



**BlueCross BlueShield
of Oklahoma**

If a conflict arises between a Clinical Payment and Coding Policy (“CPCP”) and any plan document under which a member is entitled to Covered Services, the plan document will govern. If a conflict arises between a CPCP and any provider contract pursuant to which a provider participates in and/or provides Covered Services to eligible member(s) and/or plans, the provider contract will govern. “Plan documents” include, but are not limited to, Certificates of Health Care Benefits, benefit booklets, Summary Plan Descriptions, and other coverage documents. BCBSOK may use reasonable discretion interpreting and applying this policy to services being delivered in a particular case. BCBSOK has full and final discretionary authority for their interpretation and application to the extent provided under any applicable plan documents.

Providers are responsible for submission of accurate documentation of services performed. Providers are expected to submit claims for services rendered using valid code combinations from Health Insurance Portability and Accountability Act (“HIPAA”) approved code sets. Claims should be coded appropriately according to industry standard coding guidelines including, but not limited to: Uniform Billing (“UB”) Editor, American Medical Association (“AMA”), Current Procedural Terminology (“CPT®”), CPT® Assistant, Healthcare Common Procedure Coding System (“HCPCS”), ICD-10 CM and PCS, National Drug Codes (“NDC”), Diagnosis Related Group (“DRG”) guidelines, Centers for Medicare and Medicaid Services (“CMS”) National Correct Coding Initiative (“NCCI”) Policy Manual, CCI table edits and other CMS guidelines.

Claims are subject to the code edit protocols for services/procedures billed. Claim submissions are subject to claim review including but not limited to, any terms of benefit coverage, provider contract language, medical policies, clinical payment and coding policies as well as coding software logic. Upon request, the provider is urged to submit any additional documentation.

Fecal Analysis in the Diagnosis of Intestinal Dysbiosis and Fecal Microbiota Transplant Testing

Policy Number: CPCPLAB025

Version 1.0

Enterprise Clinical Payment and Coding Policy Committee Approval Date:

Plan Effective Date: March 1, 2024

Description

BCBSOK has implemented certain lab management reimbursement criteria. Not all requirements apply to each product. Providers are urged to review Plan documents for eligible coverage for services rendered.

Reimbursement Information:

1. Prior to fecal microbiota transplant (FMT), fecal analysis by culture for the following microorganisms **may be reimbursable**:

 - a. Extended spectrum beta-lactamase (ESBL)-producing *Enterobacteriaceae*
 - b. Vancomycin-resistant *Enterococci* (VRE)
 - c. Carbapenem-resistant *Enterobacteriaceae* (CRE)
 - d. Methicillin-resistant *Staphylococcus aureus* (MRSA)
 - e. *Campylobacter*
 - f. *Shigella*
 - g. *Salmonella*
2. Prior to fecal microbiota transplant (FMT), fecal analysis for the following microorganisms by nucleic acid amplification testing (NAAT) **may be reimbursable**.

 - a. *Clostridium difficile*;
 - b. *Campylobacter*;
 - c. *Salmonella*;
 - d. *Shigella*;
 - e. Shiga toxin-producing *Escherichia coli*;
 - f. Norovirus;
 - g. Rotavirus;
 - h. COVID-19 (SARS-CoV-2).
3. Prior to fecal microbiota transplant (FMT), fecal analysis for the following microorganisms by nucleic acid amplification testing (NAAT) **is not reimbursable**:

 - a. Extended spectrum beta-lactamase (ESBL)-producing *Enterobacteriaceae*;
 - b. Vancomycin-resistant *Enterococci* (VRE);
 - c. Carbapenem-resistant *Enterobacteriaceae* (CRE);
 - d. Methicillin-resistant *Staphylococcus aureus* (MRSA);
 - e. Any other microorganisms not listed above.
4. As a diagnostic test for the evaluation of intestinal dysbiosis, irritable bowel syndrome, malabsorption, or small intestinal overgrowth of bacteria, fecal analysis of the following components **is not reimbursable**:

