The use of advanced practice professionals (APPs) has been established in oncology care. APPs are frequently the most readily available ordering provider for care guidance when it becomes evident that a patient with cancer is failing. The purpose of the current preliminary descriptive project was to determine the best method for assessing APP performance in oncology-specific circumstances, particularly in the failing patient with cancer. A test group of 14 APPs completed a competency self-assessment, the Basic Knowledge Assessment Tool (BKAT)-8S, and attended a four-hour simulation and classroom experience. Competency checklists with 30 priority interventions for each scenario had been anticipated by an expert panel. The APP competency self-assessment was measured for knowledge base and critical thinking. All of the APPs scored at or above the level of a critical care nurse with one year of experience on the BKAT-8S. Twenty-seven of the anticipated interventions were enacted by all APPs. Five additional interventions were ordered that had not been anticipated. The success of this educational strategy has stimulated new learning opportunities, including initiation of a full-team oncology failure-to-rescue simulation, course restructuring, and other innovative simulation experiences.