Health Disparities in Inflammatory Bowel Disease

These materials were created in conjunction with Pfizer Inc.

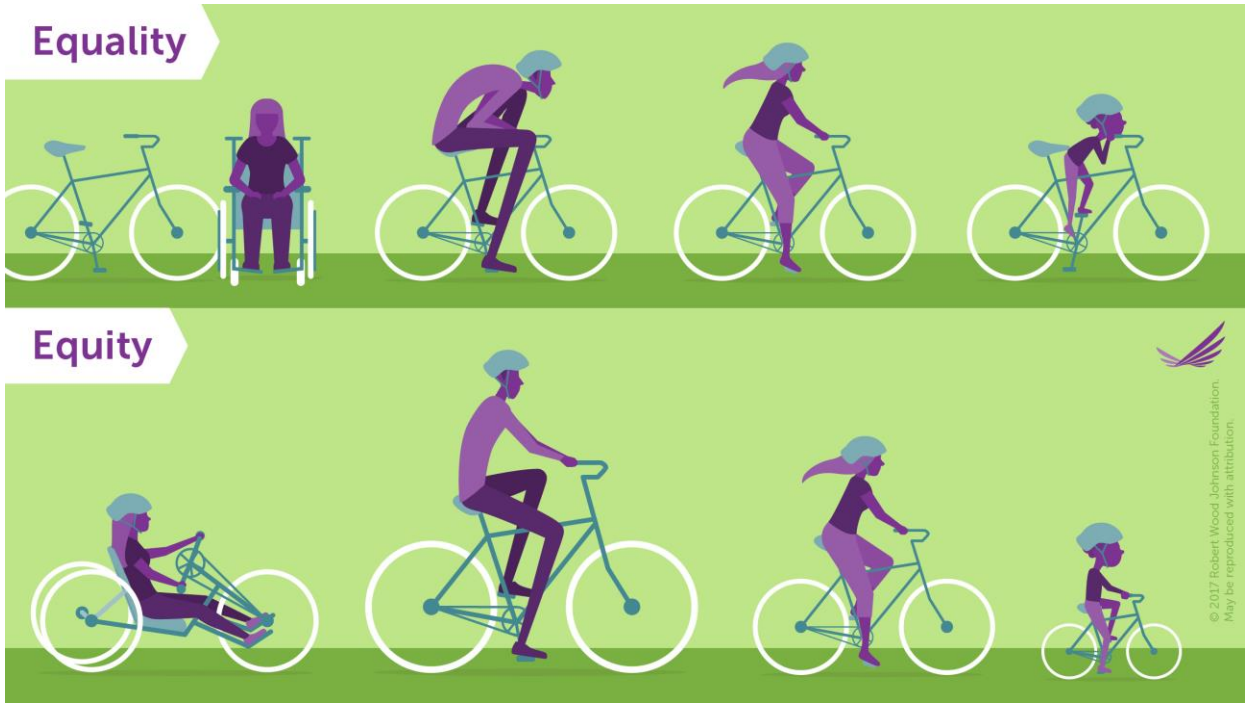
Contents

Defining Health Disparities

Health Disparity, Health Equity, and Health Equality

- *A **health disparity*** is a particular type of health difference that is closely linked with economic, social, and/or environmental disadvantage[1]
  - Health disparities adversely affect groups of people who have systematically experienced greater social or economic obstacles to health that link to discrimination or exclusion (social injustice)[1,2]
- A reduction in health disparities is a measure of progress toward achieving ***health equity*** and attainment of the highest level of health for all people[1,3]
- Note that equity ≠ equality; ***health equity*** provides a just and fair distribution of resources that directly address systemic inequalities[4]

Illustrating the Difference Between "Equality" and "Equity"[5]



1. Centers for Disease Control and Prevention. https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities. Accessed July 30, 2020. **2.** Braveman PA, et al. *Am J Public Health.* 2011;101(suppl 1):S149-S155. **3.** Braveman PA. *Public Health Rep.* 2014;129(suppl 2):5-8. **4.** Braveman PA, Gruskin S. *J Epidemiol Community Health.* 2003;57(4):254-258. **5.** Robert Wood Johnson Foundation. https://www.rwjf.org/en/library/infographics/visualizing-health-equity.html. Accessed August 7, 2020.

Root Causes of Health Disparities in Social Determinants of Health

- ***Social determinants of health*** reflect the social factors and physical conditions of the environment in which people are born, live, learn, play, work, and age[1]
  - These circumstances are shaped by the distribution of money, power, and resources at global, national, and local levels and are mostly responsible for health inequities[2]
- Social determinants of health can be categorized into upstream and midstream factors, which affect downstream health outcomes[3]

Social Determinants of Health[3]

Upstream determinants

- Such as racism, discrimination, and poverty

↓

Midstream determinants

- Including education, food, housing, and access to healthcare

↓

Downstream health outcomes

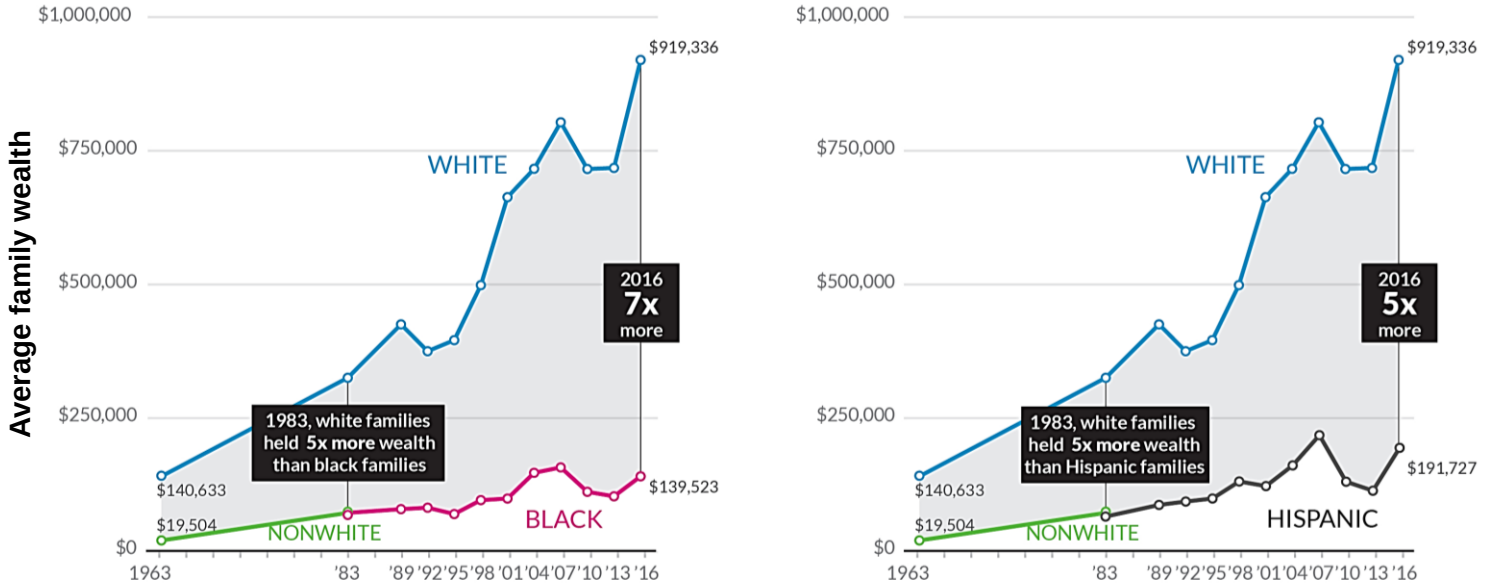
- Such as chronic diseases (eg, cancer, heart disease, obesity)

1. Centers for Disease Control and Prevention. https://www.healthypeople.gov/2020/about/foundation-health-measures/Determinants-of-Health. Accessed July 28, 2020. **2.** World Health Organization. https://www.who.int/social_determinants/sdh_definition. Accessed July 28, 2020. **3.** Gray DM, et al. *Nat Rev Gastroenterol Hepatol.* 2020. doi:10.1038/s41575-020-0330-8.