 - a. Triglycerides;
 - b. Chymotrypsin;
 - c. Iso-butyrate, iso-valerate, and n-valerate;
 - d. Meat and vegetable fibers;
 - e. Long chain fatty acids;
 - f. Cholesterol;
 - g. Total short chain fatty acids;
 - h. Levels of *Lactobacilli*, bifidobacteria, and *E. coli* and other "potential pathogens," including *Aeromona*, *Bacillus cereus*, *Campylobacter*, *Citrobacter*, *Klebsiella*, *Proteus*, *Pseudomonas*, *Salmonella*, *Shigella*, *S. aureus*, *Vibrio*;
 - i. Identification and quantitation of fecal yeast (including *C. albicans*, *C. tropicalis*, *Rhodoptorul* and *Geotrichum*);
 - j. N-butyrate;
 - k. Beta-glucuronidase;
 - l. pH;

- m. Short chain fatty acid distribution (adequate amount and proportions of the different short chain fatty acids reflect the basic status of intestinal metabolism);
- n. Fecal secretory IgA.

Procedure Codes

The following is not an all-encompassing code list. The inclusion of a code does not guarantee it is a covered service or eligible for reimbursement.

Codes
82239, 82542, 82705, 82710, 82715, 82725, 82784, 83520, 83630, 83986, 84311, 87045, 87046, 87075, 87102, 87177, 87209, 87328, 87329, 87336, 87493, 87500, 87641, 87798, 89160, S3708

References:

Arasaradnam, R. P., Brown, S., Forbes, A., Fox, M. R., Hungin, P., Kelman, L., Major, G., O'Connor, M., Sanders, D. S., Sinha, R., Smith, S. C., Thomas, P., & Walters, J. R. F. (2018). Guidelines for the investigation of chronic diarrhoea in adults: British Society of Gastroenterology, 3rd edition. *Gut*, 67(8), 1380. <https://doi.org/10.1136/gutjnl-2017-315909>

Bäckhed, F., The Wallenberg Laboratory, U. o. G., Sahlgrenska University Hospital, Göteborg, Sweden 41345, Institute for Genome Sciences at the University of Maryland School of Medicine, B., MD 21201, USA, Ringel, Y., Division of Gastroenterology and Hepatology, D. o. M., University of North Carolina at Chapel Hill, NC 27599, USA, Dairy & Food Culture Technologies, C., CO 80122, USA, Division of Gastroenterology and Hepatology, M., and Immunology, University of North Carolina, Chapel Hill, NC 27599, USA, Gastroenterology, H. a. N., Hospital for Sick Children, University of Toronto, Toronto, Canada M5G 1X8, Versalovic, J., Young, V., Department of Microbiology and Immunology, U. o. M., Ann Arbor, MI 48109, USA, & bfinlay@msl.ubc.ca. (2012). Defining a Healthy Human Gut Microbiome: Current Concepts, Future Directions, and Clinical Applications. *Cell Host & Microbe*, 12(5), 611-622. <https://doi.org/10.1016/j.chom.2012.10.012>

Bakken, J. S., Borody, T., Brandt, L. J., Brill, J. V., Demarco, D. C., Franzos, M. A., Kelly, C., Khoruts, A., Louie, T., Martinelli, L. P., Moore, T. A., Russell, G., & Surawicz, C. (2011). Treating Clostridium difficile Infection With Fecal Microbiota Transplantation. *Clinical Gastroenterology and Hepatology*, 9(12), 1044-1049. <https://doi.org/10.1016/j.cgh.2011.08.014>

Bernstein, C. N., Eliakim, A., Fedail, S., Fried, M., Gearry, R., Goh, K. L., Hamid, S., Khan, A. G., Khalif, I., Ng, S. C., Ouyang, Q., Rey, J. F., Sood, A., Steinwurz, F., Watermeyer, G., & LeMair, A. (2016). World Gastroenterology Organisation Global Guidelines Inflammatory Bowel Disease: Update August 2015. *J Clin Gastroenterol*, 50(10), 803-818. <https://doi.org/10.1097/mcg.0000000000000660>

Berry, D., & Reinisch, W. (2013). Intestinal microbiota: a source of novel biomarkers in inflammatory bowel diseases? *Best Pract Res Clin Gastroenterol*, 27(1), 47-58. <https://doi.org/10.1016/j.bpg.2013.03.005>

