitant medications may be associated with improved adherence to therapy and clinical outcome[1]

5-ASA=5-aminosalicylic acid; IBD=Inflammatory bowel disease; JAKi=Janus kinase inhibitor; TNFi=tumor necrosis factor inhibitor; UC=ulcerative colitis.

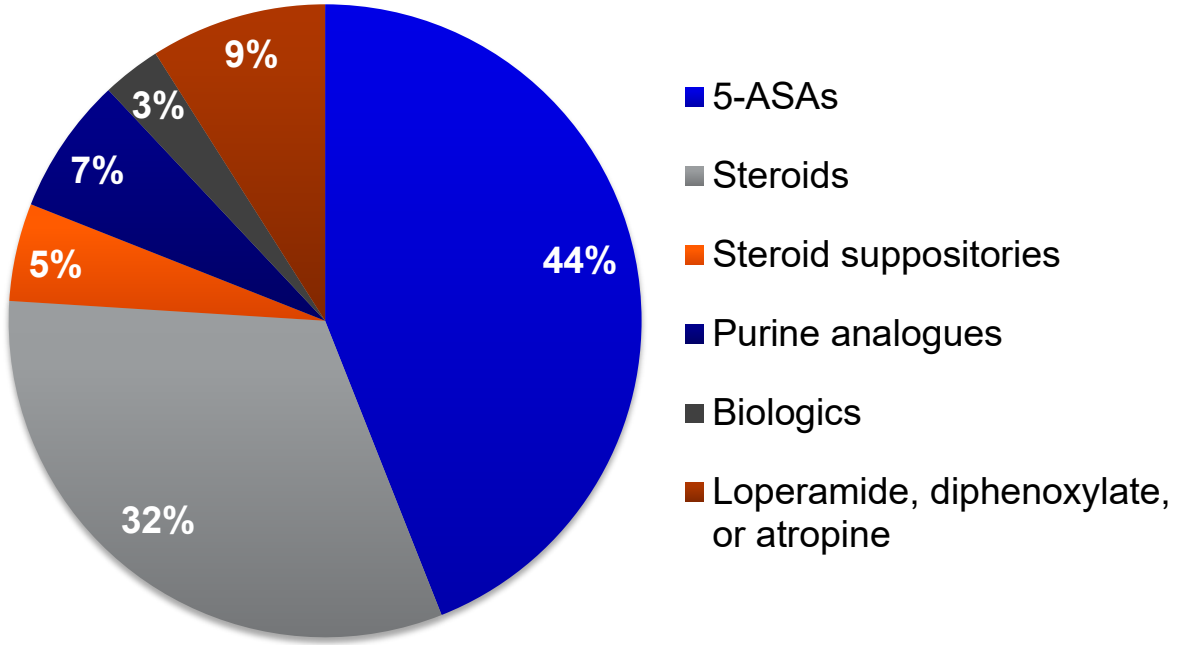
1. Arnott I, et al. *Inflamm Intest Dis.* 2018;2(4):189-199. **2.** Ananthakrishnan A, et al. *Gastroenterology.* 2021;160(1):445-451.

Use of Medications in Patients ≥65 Years of Age With IBD

- A retrospective observational study from 1991 to 2010 in older patients (aged ≥65 years) with IBD (N=393) found that[1]
  - 5-ASAs were most commonly used for maintenance therapy
  - Patients with new diagnosis of IBD at age ≥65 years were treated with higher dosages of steroids than those diagnosed at a younger age

Note: This study was limited by the retrospective nature; not all available data were used in the analysis, because paper charts were not included. In addition, biologics were newly approved at the time of study and therefore may not reflect current state of medication use. Finally, JAKis were not included in this study, because the data were collected between 1991 and 2010, prior to FDA approval of JAKis for the treatment of patients with moderately to severely active UC.[1,2]

Utilization of Different Therapeutic Agents in Patients Aged ≥65 Years[1]



5-ASA=5-aminosalicylic acid; FDA=US Food and Drug Administration; IBD=inflammatory bowel disease; JAKi=Janus kinase inhibitor; UC=ulcerative colitis.

1. Juneja M, et al. *Dig Dis Sci*. 2012;57(9):2408-2415. **2.** Pfizer Inc. Accessed August 2, 2021. https://www.pfizer.com/news/press-release/press-release-detail/pfizer_announces_u_s_fda_approves_xeljanz_tofacitinib_for_the_treatment_of_moderately_to_severely_active_ulcerative_colitis-0.

Treatment Considerations in Older Adults With IBD

- A comprehensive initial assessment of the older patient is important to collaboratively establish short- and long-term treatment goals and priorities[1]
- Clinicians should risk-stratify patients based on the likelihood of severe clinical course to determine an appropriate therapeutic strategy[1]
- Systemic corticosteroids are not indicated for maintenance therapy; for induction therapy, nonsystemic corticosteroids or early biologic therapy (if budesonide is not appropriate) is preferred[1]
  - Steroid use and older age each independently predispose to infections, and infections increase mortality in hospitalized older patients with IBD[2]
- Immunomodulatory treatments with lower overall infection or malignancy risk may be preferred in older patients[1]
  - Choice of treatment must also include assessment of risk factors and clinical context, efficacy of treatments for specific phenotypes, rapidity of onset of action, and ability to achieve corticosteroid-free remission[1]
  - Certain biologic agents are rarely used in the older IBD population due to a higher infection risk[3]

IBD=inflammatory bowel disease.