Race/Ethnicity and Income Are 2 Key Upstream Social Determinants of Health

- In general, racial and ethnic minority groups are poorer, and this wealth gap has worsened over time[1-3]
- Racial and economic inequalities can affect midstream health determinants
  - Poorer access to medical care and healthy foods[1,4]
  - Lower educational attainment and educational upward mobility[5-7]

Urban Institute Calculations for Average Family Wealth by Race/Ethnicity (1963-2016)[2,a]



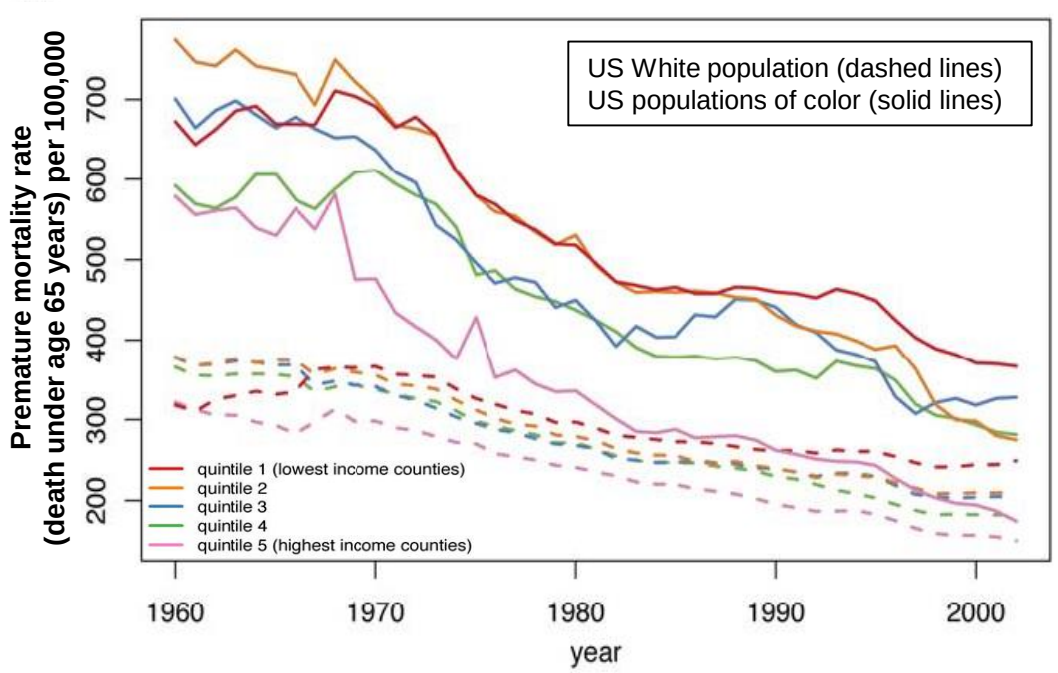
[a]Urban Institute calculations (2016 dollars) from Survey of Financial Characteristics of Consumers 1962 (December 31), Survey of Changes in Family Finances 1963, and Survey of Consumer Finances 1983-2016. No comparable data are available between 1963 and 1983. Black/Hispanic distinction within non-White population is available only in 1983 and later years.

1. Khullar D, Chokshi DA. doi:10.1377/hpb20180817.901935. **2.** Urban Institute. https://apps.urban.org/features/wealth-inequality-charts. Accessed July 28, 2020. **3.** Chetty R. *Q J Econ.* 2020;135(2):711-783. **4.** Larson NI, et al. *Am J Prev Med.* 2009;36(1):74-81. **5.** Ryan CL, Bauman K. http://www.census.gov/content/dam/census/library/publications/2016/demo/p20-578.pdf. Accessed July 28, 2020. **6.** Urban Institute. https://www.urban.org/research/publication/wealth-inequality-barrier-education-and-social-mobility. Accessed September 9, 2020. **7.** Assari S. *Behav Sci (Basel).* 2018;8(11):107-122.

Racial and Economic Inequalities Are Directly Related to Downstream Effects

- People of color and low-income individuals have higher rates of mortality and chronic conditions (eg, heart disease, diabetes, stroke) compared with the White population and those with higher incomes[1,2]

US County Data From 1960 to 2002 Show Higher Premature Mortality Rates in Populations of Color and Low-Income Areas[3,a]



- The relative and absolute socioeconomic gaps for premature mortality have widened since 1981
- Among the White population and people of color, 14% and 30% of premature deaths, respectively, would not have occurred had all persons experienced the same yearly age-specific premature mortality rates as the White population living in the highest income quintile

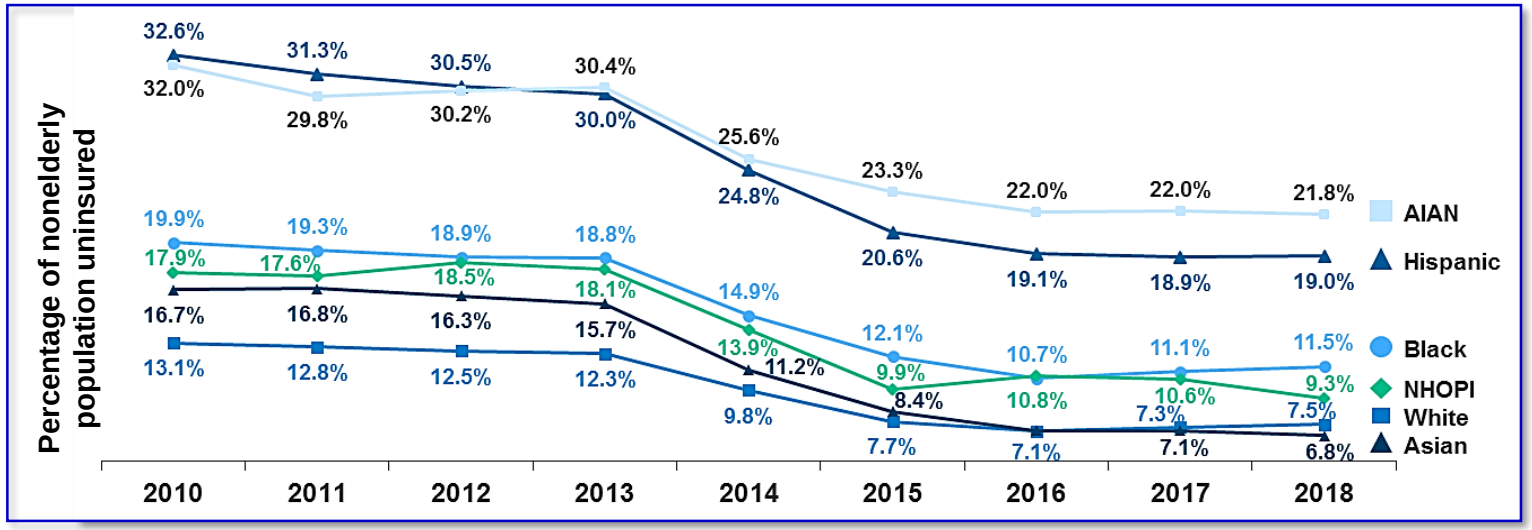
[a]The only racial/ethnic categories available for the full-time period under study were "White," "Black," and "other." The authors accordingly distinguished solely between the US White population and US populations of color.

1. Khullar D, Chokshi DA. doi:10.1377/hpb20180817.901935. **2.** Kaiser Family Foundation. https://www.kff.org/disparities-policy/issue-brief/disparities-in-health-and-health-care-five-key-questions-and-answers. Accessed July 28, 2020. **3.** Krieger N, et al. *PLoS Med.* 2008;5(2):227-241.

Disparity in Insurance Status Is a Key Midstream Social Determinant of Health

- Insurance coverage significantly improves access to and utilization of medical care and self-reported health-related quality of life[1,2]
- Despite improvement in coverage since the ACA, racial economic inequality persists in an individual's ability to obtain insurance coverage[3]
  - Most groups of color and low-income groups remain more likely to be uninsured

Data From National Health Interview Survey on Percentage of Nonelderly Population Aged 0-64 Years Who Were Uninsured, by Race and Ethnicity (2010-2018)[3,a]



- Black individuals remained 1.5 times more likely to be uninsured than White individuals between 2010 and 2018
- The Hispanic uninsured rate remained over 2.5 times higher than the rate for White individuals
- In 2018, the uninsured rate for poor individuals was 4 times higher than the rate for those with higher incomes (17.3% vs 4.3%)