BioHM. (2023). <https://biohmhealth.com/>

Carding, S., Verbeke, K., Vipond, D. T., Corfe, B. M., & Owen, L. J. (2015). Dysbiosis of the gut microbiota in disease. *Microb Ecol Health Dis*, 26. <https://doi.org/10.3402/mehd.v26.26191>

Casen, C., Vebo, H. C., Sekelja, M., Hegge, F. T., Karlsson, M. K., Cierniejewska, E., Dzankovic, S., Froyland, C., Nestestog, R., Engstrand, L., Munkholm, P., Nielsen, O. H., Rogler, G., Simren, M., Ohman, L., Vatn, M. H., & Rudi, K. (2015). Deviations in human gut microbiota: a novel diagnostic test for determining dysbiosis in patients with IBS or IBD. *Aliment Pharmacol Ther*, 42(1), 71-83.

<https://doi.org/10.1111/apt.13236>

Colombel, J. F., Shin, A., & Gibson, P. R. (2019). AGA Clinical Practice Update on Functional Gastrointestinal Symptoms in Patients With Inflammatory Bowel Disease: Expert Review. *Clin Gastroenterol Hepatol*, 17(3), 380-390.e381. <https://doi.org/10.1016/j.cgh.2018.08.001>

Costello, S. P., Hughes, P. A., Waters, O., Bryant, R. V., Vincent, A. D., Blatchford, P., Katsikeros, R., Makanyanga, J., Campaniello, M. A., Mavrangelos, C., Rosewarne, C. P., Bickley, C., Peters, C., Schoeman, M. N., Conlon, M. A., Roberts-Thomson, I. C., & Andrews, J. M. (2019). Effect of Fecal Microbiota Transplantation on 8-Week Remission in Patients With Ulcerative Colitis: A Randomized Clinical Trial. *Jama*, 321(2), 156-164. <https://doi.org/10.1001/jama.2018.20046>

Danilova, N. A., Abdulkhakov, S. R., Grigoryeva, T. V., Markelova, M. I., Vasilyev, I. Y., Boulygina, E. A., Ardatskaya, M. D., Pavlenko, A. V., Tyakht, A. V., Odintsova, A. K., & Abdulkhakov, R. A. (2019). Markers of dysbiosis in patients with ulcerative colitis and Crohn's disease. *Ter Arkh*, 91(4), 17-24.

<https://doi.org/10.26442/00403660.2019.04.000211>

Davidovics, Z. H., Michail, S., Nicholson, M. R., Kociolek, L. K., Pai, N., Hansen, R., Schwerd, T., Maspons, A., Shamir, R., Szajewska, H., Thapar, N., de Meij, T., Mosca, A., Vandenplas, Y., Kahn, S. A., & Kellermayer, R. (2019). Fecal Microbiota Transplantation for Recurrent Clostridium difficile Infection and Other Conditions in Children: A Joint Position Paper From the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition. *J Pediatr Gastroenterol Nutr*, 68(1), 130-143.

<https://doi.org/10.1097/mpg.0000000000002205>

DNA Testing Choice. (2019). Microbiome Testing. <https://dnatestingchoice.com/en-us/microbiome-testing>

Falony, G., Joossens, M., Vieira-Silva, S., Wang, J., Darzi, Y., Faust, K., Kurilshikov, A., Bonder, M. J., Valles-Colomer, M., Vandepitte, D., Tito, R. Y., Chaffron, S., Rymenans, L., Verspecht, C., De Sutter, L., Lima-Mendez, G., D'Hoe, K., Jonckheere, K., Homola, D., . . . Raes, J. (2016). Population-level analysis of gut microbiome variation. *Science*, 352(6285), 560-564. <https://doi.org/10.1126/science.aad3503>

FDA. (2019). *Fecal Microbiota for Transplantation: Safety Communication- Risk of Serious Adverse Reactions Due to Transmission of Multi-Drug Resistant Organisms*.

