Infertility is a common result of cancer treatment; however, opportunities exist for patients to preserve fertility prior to treatment. Recent evidence suggests that healthcare providers, including nurses, do not consistently discuss fertility preservation (FP) with patients. This qualitative, cross-sectional pilot study used a focus group and in-depth interviews to explore knowledge, attitudes, and practice behaviors related to nurses’ discussion of FP with patients with cancer. Results indicate that only half of the nurses discuss FP methods with patients, even though most believe that having discussions with patients about fertility is part of their role. Factors associated with the discussion of FP among nurses included (a) knowledge (FP procedures, fertility institutes and clinics, resources for patients, and practice guidelines), (b) attitudes (difficulty finding facilities, time constraints, role, comfort level, ethical issues, financial considerations, and patient characteristics), and (c) behaviors (patient initiation, physician behaviors, patient characteristics, and timing). Discussion should be stimulated among nurses about the role of nurses in the FP discussion, and educational interventions and practice guidelines should be developed that are aimed at oncology nurses to help facilitate discussions with patients.