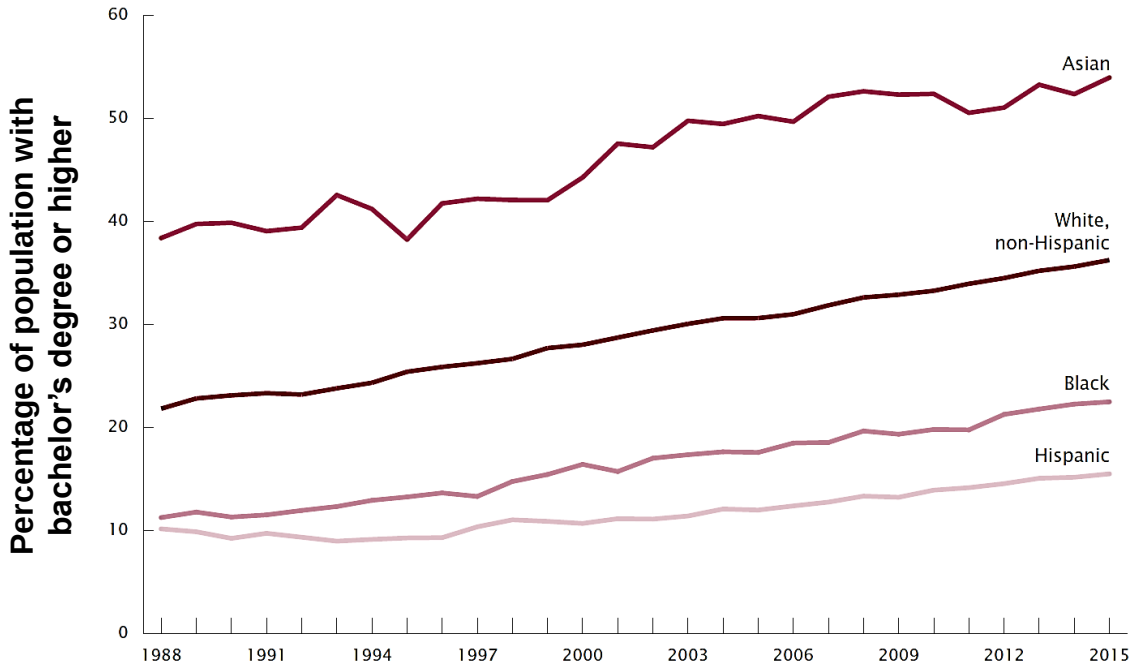
[a]Source: Kaiser Family Foundation analysis of the 2010-2018 American Community Survey.
ACA=Affordable Care Act; AIAN=American Indians and Alaska Natives; NHOPI=Native Hawaiians and Other Pacific Islanders.

1. Baicker K, et al. *N Engl J Med.* 2013;368(18):1713-1722. **2.** Sommers BD, et al. *Health Aff (Millwood).* 2017;36(6):1119-1128. **3.** Kaiser Family Foundation. https://www.kff.org/disparities-policy/issue-brief/disparities-in-health-and-health-care-five-key-questions-and-answers. Accessed July 28, 2020.

Education Is a Key Midstream Social Determinant of Health

- Educational attainment has been shown to influence health knowledge and behaviors, employment, and income, thereby influencing an individual's health and outcomes[1-3]
  - More education may increase the likelihood of employment that provides health-promoting benefits and higher incomes[2]
  - People with higher levels of education are more likely to learn healthy behaviors; educated patients may communicate more effectively and show better treatment adherence[2,3]
- Although educational attainment has increased over time for all races, gaps between races remain[4]

Percentage of the US Population Aged ≥25 Years With a Bachelor's Degree or Higher, by Race and Ethnicity (1988-2015)[4,a]



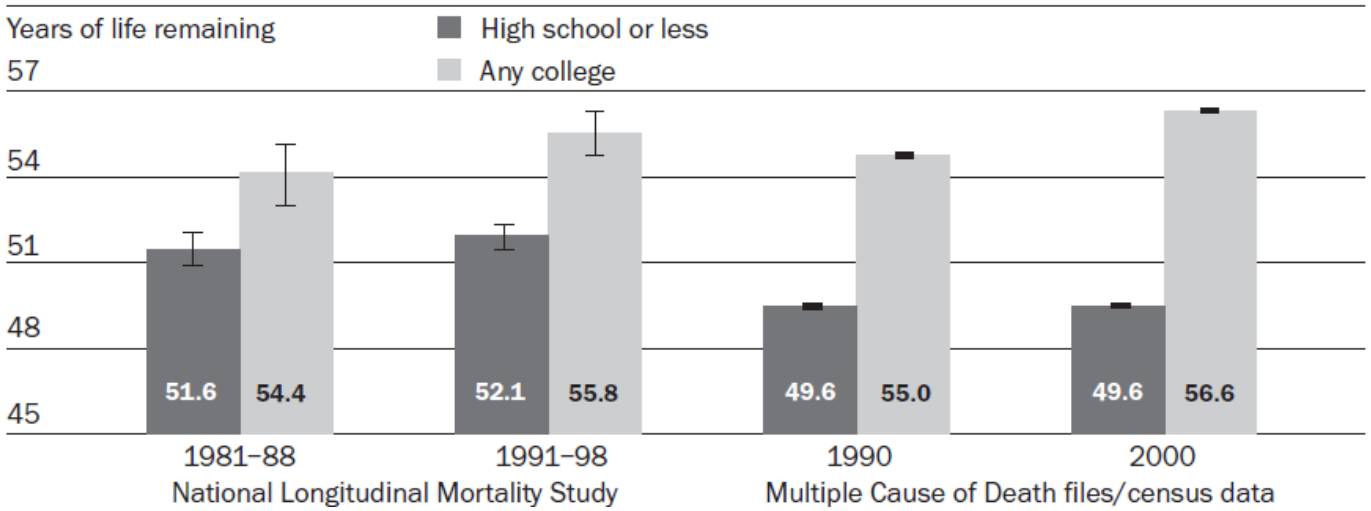
[a]Source: US Census Bureau, 1988-2015 Current Population Survey.

1. National Academies of Sciences, Engineering, and Medicine. *Communities in Action: Pathways to Health Equity*. National Academies Press; 2017. **2.** Robert Wood Johnson Foundation. https://www.rwjf.org/en/library/research/2014/04/why-education-matters-to-health.html. Accessed July 30, 2020. **3.** Pandey A, et al. *Am J Cardiol.* 2017;69(11 suppl):1847. **4.** Ryan CL, Bauman K. http://www.census.gov/content/dam/census/library/publications/2016/demo/p20-578.pdf. Accessed July 28, 2020.

Disparities in Education Affect Downstream Health Outcomes

- There is a positive correlation between educational attainment and health status indicators, such as life expectancy, obesity, and morbidity from acute and chronic diseases[1,2]
- This relationship may still exist even after adjusting for demographic, income, risk factor, and behavioral variables, highlighting the importance of education alone in health and health outcomes[3]

Life Expectancy Among Americans at Age 25 Years by Education Level (1981-2000)[2,a]



- Between 1981 and 2000, life expectancy increases occurred nearly exclusively among high-education groups
- In both data sets, education-related gaps in life expectancy increased by ~30%

[a]Source: Authors' calculations using data on non-Hispanic Blacks and Whites in the National Longitudinal Mortality Study and death certificate data from the Multiple Cause of Death files linked to census data.

1. National Academies of Sciences, Engineering, and Medicine. *Communities in Action: Pathways to Health Equity*. National Academies Press; 2017. **2.** Meara ER, et al. *Health Aff (Millwood).* 2008;27(2):350-360. **3.** Kaplan RM, et al. *Ann Epidemiol.* 2015;25(5):323-328.

Downstream Health Disparities in the Chronic Disease Care Continuum: A Case Study of Colorectal Cancer

- Black patients have the highest incidence and mortality rate from colorectal cancer (CRC)[1,2]
  - Diagnosed at younger age than White patients[3]
  - Less likely to receive an HCP recommendation for screening than White patients[4]
- Systemic factors such as socioeconomic inequality, access to care, and prejudice contribute to CRC disparities[2,4,5]
- Successful implementation and utilization of screening can greatly reduce disparities for CRC incidence; suggested strategies include[2,5,6]
  - Patient and provider education for screening
  - Implementation of patient navigation process
  - Increase screening among Black patients
  - Modify the age of screening in Black patients

Potential Factors Contributing to CRC Disparities Between Black Patients and White Patients[2]

Socioeconomics	Low socioeconomic status
	Less education
Insurance and access to care	Health insurance coverage
	Access to medical care especially screening
Screening behaviors	Screening uptake & adherence
	Physician recommendation to screen
Co-morbid conditions	Obesity
	Metabolic syndrome
	Type 2 diabetes
Habits	Lack of physical activity
	Tobacco use
	Alcohol use
Medications	Non-steroidal anti-inflammatory drugs
	Aspirin
	Hormone replacement therapy
Microbiome & metabolites	Microbial composition
	Bile acid, butyrate & other metabolite composition