<https://www.fda.gov/safety/medwatch-safety-alerts-human-medical-products/fecal-microbiota-transplantation-safety-communication-risk-serious-adverse-reactions-due>

FDA. (2020a). *Fecal Microbiota for Transplantation: New Safety Information - Regarding Additional Protections for Screening Donors for COVID-19 and Exposure to SARS-CoV-2 and Testing for SARS-CoV-2.* <https://www.fda.gov/safety/medical-product-safety-information/fecal-microbiota-transplantation-new-safety-information-regarding-additional-protections-screening>

FDA. (2020b). Fecal Microbiota for Transplantation: Safety Alert - Risk of Serious Adverse Events Likely Due to Transmission of Pathogenic Organisms. <https://www.fda.gov/safety/medical-product-safety-information/fecal-microbiota-transplantation-safety-alert-risk-serious-adverse-events-likely-due-transmission>

Frank, D. N., St Amand, A. L., Feldman, R. A., Boedeker, E. C., Harpaz, N., & Pace, N. R. (2007). Molecular-phylogenetic characterization of microbial community imbalances in human inflammatory bowel diseases. *Proc Natl Acad Sci U S A*, 104(34), 13780-13785. <https://doi.org/10.1073/pnas.0706625104>

Genova. (2023). *Organix® Dysbiosis Profile.* <https://www.gdx.net/uk/product/organix-dysbiosis-test-urine>

Guarino, A., Ashkenazi, S., Gendrel, D., Lo Vecchio, A., Shamir, R., & Szajewska, H. (2014). European Society for Pediatric Gastroenterology, Hepatology, and Nutrition/European Society for Pediatric Infectious Diseases Evidence-Based Guidelines for the Management of Acute Gastroenteritis in Children in Europe: Update 2014. 59(1), 132-152. <https://doi.org/10.1097/mpg.0000000000000375>

Guinane, C. M., & Cotter, P. D. (2013). Role of the gut microbiota in health and chronic gastrointestinal disease: understanding a hidden metabolic organ. *Therap Adv Gastroenterol*, 6(4), 295-308. <https://doi.org/10.1177/1756283x13482996>

Holleran, G., Scaldaferri, F., Ianiro, G., Lopetuso, L., Mc Namara, D., Mele, M. C., Gasbarrini, A., & Cammarota, G. (2018). Fecal microbiota transplantation for the treatment of patients with ulcerative colitis and other gastrointestinal conditions beyond Clostridium difficile infection: an update. *Drugs Today (Barc)*, 54(2), 123-136. <https://doi.org/10.1358/dot.2018.54.2.2760765>

Hunt, R., Quigley, E., Abbas, Z., Eliakim, A., Emmanuel, A., Goh, K.-L., Guarner, F., Katelaris, P., Smout, A., Umar, M., Whorwell, P., Johanson, J., Saenz, R., Besançon, L., Ndjeuda, E., Horn, J., Hungin, P., Jones, R., Krabshuis, J., . . . Review, T. (2014). Coping With Common Gastrointestinal Symptoms in the Community: A Global Perspective on Heartburn, Constipation, Bloating, and Abdominal Pain/Discomfort May 2013. *Journal of Clinical Gastroenterology*, 48(7). <https://doi.org/10.1097/MCG.0000000000000141>

IDSA/ACG/ASGE/AGA/NASPGHAN. (2013). Current Consensus Guidance on Donor Screening and Stool Testing for FMT. [https://www.naspghan.org/files/documents/Joint_Scty_Sign-on_FDA%20FMT_final%207.15.13%20\(1\).pdf](https://www.naspghan.org/files/documents/Joint_Scty_Sign-on_FDA%20FMT_final%207.15.13%20(1).pdf)

Johnston Jr, R. B. (2023, 04/06/2023). *An overview of the innate immune system.* <https://www.uptodate.com/contents/an-overview-of-the-innate-immune-system>

Kau, A. L., Ahern, P. P., Griffin, N. W., Goodman, A. L., & Gordon, J. I. (2011). Human nutrition, the gut microbiome and the immune system. *Nature*, 474(7351), 327-336. <https://doi.org/10.1038/nature10213>

Kelly, C. R., Fischer, M., Allegretti, J. R., LaPlante, K., Stewart, D. B., Limketkai, B. N., & Stollman, N. H. (2021). ACG Clinical Guidelines: Prevention, Diagnosis, and Treatment of Clostridioides difficile Infections. *Official journal of the American College of Gastroenterology / ACG*, 116(6), 1124-1147. <https://doi.org/10.14309/ajg.0000000000001278>