1. Ananthakrishnan AN, et al. *Gastroenterology.* 2021;160(1):445-451. **2.** Brassard P, et al. *Am J Gastroenterol.* 2014;109(11):1795-1802. **3.** LeBlanc FJ, et al. *World J Gastroenterol.* 2019;25(30):4158-4171.

Health Maintenance Considerations

General Health Maintenance Considerations in Older Patients With IBD

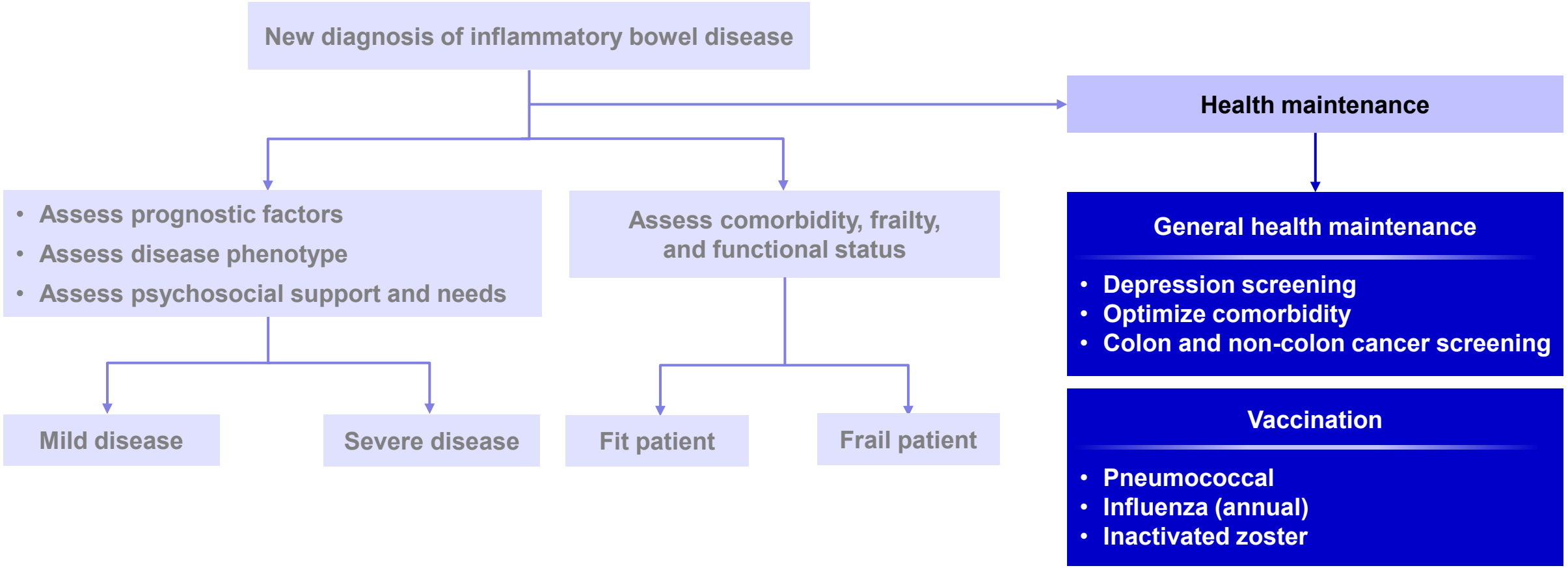
- To limit risk of infection, older patients with IBD should adhere to vaccination schedules, including influenza, pneumococcal, and herpes zoster vaccines; if possible, depending on the vaccine, vaccination should be scheduled before immunosuppression is started[1]
- Due to increased risk of malignancy, including colorectal cancer, adenomas, and serrated polyps, older patients with IBD should follow screening and surveillance procedures[1]
- Older patients with IBD have an increased risk of venous thromboembolism and infections, and this should be incorporated into therapeutic decision making[1]
- Due to an increased risk of developing fractures, older patients with IBD should be screened for decreased bone mineral density, especially in patients with additional risk factors, such as sedentary lifestyle, hypogonadism, and low body mass index[2]
  - Patients should also be educated on lifestyle changes to promote bone health (diet, exercise, smoking cessation, etc)
- Psychosocial status and need for psychological care at regular visits should be assessed in older patients with psychotherapy provided if needed[2]

Pfizer Medical Affairs

IBD=inflammatory bowel disease.

1. Ananthakrishnan AN, et al. *Gastroenterology*. 2021;160(1):445-451. **2.** Shrestha MP, et al. *Ann Gastroenterol*. 2017;30(3):273-286.

Health Maintenance in Older Patients With IBD



IBD=inflammatory bowel disease.

Ananthakrishnan AN, et al. *Gastroenterology*. 2021;160(1):445-451.

Summary

- As the number of patients with IBD has risen over the years, it is important to understand the epidemiology of this chronic disease among the older population
- Diagnosis of older-onset IBD (age ≥60 years) takes longer, and misdiagnosis is common, with a delay in diagnosis of up to 6 years, compared with 2 years in younger adults
- Patients with older-onset IBD may present with more benign phenotypes than those with younger-onset IBD
- Older patients with IBD have specific health-related comorbidities to contend with, such as heart disease, diabetes, cancer, psychiatric disorders, and arthritis, as well as increased risks of infections and fractures
- A comprehensive initial assessment of the older patient by the healthcare professional is important to collaboratively establish short- and long-term treatment goals and priorities

IBD=inflammatory bowel disease.

Available Resources

- American Gastroenterological Association
  - Expert review
- Centers for Disease Control and Prevention
  - Morbidity and Mortality Weekly Report

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