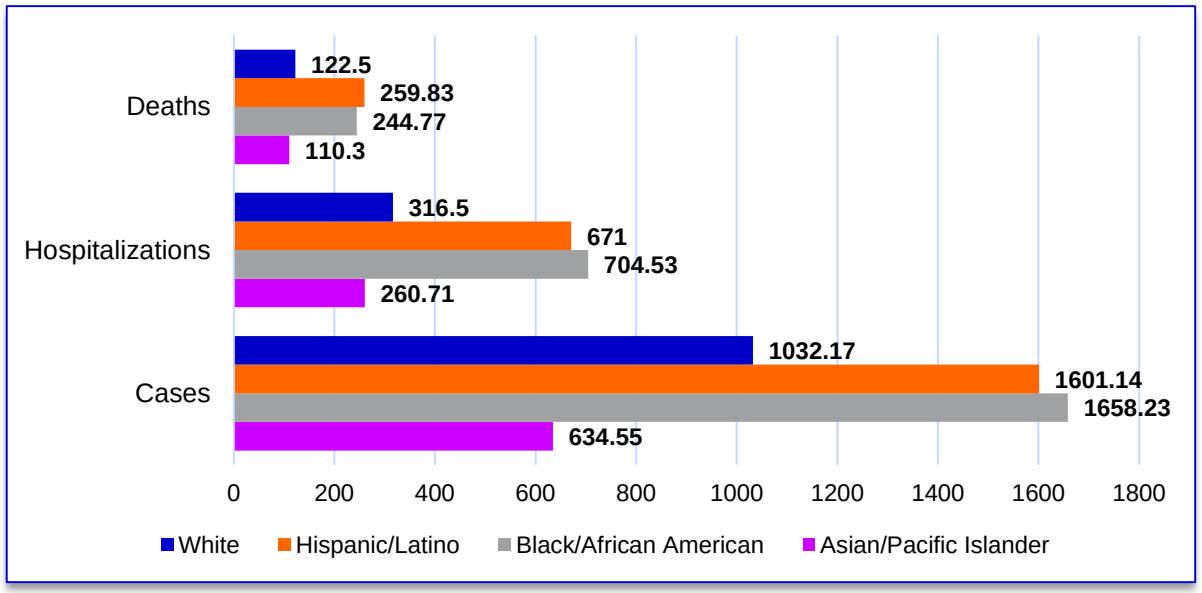
HCP=healthcare professional.

1. Siegel RI, et al. *CA Cancer J Clin.* 2020;70(1):7-30. **2.** Ashktorab H, et al. *Gastroenterology.* 2017;153(4):910-923. **3.** Jackson CS, et al. *J Gastrointest Oncol.* 2016;7(suppl 1):S32-S43. **4.** May FP, et al. *Am J Gastroenterol.* 2015;110(10):1388-1394. **5.** Carethers JM, Doubeni CA. *Gastroenterology.* 2020;158(2):354-367. **6.** Demb J, Gupta S. *Clin Gastroenterol Hepatol.* 2020;18(8):1691-1693.

Racial and Socioeconomic Disparities Have Resulted in Downstream Health Disparities During the COVID-19 Pandemic

- Racial and economic inequalities exist between White patients and minorities in the incidence rates and clinical outcomes for COVID-19[1-3]
- Other determinants—including preexisting health conditions, difficulties in healthcare access, and inability to practice social distancing due to occupation—may also contribute to exacerbated health disparities in minorities[1,4]

Age-Adjusted Rates of COVID-19 Cases, Hospitalizations, and Deaths per 100,000 by Race/Ethnicity Group in New York City[3,a]



- Hospitalization and mortality rates are 2 times higher in patients from neighborhoods with very high poverty than in those from neighborhoods with low poverty[b]

[a]Data accessed as of July 28, 2020. [b]Neighborhood poverty is the percentage of a zip code's population living below the federal poverty level, per the 2013-2017 American Community Survey: low poverty, under 10%; medium poverty, 10% to 19.9%; high poverty, 20% to 29.9%; very high poverty, 30% and over. COVID-19=coronavirus disease 2019.

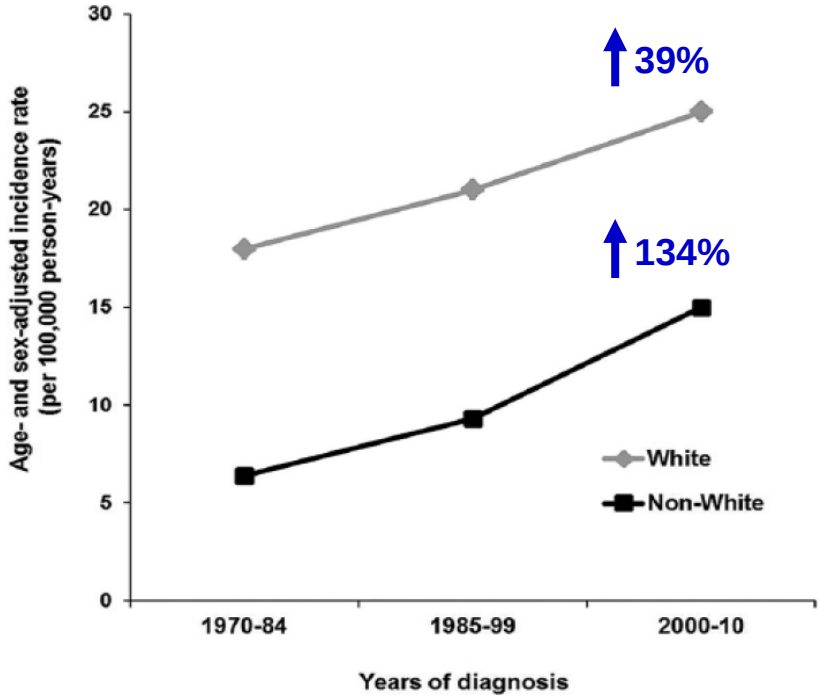
1. Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/racial-ethnic-minorities.html. **2.** Webb Hooper M, et al. *JAMA.* 2020;323(24):2466-2467. **3.** NYC Health. https://www1.nyc.gov/site/doh/covid/covid-19-data.page. Accessed July 28, 2020. **4.** Dorn AV, et al. *Lancet.* 2020;395(10232):1243-1244.

Recognizing Health Disparities in IBD

Epidemiology of IBD by Race

- Although IBD was historically considered to be a disease affecting White patients, it is increasingly recognized as a disease that affects minority populations[1,2]
- A systematic review of 5 studies in the US found the incidence and prevalence of IBD to be higher among White patients compared with minority populations, but the difference is narrowing over time[1]
- Understanding the burden of IBD among racial and ethnic groups is important because it can impact IBD diagnosis, prognosis, and management[1,2]

A Population-Based Inception Cohort (1970-2010) Investigated the Incidence of IBD by Race[2,a]



Note: This study was limited by data collection from the relatively small county, which was not diverse racially and ethnically compared with the entire US population.

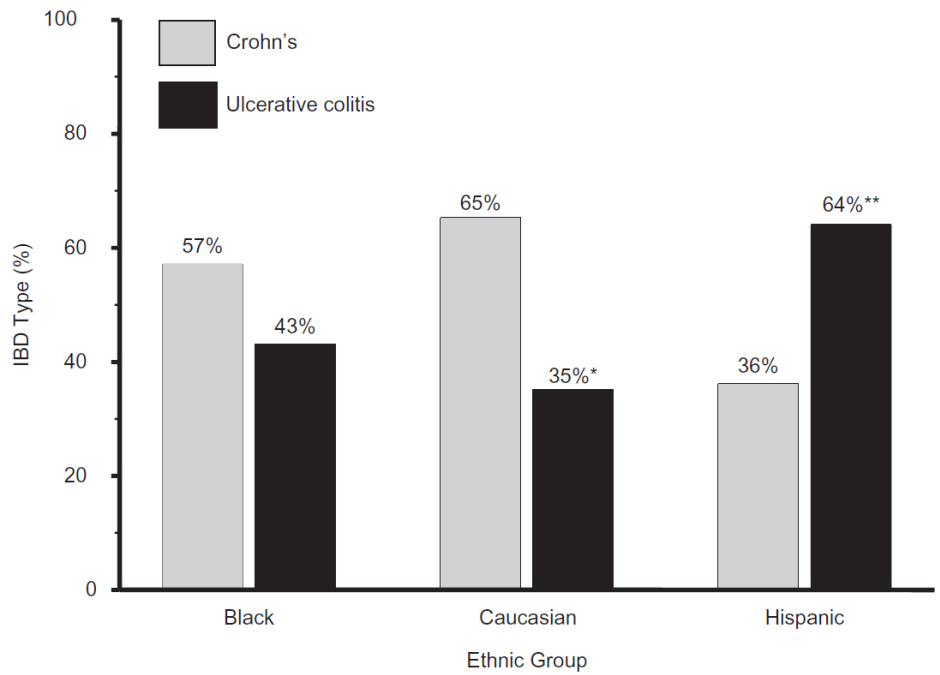
[a]Study from Olmsted County, Minnesota, between 1970 and 2010, which included 776 White patients and 38 non-White patients.
IBD=inflammatory bowel disease.