Kelly, C. R., Kahn, S., Kashyap, P., Laine, L., Rubin, D., Atreja, A., Moore, T., & Wu, G. (2015). Update on Fecal Microbiota Transplantation 2015: Indications, Methodologies, Mechanisms, and Outlook. *Gastroenterology*, 149(1), 223-237. <https://doi.org/10.1053/j.gastro.2015.05.008>

Kim, K. O., & Gluck, M. (2019). Fecal Microbiota Transplantation: An Update on Clinical Practice. *Clin Endosc*, 52(2), 137-143. <https://doi.org/10.5946/ce.2019.009>

Lacy, B. E., Pimentel, M., Brenner, D. M., Chey, W. D., Keefer, L. A., Long, M. D., & Moshiree, B. (2021). ACG Clinical Guideline: Management of Irritable Bowel Syndrome. *Am J Gastroenterol*, 116(1), 17-44. <https://doi.org/10.14309/ajg.0000000000001036>

Lamb, C. A., Kennedy, N. A., Raine, T., Hendy, P. A., Smith, P. J., Limdi, J. K., Hayee, B. H., Lomer, M. C. E., Parkes, G. C., Selinger, C., Barrett, K. J., Davies, R. J., Bennett, C., Gittens, S., Dunlop, M. G., Faiz, O., Fraser, A., Garrick, V., Johnston, P. D., . . . Hawthorne, A. B. (2021). Correction: British Society of Gastroenterology consensus guidelines on the management of inflammatory bowel disease in adults. *Gut*, 68(Suppl 3), s1. <https://doi.org/10.1136/gutjnl-2019-318484>

Ley, R. E., Peterson, D. A., & Gordon, J. I. (2006). Ecological and evolutionary forces shaping microbial diversity in the human intestine. *Cell*, 124(4), 837-848. <https://doi.org/10.1016/j.cell.2006.02.017>

Ley, R. E., Turnbaugh, P. J., Klein, S., & Gordon, J. I. (2006). Microbial ecology: human gut microbes associated with obesity. *Nature*, 444(7122), 1022-1023. <https://doi.org/10.1038/4441022a>

Lichtenstein, G. R., Loftus, E. V., Isaacs, K. L., Regueiro, M. D., Gerson, L. B., & Sands, B. E. (2018). ACG Clinical Guideline: Management of Crohn's Disease in Adults. *Official journal of the American College of Gastroenterology / ACG*, 113(4). <https://doi.org/10.1038/ajg.2018.27>

Lo Presti, A., Zorzi, F., Del Chierico, F., Altomare, A., Cocca, S., Avola, A., De Biasio, F., Russo, A., Celli, E., Reddel, S., Calabrese, E., Biancone, L., Monteleone, G., Cicala, M., Angeletti, S., Ciccozzi, M., Putignani, L., & Guarino, M. P. L. (2019). Fecal and Mucosal Microbiota Profiling in Irritable Bowel Syndrome and Inflammatory Bowel Disease. *Front Microbiol*, 10, 1655. <https://doi.org/10.3389/fmicb.2019.01655>

Lozupone, C. A., Stombaugh, J. I., Gordon, J. I., Jansson, J. K., & Knight, R. (2012). Diversity, stability and resilience of the human gut microbiota. *Nature*, 489(7415), 220-230. <https://doi.org/10.1038/nature11550>

Maaser, C., Sturm, A., Vavricka, S. R., Kucharzik, T., Fiorino, G., Annese, V., Calabrese, E., Baumgart, D. C., Bettenworth, D., Borralho Nunes, P., Burisch, J., Castiglione, F., Eliakim, R., Ellul, P., González-Lama, Y., Gordon, H., Halligan, S., Katsanos, K., Kopylov, U., . . . Stoker, J. (2019). ECCO-ESGAR Guideline for Diagnostic Assessment in IBD Part 1: Initial diagnosis, monitoring of known IBD, detection of complications. *Journal of Crohn's and Colitis*, 13(2), 144-164K. <https://doi.org/10.1093/ecco-jcc/jiy113>

Macareño-Castro, J., Solano-Salazar, A., Dong, L. T., Mohiuddin, M., & Espinoza, J. L. (2022). Fecal microbiota transplantation for Carbapenem-Resistant Enterobacteriaceae: A systematic review. *J Infect*, 84(6), 749-759. <https://doi.org/10.1016/j.jinf.2022.04.028>

