Dr. Carol Tweed attended Duke University, where she was inducted into Phi Beta Kappa. She graduated summa cum laude with a degree in Biology, and a concentration in molecular biology. She received her medical degree from Washington University in St. Louis, where she was elected to Alpha Omega Alpha. She then completed her Internal Medicine Residency and Hematology/Oncology Fellowship at the University of Pennsylvania.

From 2006-2012, Dr. Tweed was an Assistant Professor on faculty at the University of Pennsylvania's Abramson Cancer Center. During this time, she practiced as a breast oncology specialist and enthusiastically educated medical students, residents, and fellows.

In 2012, she moved to Annapolis, MD, practicing medical oncology and hematology, and joined Maryland Oncology Hematology in October 2020. Dr. Tweed passionately cares for patients with a broad range of hematologic and oncologic disorders. Her work as a breast medical oncology expert continues. She serves as a member of the Editorial Board of the (National Cancer Institute) NCI PDQ. She is a regional speaker on the topics of breast cancer and cancer genomics. She received her certification in genetic cancer risk assessment through the City of Hope via completion of the Intensive Course in Genomic Cancer Risk Assessment in 2022. Also, Dr. Tweed is a co-founder and co-director of the Maryland Breast Cancer Consortium.

Dr. Tweed is an active clinical researcher; she has served as principal investigator on numerous clinical trials. She also is an Instructor of Medicine/preceptor for Johns Hopkins School of Medicine, educating medical students.