1. Afzali A, Cross RK. *Inflamm Bowel Dis.* 2016;22(8):2023-2040. **2.** Aniwan S, et al. *Therap Adv Gastroenterol.* 2019;12:1756284819827692.

Variations in IBD Disease Characteristics by Ethnicity

- Disease characterization among non-White patients in the US is sparse and inconsistent in the literature[1]
- Emerging studies are beginning to reveal important differences in IBD disease characteristics among different races
  - Distribution of CD and UC in different races/ethnic groups[1]
  - Differences in phenotype, disease course, and frequency of extraintestinal manifestations[2,3]

A Retrospective Cohort Study (N=273) Investigated the Differences in IBD Characteristics by Ethnicity[4,a]



Note: This study was limited by the retrospective nature of the data collection and small sample size.

[a]Patients diagnosed with IBD between 2000 and 2006.
*P<0.05, **P<0.001.
CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.

1. Afzali A, Cross RK. *Inflamm Bowel Dis.* 2016;22(8):2023-2040. **2.** Shi HY, et al. *Clin Gastroenterol Hepatol*. 2018;16(2):190-197. **3.** Sofia MA, et al. *Dig Dis Sci*. 2014;59(9):2228-2235. **4.** Malaty HM, et al. *Clin Exp Gastroenterol.* 2010;3:165-170.

IBD Phenotype and Disease Course May Vary Across Ethnicities

A Systematic Review and Meta-analysis[a] Investigated IBD Phenotype and Course by Ethnicity (N=525,425)[b]

- Disease phenotype
  - Higher frequency of perianal involvement in Asian and Black patients with CD
  - Higher frequency of proctitis among White and Asian patients compared with Black and Hispanic patients
- Disease course
  - Lowest rate of surgery for both UC and CD in Asian patients among all ethnic groups

Note: The robustness of estimates in this study was limited by the paucity of non-Caucasian population-based studies, the wide range of time periods for studies included, and the inability to adjust for other confounders. This analysis included ex-US studies and therefore may not be directly applicable to the US patient population.

Differences in phenotype of CD and UC across ethnicities

Phenotype	White	Asian	Black	Hispanic	*P* value
CD					
Perianal	0.14 (0.12–0.16)	0.23 (0.17–0.29)	0.31 (0.11–0.52)	0.13 (0.04–0.22)	***P*=0.02**
UC					
Extent					
E1	0.28 (0.24–0.32)	0.27 (0.23–0.31)	0.18 (0.12–0.23)	0.13 (0.11–0.15)	***P*<0.01**

Differences in likelihood of surgery for CD and UC across ethnicities

Outcome	White	Asian	Black	Hispanic	*P* value
CD					
Surgery					
Cumulative	0.32 (0.28–0.37)	0.29 (0.15–0.43)	0.41 (0.24–0.59)	0.49 (0.44–0.54)	***P*<0.01**
UC					
Surgery					
Cumulative	0.11 (0.09–0.12)	0.07 (0.05–0.09)	0.18 (0.12–0.24)	0.29 (0.25–0.34)	***P*<0.01**

[a]Included 198 unique studies, which comprised 65% Caucasian, 30% Asian, 2% Hispanic, and 1% Black patients from 54 countries and 6 continents. [b]A total of 211,563 patients had CD, 308,074 patients had UC, and 5788 patients had IBD-unspecified.
CD=Crohn's disease; IBD=inflammatory bowel disease; UC=ulcerative colitis.
Shi HY, et al. *Clin Gastroenterol Hepatol*. 2018;16(2):190-197.

Healthcare Disparities Exist Among Disadvantaged Patients With IBD

- Healthcare disparities exist for patients of minority race and low socioeconomic status in many chronic diseases, including IBD[1-3]
  - Despite having a lower prevalence of IBD compared with White patients, minority groups may experience a disproportionately higher burden of disease[3]

Domain	Description of potential disparities
Preventive care	• Racial disparities in adherence to recommended examinations, such as CRC and osteoporosis screenings, may exist[4-6]
Medical therapy and adherence	• There are examples of disparities in access and utilization of medical therapy, including steroids, immunomodulators, and biologicals[2,7] • Racial and socioeconomic disparities in medication adherence may exist[1]
Hospitalization	• Hospital-related disparities (eg, hospitalization rates, charges, length of stay, readmission) according to race have been observed[3,8,9]
Surgery and postoperative outcomes	• It is unclear whether racial disparities in surgical care exist; however, disparities among racial groups may exist in postoperative outcomes, which may be affected by differences in socioeconomic status[2,10,11]
Patient activation[a]	• Higher patient activation may be associated with better disease outcome[12]
Quality of life	• Socioeconomic disparities (eg, employment status, income, educational level) may exist in health-related quality of life[1]

- These health disparities may contribute to poorer disease outcomes, including mortality rates, in disadvantaged patients with IBD[1,2]

[a]Patient activation is defined by a patient's demonstration of the skills, knowledge, and motivation needed to effectively manage one's health and participate in healthcare decisions.
CRC=colorectal cancer; IBD=inflammatory bowel disease.

1. Sewell JL, Velayos FS. *Inflamm Bowel Dis.* 2013;19(3):627-643. **2.** Afzali A, Cross RK. *Inflamm Bowel Dis.* 2016;22(8):2023-2040. **3.** Nguyen GC, et al. *J Crohns Colitis.* 2014;8(4):288-295. **4.** May FP, et al. *Am J Gastroenterol.* 2015;110(10):1388-1394. **5.** Hou J, et al. *Gastroenterology.* 2011;140(5):S575. **6.** Greenfest A, et al. *Gastroenterology.* 2019;156(3):S12. **7.** Shi HY, et al. *Clin Gastroenterol Hepatol*. 2018;16(2):190-197. **8.** Galoosian A, et al. *J Clin Gastroenterol.* 2020;54(7):e63-e72. **9.** Gunnells DJ Jr, et al. *J Gastrointest Surg.* 2016;20(5):985-993. **10.** Nguyen GC, et al. *Inflamm Bowel Dis.* 2007;13(11):1408-1416. **11.** Nguyen GC, et al. *Clin Gastroenterol Hepatol.* 2006;4(12):1507-1513. **12.** Barnes EL, et al. *Inflamm Bowel Dis.* 2019;25(7):1248-1254.

Preventive Care Disparities Among Disadvantaged Patients With IBD

- Preventive care is an essential aspect of disease management for patients with IBD[1]
- Frequent and varied tests and procedures for patients with IBD include
  - Screenings for skin cancer, colorectal cancer, cervical cancer, osteoporosis, and anxiety/depression[2,3]
  - Vaccinations against influenza, pneumococcus, herpes zoster, varicella, Tdap, hepatitis A and B, HPV, and MMR[2,3]
  - Other routine evaluations, such as ophthalmic and vitamin D assessments to reduce IBD-related complications[4]
- Differences in adherence to preventive care recommendations have been observed among minorities with IBD[4,5]
  - A retrospective single-center study[a] of patients with IBD found higher rates of skin and ophthalmic examinations among Caucasian patients relative to African American and Asian patients but no difference in vitamin D or DEXA assessments between patient populations[4]

    Note: This study was limited by its retrospective and single-institution design.
  - A cross-sectional single-center study[b] of patients with IBD who had equal access to diagnostic testing and specialist care found a significantly lower prevalence of osteoporosis screening in African American patients (5%) compared with Caucasian (17%) and Hispanic patients (17%)[5]