Malham, M., Lilje, B., Houen, G., Winther, K., Andersen, P. S., & Jakobsen, C. (2019). The microbiome reflects diagnosis and predicts disease severity in paediatric onset inflammatory bowel disease. *Scand J Gastroenterol*, 1-7. <https://doi.org/10.1080/00365521.2019.1644368>

Marietta, E., Mangalam, A. K., Taneja, V., & Murray, J. A. (2020). Intestinal Dysbiosis in, and Enteral Bacterial Therapies for, Systemic Autoimmune Diseases [Review]. *Frontiers in Immunology*, 11(2760). <https://doi.org/10.3389/fimmu.2020.573079>

Michail, S., Nicholson, M., Kahn, S., & Kellermayer, R. (2020). Addendum for: Fecal Microbiota Transplantation for Recurrent Clostridium difficile Infection and Other Conditions in Children: A Joint Position Paper From the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition. *J Pediatr Gastroenterol Nutr*, 70(3). <https://doi.org/10.1097/MPG.0000000000002205>

Mullish, B. H., Quraishi, M. N., Segal, J. P., McCune, V. L., Baxter, M., Marsden, G. L., Moore, D. J., Colville, A., Bhala, N., Iqbal, T. H., Settle, C., Kontkowski, G., Hart, A. L., Hawkey, P. M., Goldenberg, S. D., & Williams, H. R. T. (2018). The use of faecal microbiota transplant as treatment for recurrent or refractory Clostridium difficile infection and other potential indications: joint British Society of Gastroenterology (BSG) and Healthcare Infection Society (HIS) guidelines. *Gut*, 67(11), 1920. <https://doi.org/10.1136/gutjnl-2018-316818>

Myneedu, K., Deoker, A., Schmulson, M. J., & Bashashati, M. (2019). Fecal microbiota transplantation in irritable bowel syndrome: A systematic review and meta-analysis. *United European Gastroenterol J*, 7(8), 1033-1041. <https://doi.org/10.1177/2050640619866990>

NICE. (2017). Irritable bowel syndrome in adults: diagnosis and management. <https://www.nice.org.uk/guidance/cg61/chapter/1-Recommendations#diagnosis-of-ibs>

Pang, T., Leach, S. T., Katz, T., Day, A. S., & Ooi, C. Y. (2014). Fecal Biomarkers of Intestinal Health and Disease in Children. *Front Pediatr*, 2. <https://doi.org/10.3389/fped.2014.00006>

Parada Venegas, D., De la Fuente, M. K., Landskron, G., Gonzalez, M. J., Quera, R., Dijkstra, G., Harmsen, H. J. M., Faber, K. N., & Hermoso, M. A. (2019). Short Chain Fatty Acids (SCFAs)-Mediated Gut Epithelial and Immune Regulation and Its Relevance for Inflammatory Bowel Diseases. *Front Immunol*, 10, 277. <https://doi.org/10.3389/fimmu.2019.00277>

Qin, J., Li, R., Raes, J., Arumugam, M., Burgdorf, K. S., Manichanh, C., Nielsen, T., Pons, N., Levenez, F., Yamada, T., Mende, D. R., Li, J., Xu, J., Li, S., Li, D., Cao, J., Wang, B., Liang, H., Zheng, H., . . . Ehrlich, S. D. (2010). A human gut microbial gene catalogue established by metagenomic sequencing. *Nature*, 464(7285), 59-65. <https://doi.org/10.1038/nature08821>

Qin, J., Li, Y., Cai, Z., Li, S., Zhu, J., Zhang, F., Liang, S., Zhang, W., Guan, Y., Shen, D., Peng, Y., Zhang, D., Jie, Z., Wu, W., Qin, Y., Xue, W., Li, J., Han, L., Lu, D., . . . Kristiansen, K. (2012). A metagenome-wide

association study of gut microbiota in type 2 diabetes. *Nature*, 490(7418), 55-60.
<https://doi.org/10.1038/nature11450>

Raby, B. (2020). Tools for genetics and genomics: Polymerase chain reaction.