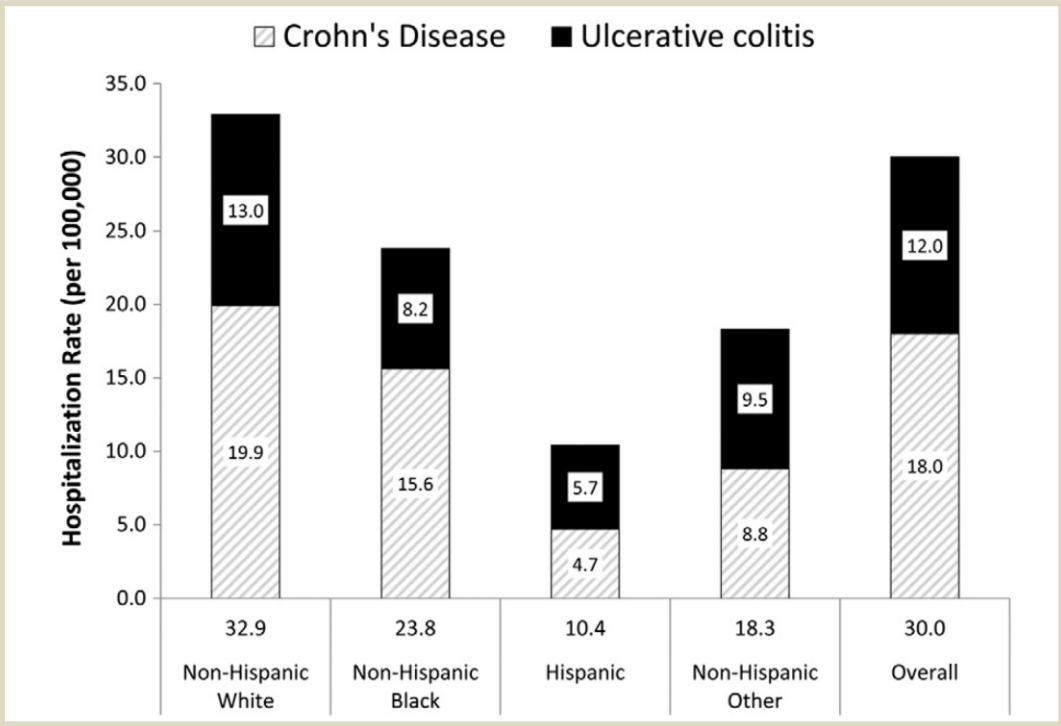
    Note: This study was limited by its retrospective and single-institution design.

[a]Study included 393 patients at a university gastroenterology clinic over a 5-year period. [b]Harris County Hospital District with IBD diagnosis between 2000 and 2006. The study included 197 patients, of whom 48% were African American, 28% Caucasian, and 24% Hispanic.
DEXA=dual-energy X-ray absorptiometry; HPV=human papillomavirus; IBD=inflammatory bowel disease; MMR=measles, mumps, and rubella; Tdap=tetanus, diphtheria, and pertussis.
1. Centers for Disease Control and Prevention**.** https://www.cdc.gov/ibd/data-statistics.htm. Accessed July 28, 2020. **2.** Crohn's & Colitis Foundation. https://www.crohnscolitisfoundation.org/science-and-professionals/education-resources/health-maintenance-checklists. Accessed July 28, 2020. **3.** Farraye FA, et al. *Am J Gastroenterol.* 2017;112(2):241-258. **4.** Greenfest A, et al. *Gastroenterology.* 2019;156(3):S12. **5.** Hou J, et al. *Gastroenterology.* 2011;140(5):S575.

Hospital-Related Disparities Among Disadvantaged Patients With IBD

- Increased hospitalization rates, longer stays, higher hospitalization costs, and higher rates of readmission have been reported among minority patients compared with White patients[1-3]

A Nationwide Database Study of Patients With IBD Investigated the Burden of IBD by Race in the US[2,a]



- Although the rates of hospitalization were highest among White patients, the ratio of IBD hospitalizations to prevalence was disproportionately higher among Black patients (7.3%) compared with White (3.0%) and Hispanic patients (2.7%)
- The ratio of IBD-related mortality to prevalence was highest among Black patients (0.061%) compared with White (0.036%), Hispanic (0.026%), and non-Hispanic other (0.032%) patients

Note: This study was limited by the retrospective design, small sample size, lack of data collection in pediatric patients, and self-reported IBD diagnosis in National Health Interview Study data, which may skew the prevalence of IBD.

[a]Data extracted from the Nationwide Inpatient Sample from 1999.
IBD=inflammatory bowel disease.

1. Galoosian A, et al. *J Clin Gastroenterol.* 2020;54(7):e63-e72. **2.** Nguyen GC, et al. *J Crohns Colitis.* 2014;8(4):288-295. **3.** Gunnells DJ Jr, et al. *J Gastrointest Surg.* 2016;20(5):985-993.

Disparities in Surgery and Postoperative Outcomes in Disadvantaged Patients With IBD

- It remains unclear whether disparities in the utilization of surgery exist among racial and ethnic groups
  - Several US-based studies reported no difference among races[1]
  - Other studies found that Black patients with IBD were less likely to undergo surgery compared with White patients and had longer intervals between admission and surgery[2,3]
  - A meta-analysis including studies from 54 countries showed that Black patients with IBD were more likely to undergo surgery[4]
- Differences in postoperative recurrence, readmission, and mortality rates have been reported among racial groups[1,5-7]
  - A single-center retrospective study found that African American (n=36) patients with CD had lower rates of clinical remission and greater likelihood of recurrence compared with Caucasian (n=167) patients[6]

    Note: This study was limited by its retrospective single-center design, subjective measures for clinical scores, and lack of data on patient compliance.
  - A separate retrospective study analyzed outcomes after surgery in 14,679 patients with IBD and found that Black patients had higher odds of postoperative mortality compared with White patients (OR: 1.37; 95% CI: 1.14-1.64)[7]

    Note: This study was limited by its retrospective design and lack of control for confounders such as insurance status and socioeconomic status.
- Socioeconomic status (eg, insurance and income) is thought to contribute to disparities in surgical therapy and postoperative outcomes[1-3]

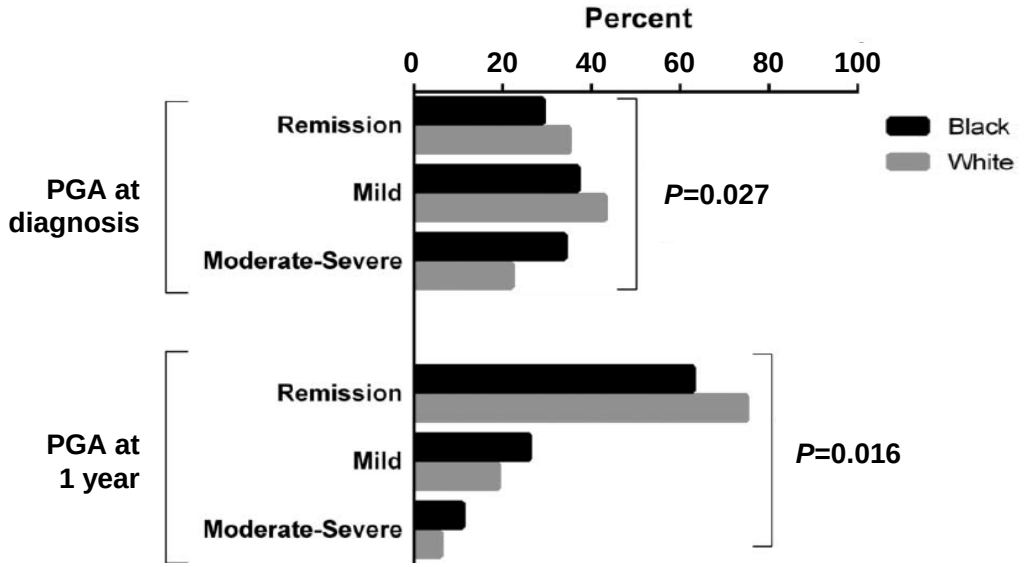
CD=Crohn's disease; IBD=inflammatory bowel disease; OR=odds ratio.

1. Afzali A, Cross RK. *Inflamm Bowel Dis.* 2016;22(8):2023-2040. **2.** Nguyen GC, et al. *Inflamm Bowel Dis.* 2007;13(11):1408-1416. **3.** Nguyen GC, et al. *Clin Gastroenterol Hepatol.* 2006;4(12):1507-1513. **4.** Shi HY, et al. *Clin Gastroenterol Hepatol*. 2018;16(2):190-197. **5.** Gunnells DJ Jr, et al. *J Gastrointest Surg.* 2016;20(5):985-993. **6.** Anyane-Yeboa A, et al. *Aliment Pharmacol Ther.* 2018;48(9):933-940. **7.** Montgomery SR Jr, et al. *Am J Surg.* 2018;215(6):1046-1050.

Health Disparities in IBD Also Exist Among Pediatric Patients

- Disparities in children with IBD may include
  - Severity of disease at diagnosis and incidence of perianal involvement[1-3]
  - Rates of complications, including anemia and nutritional deficiency (eg, low vitamin D and albumin levels)[1,2]
  - Frequency of hospital readmission and length of stay[1,3]
- Insurance status and parental income levels may contribute to the disparities in health and healthcare in children with IBD[2-4]

Disease Severity in Pediatric Patients With CD at Diagnosis and 1-Year Follow-up by Race (N=976)[2,a]



- White children with CD had higher rates of satisfactory growth and lower rates of growth failure at 1-year follow-up (*P*=0.002)

Note: This study was limited by the retrospective design, outpatient clinic encounters only for the data collection, small sample size, and inability to separate the effects of race from those of income or socioeconomic status.

[a]Data extracted from ImproveCareNow network (2006-2014). A total of 118 Black and 858 White patients were included in the study.
CD=Crohn's disease; IBD=inflammatory bowel disease; PGA=physician global assessment.

1. Dotson JL, et al. *Inflamm Bowel Dis.* 2015;21(4):801-808. **2.** Dotson JL, et al. *Inflamm Bowel Dis.* 2017;23(5):767-774. **3.** Barnes EL, et al. *Inflamm Bowel Dis.* 2017;23(12):2189-2196.
4. McLoughlin RJ, et al. *Pediatr Res.* 2020. doi.org/10.1038/s41390-020-0830-9.

Strategies to Overcome Health Disparities in Patients With IBD

- Despite an increase in the incidence of IBD among non-White patients, information on disease characteristics and healthcare utilization associated with IBD in these populations in the US remains sparse[1,2]
- As the burden of IBD among minorities is recognized, increased attention must be given to the availability of quality IBD care for disadvantaged populations[3]
- Key strategies to overcome health disparities in IBD include[3]
  - Clear identification of healthcare barriers and disparities
  - Investigation of the effectiveness of IBD care in diverse settings
  - Investigation of new therapies in studies that enroll patients of lower socioeconomic status and of non-White race/ethnicity
  - Outreach to disadvantaged populations to educate and support patients with IBD to improve their health-related quality of life and correct disease misperceptions
- Increased awareness and understanding of existing health disparities, as well as potential differences in disease management for diverse subgroups of patients, will lead to improved care for all patients with IBD[1]

IBD=inflammatory bowel disease.

1. Afzali A, Cross RK. *Inflamm Bowel Dis.* 2016;22(8):2023-2040. **2.** Aniwan S, et al. *Therap Adv Gastroenterol.* 2019;12:1756284819827692. **3.** Sewell JL, Velayos FS. *Inflamm Bowel Dis.* 2013;19(3):627-643.

Strategies to Improve Health Equity

Multiple Stakeholders Can Help Achieve Health Equity

- Health equity is achieved when fair and equal opportunity is given to every person to attain the highest level of health possible; it is the principle underlying a commitment to reduce and eliminate disparities[1,2]
- Various stakeholders can help[3,4]:

Government

Manufacturers

Community Organizations

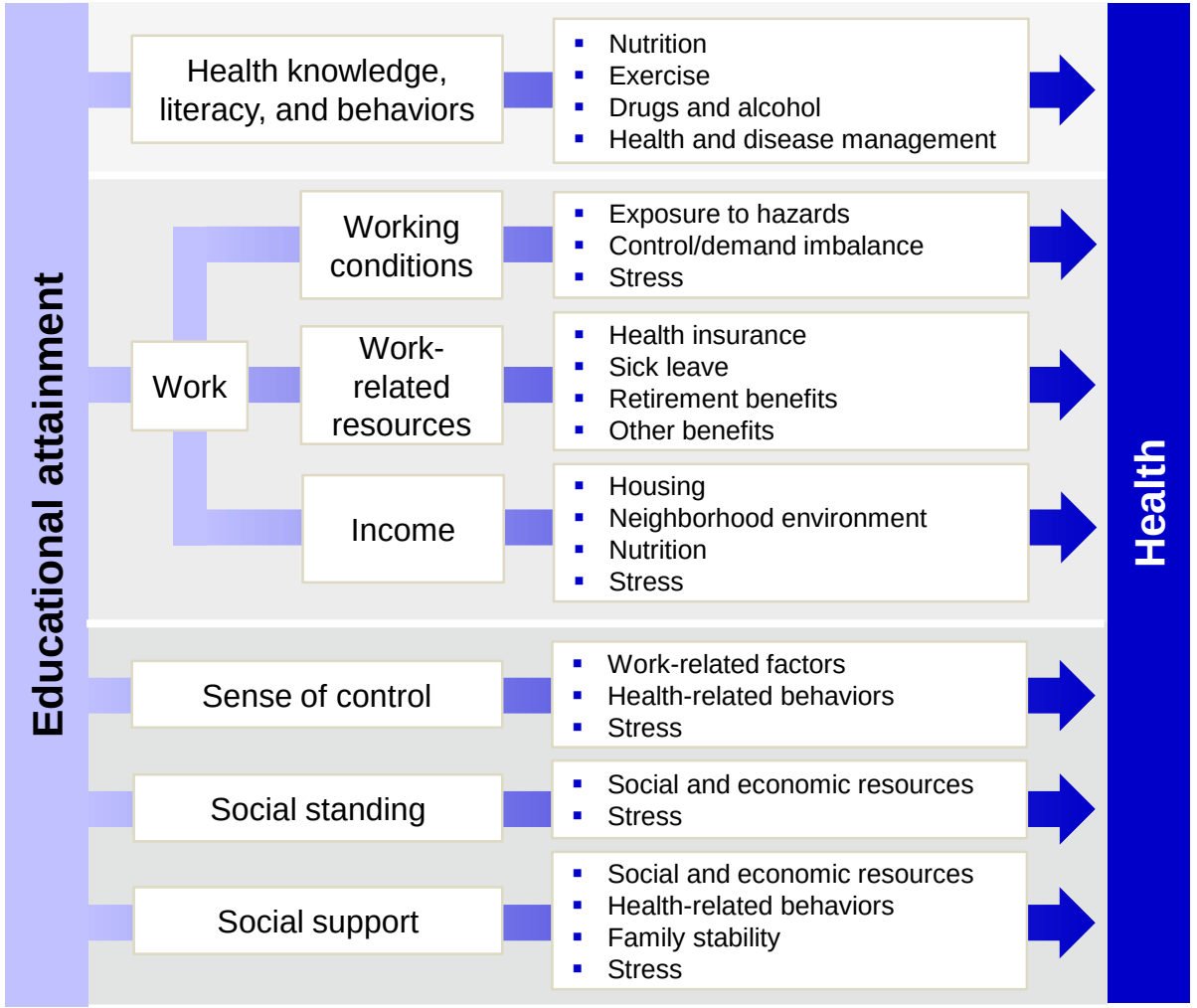
Healthcare Providers

- Stakeholders should focus on improving all components of health equity, including[3,5,6]
  - **Upstream:** awareness of racism and socioeconomic bias
  - **Midstream**: patient education about preventive care, treatment strategies, and access to quality care
  - **Downstream**: diversity in research and advancements in personalized care

1. Centers for Disease Control and Prevention. https://www.healthypeople.gov/2020/about/foundation-health-measures/Disparities. Accessed July 30, 2020. **2.** Braveman PA. *Public Health Rep.* 2014;129(suppl 2):5-8. **3.** Witty A. *Health Aff (Millwood).* 2011;30(1):118-126. **4.** Wallerstein NB, et al. *Am J Public Health.* 2011;101(5):822-830. **5.** Williams DR, Cooper LA. *Int J Environ Res Public Health.* 2019;16(4):606-632. **6.** Sewell JL, Velayos FS. *Inflamm Bowel Dis.* 2013;19(3):627-643.

Be an Advocate for Equal Opportunity in Education

- Advocacy for policies and practices that increase educational attainment is important to improving overall health, including[1,2]
  - Knowledge of healthy behaviors
  - Improved work opportunities
  - Access to care
  - Mental health



1. National Academies of Sciences, Engineering, and Medicine. *Communities in Action: Pathways to Health Equity*. National Academies Press; 2017. **2.** Robert Wood Johnson Foundation. https://www.rwjf.org/en/library/research/2011/05/education-matters-for-health.html. Accessed July 30, 2020.

Increase Diversity in Clinical Research

- Inclusion of diverse participants in clinical research is crucial because it may lead to more comprehensive understanding of racial and ethnic differences in treatment responses, as well as better outcomes[1]
- Increasing diversity in clinical research can occur at various levels[2]
  - **National level:** Regulatory interventions and policy enactments are required to achieve improved access of minority patients to clinical trials
  - **Regional level:** Partnerships between academic centers and satellite sites in underserved communities should be created to increase accrual
  - **Individual level:** Interventions could focus on promoting awareness of clinical trial options for minority patients

1. Clark LT, et al. *Curr Probl Cardiol*. 2019;44(5):148-172. **2.** Nazha B, et al. *Am Soc Clin Oncol Educ Book.* 2019;39:3-10.