Rubin, D. T., Ananthakrishnan, A. N., Siegel, C. A., Sauer, B. G., & Long, M. D. (2019). ACG Clinical Guideline: Ulcerative Colitis in Adults. *Official journal of the American College of Gastroenterology / ACG*, 114(3). <https://doi.org/10.14309/ajg.0000000000000152>

Saha, S., Mara, K., Pardi, D. S., & Khanna, S. (2021). Long-term Safety of Fecal Microbiota Transplantation for Recurrent Clostridioides difficile Infection. *Gastroenterology*, 160(6), 1961-1969.e1963. <https://doi.org/10.1053/j.gastro.2021.01.010>

Simren, M., Barbara, G., Flint, H. J., Spiegel, B. M., Spiller, R. C., Vanner, S., Verdu, E. F., Whorwell, P. J., & Zoetendal, E. G. (2013). Intestinal microbiota in functional bowel disorders: a Rome foundation report. *Gut*, 62(1), 159-176. <https://doi.org/10.1136/gutjnl-2012-302167>

Snapper, S. B., & Abraham, C. (2022, 02/10/2022). *Immune and microbial mechanisms in the pathogenesis of inflammatory bowel disease*. <https://www.uptodate.com/contents/immune-and-microbial-mechanisms-in-the-pathogenesis-of-inflammatory-bowel-disease>

Vaughn, B. P., Rank, K. M., & Khoruts, A. (2018). Fecal Microbiota Transplantation: Current Status in Treatment of GI and Liver Disease. *Clin Gastroenterol Hepatol*.
<https://doi.org/10.1016/j.cgh.2018.07.026>

Viome. (2019). *Viome: Demo Two's Recommendations*.
https://assets.ctfassets.net/qk4l4jfatr3e/5LmbY0DgNjXgFQ9kq8LWxa/f60f6d2d955b6a89be2453fecacf1103/ViomeRecommendations_Demo.pdf

Viome. (2023). *What is the Gut Microbiome?* <https://www.viome.com/topic/gut-health/what-is-the-gut-microbiome>

Yu, E. W., Gao, L., Stastka, P., Cheney, M. C., Mahabamunuge, J., Torres Soto, M., Ford, C. B., Bryant, J. A., Henn, M. R., & Hohmann, E. L. (2020). Fecal microbiota transplantation for the improvement of metabolism in obesity: The FMT-TRIM double-blind placebo-controlled pilot trial. *PLoS Med*, 17(3), e1003051. <https://doi.org/10.1371/journal.pmed.1003051>

Zhang, H., DiBaise, J. K., Zuccolo, A., Kudrna, D., Braidotti, M., Yu, Y., Parameswaran, P., Crowell, M. D., Wing, R., Rittmann, B. E., & Krajmalnik-Brown, R. (2009). Human gut microbiota in obesity and after gastric bypass. *Proc Natl Acad Sci U S A*, 106(7), 2365-2370. <https://doi.org/10.1073/pnas.0812600106>

Zhernakova, A., Kurilshikov, A., Bonder, M. J., Tigchelaar, E. F., Schirmer, M., Vatanen, T., Mujagic, Z., Vila, A. V., Falony, G., Vieira-Silva, S., Wang, J., Imhann, F., Brandsma, E., Jankipersadsing, S. A., Joossens, M., Cenit, M. C., Deelen, P., Swertz, M. A., Weersma, R. K., . . . Fu, J. (2016). Population-based metagenomics analysis reveals markers for gut microbiome composition and diversity. *Science*, 352(6285), 565-569. <https://doi.org/10.1126/science.aad3369>

Zoetendal, E. G., Akkermans, A. D., & De Vos, W. M. (1998). Temperature gradient gel electrophoresis analysis of 16S rRNA from human fecal samples reveals stable and host-specific communities of active bacteria. *Appl Environ Microbiol*, 64(10), 3854-3859. <https://doi.org/10.1128/AEM.64.10.3854-3859.1998>

Policy Update History:

Effective Date	Summary of Change
03/01/2024	Document updated with literature review. Reimbursement Information revised for clarity. Added codes 82239, 82725, 82784, 83520, 83630, 87177, 87209, 87328, 87329, 87336; and removed codes 87076, 87077, 87081, 87106. References revised.
11/1/2023	Document updated with literature review. Reimbursement information unchanged. References revised.
11/1/2022	New policy