Avoid Disparities When Using Health Technologies

- Telehealth interventions produce positive health outcomes and patient satisfaction[1,2]
- Despite the increasing adoption of health technologies such as telehealth for chronic disease management, proactive efforts are necessary to avoid access disparities for populations with limited digital literacy or access[3,4]

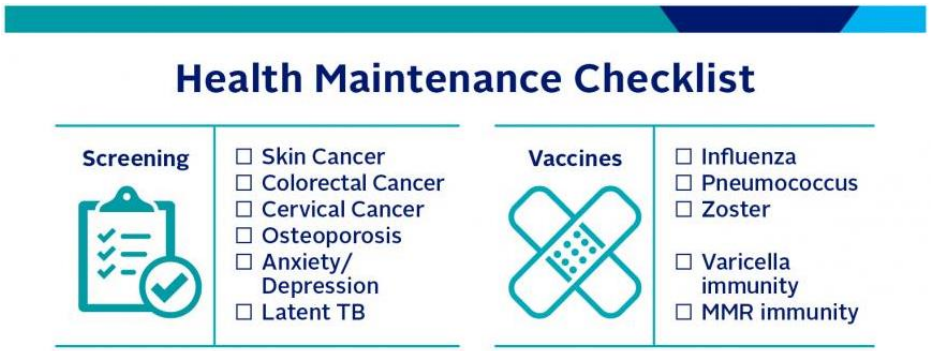
Recommendations With Key Actions to Ensure Equitable Access to Telemedicine[4]

Identify potential disparities in access	Mitigate digital literacy and resource barriers	Remove health system–created barriers	Advocate changes to support sustained and equitable access
▪ Explore potential improvements in access to care for patients with known limited digital literacy and access – Older adults – Low socioeconomic status – Limited health literacy and/or English proficiency – Racial/ethnic minorities ▪ Continue monitoring data to evaluate impact of any interventions	▪ Develop patient education and training programs on digital skills to conduct video visits ▪ Inform patients about newly free or reduced-cost broadband internet in their area	▪ Offer video visits to every patient ▪ Ensure adequate language interpreter access ▪ Screen for patients at high risk of not being able to engage in video visits (eg, no device, internet/data, privacy) ▪ Consider offering telephone visits if video visits are not possible ▪ Increase system leadership awareness of barriers to telemedicine	▪ Permanent expansion of low-cost or free broadband ▪ Funding for telemedicine expansion in less-resourced health centers ▪ Pay parity for telephone and video visits by all payers

1. Totten AM, et al, eds. *Telehealth: Mapping the Evidence for Patient Outcomes From Systematic Reviews*. Agency for Healthcare Research and Quality; 2016. **2.** Orlando JF, et al. *PLoS One.* 2019;14(8):e0221848. **3.** Arcaya MC, Figueroa JF. *Health Aff (Millwood).* 2017;36(6):992-998. **4.** Nouri S, et al. *NEJM Catal.* 2020. doi:10.1056CAT.20.0123.

Provide Education on Health Maintenance Recommendations

Share health maintenance recommendations in IBD with all patients



Adult Patients With IBD

Vaccines and Infections

Influenza: All patients >6 months of age s
annual inactivated influenza vaccine, irresp
immunosuppression status.

MMR: IBD Patients not immune to MMR s
a 2-dose series, at least 4 weeks apart. If i
is uncertain, IgG antibody titer should be c
should not be given to patients currently
immunosuppressive* therapy.

Pneumococcus: All patients >19 years age
systemic immunosuppression* should rec
followed by PPSV23 at least 8 weeks late
of PPSV23 5 years later.

Cancer Screening

Colorectal Cancer: All IBD patients with ex
(>1/3 of the colon) for ≥ 8 years should unc
colonoscopy every 1–3 years, depending on

- IBD patients with a diagnosis of PSC s
colonoscopy, starting at the time of P
and annually thereafter.
- IBD patients with features that are hig
developing colon cancer (i.e. prior histo
adenomatous polyps, dysplasia, family
colon cancer and extensive colitis) sho
colonoscopies more frequently than e

Other Protection

Osteoporosis: Screen for osteoporosis b
(hip and spine) DXA scan in all patients wi
ANY risk factors for osteoporosis; low BM
cumulative steroid exposure, smoker, pos
hypogonadism. Repeat in 5 years if initial

Pediatric Patients With IBD

Vaccines Outside of Routine Age Schedule[1]	Which Patients	How Often
Pneumococcal disease	All with altered immunocompetence[2] The plan for immunization should be discussed with the patient's pediatric gastroenterologist.	• If aged > 6 yrs and not previously received PCV13, give this first (wait 8 weeks before giving PPSV23) • If aged > 2 yrs, give 1st dose PPSV23, then second dose 5 years later

Cancer Prevention	Which Patients	How Often
Full Skin Screen	All on chronic immunosuppression[2]	Annual
Colonoscopy	All with colonic disease for > 8 years	Every 1–3 years

Other Screenings	Which Patients	How Often
Nutritional evaluation	All	Height, weight, labs and BMI at each visit
Smoking status	All	Annual
Depression check	All	Annual
DEXA Scan	All	At time of diagnosis and periodically (every 5 years) after diagnosis based on DEXA findings
PPD or IGRA	Prior to anti-TNF or anti-IL-12/23	Once (repeat if potential TB exposure or in a high-risk region)
Serologies: HepBsAg, HepBsAb, HepA IgM	Prior to anti-TNF or anti-IL-12/23	Once (repeat if potential exposure or in a high-risk region)

DEXA: dual energy X-ray absorptiometry; **PPD:** purified protein derivative; **IGRA:** Interferon Gamma Release Assay

1. Source: https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/immunocompetence.html
2. Altered immunocompetence is assumed to occur with high-dose prednisone (≥ 2 mg/kg for ≥ 14 consecutive days), azathioprine, mercaptopurine, methotrexate, anti-TNFs, anti-IL-12/23 and JAK inhibitors

Resource for your patients: http://www.justlikemeibd.org/parents/healthcare-maintenance-guide.pdf

Developed by Crohn's & Colitis Foundation Professional Education Committee subgroup; Alan Moss MD, Jill Gaidos MD, MariaStella Serrano MD • V2_July_2019

* Systemic immunosuppression refers to current treatment with prednisone (>20mg/day for more than 14 days), azathioprine (>2.5 mg/kg/day) mercaptopurine (>1.5 mg/kg/day), methotrexate (>0.4 mg/kg/week), cyclosporine, tacrolimus, infliximab, adalimumab, golimumab, certolizumab, ustekinumab, or tofacitinib.

Crohn's & Colitis Foundation Professional Education Sub-Committee; Jill Gaidos MD, Alan Moss MD, Mariastella Serrano MD, Gaurav Syal MD • 6/10/2020

Source: Crohn's & Colitis Foundation: Healthcare Maintenance Checklist, updated 2020.
IBD=inflammatory bowel disease; MMR=measles, mumps, and rubella; PCV=pneumococcal conjugate vaccine; PPSV=pneumococcal polysaccharide vaccine; TB=tuberculosis.
Crohn's & Colitis Foundation. https://www.crohnscolitisfoundation.org/science-and-professionals/education-resources/health-maintenance-checklists. Accessed July 30, 2020.

Summary

- Health disparities are differences in care closely linked with economic, social, or environmental disadvantage; reducing health disparities is directly linked to achieving health equity and the highest level of care for all people
- Upstream and midstream social determinants of health such as racism, poverty, education, and insurance status contribute to disparities in health
- Although IBD has historically been considered to be a disease affecting White patients, it is increasingly recognized as a disease affecting minority populations
- Health and healthcare disparities exist in disadvantaged patient populations; however, further research is needed to elucidate the disparities in IBD
- Stakeholders from government, drug manufacturers, providers, and communities can work to reduce health inequities and increase awareness of social determinants of health

Available Resources

- American College of Gastroenterology
  - Clinical guideline
- Crohn's & Colitis Foundation
  - Health maintenance checklists, updated 2020
- Centers for Disease Control and Prevention
  - Disparities
  - Determinants of health
  - Health equity considerations and racial and ethnic minority groups
- Kaiser Family Foundation
  - Disparities in health and healthcare: five key questions and answers
- NYC Health
  - COVID-19: data
- Robert Wood Johnson Foundation
  - Why education matters to health
  - Visualizing health equity: one size does not fit all infographic
- Urban Institute
  - Nine charts about wealth inequality in America
  - Wealth inequality is a barrier to education and social mobility
- US Census Bureau
  - Educational attainment in the United States: 2015
- World Health Organization
  - Social determinants of health

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