Researchers at the University of South Florida have developed a breakthrough technology for the early diagnosis of ovarian cancer in women. This technology utilizes a patient’s urine sample for the detection of elevated Bcl-2 levels as an indicator for the presence of ovarian cancer.

Ovarian cancer possesses the highest mortality rate among all gynecological cancers. Currently, there are no reliable early screening tests for ovarian cancer detection. Instead, a physical pelvic examination by a physician, ultrasound, or measuring blood levels for CA125 represent the only standard diagnostic procedures. However, none of these methods provides a reliably consistent and accurate means of diagnosing this deadly disease.

Our emerging technology uses protein levels of Bcl-2 in urine as a marker for ovarian cancer. In proof-of-principle tests, the sensitivity and specificity of elevated urinary levels of Bcl-2 associated with ovarian cancer were almost 100 percent, while tests for blood serum levels of CA125 only identified 68 percent of ovarian cancer patients. The average concentration of Bcl-2 in the urine of cancer patients was generally at least 10X greater than that of healthy patients, making this method of diagnosis much less prone to false positives. The levels of Bcl-2 in the urine decreased up to 100 percent after tumor debulking surgery, demonstrating that Bcl-2 levels tracked with the presence of ovarian tumors.

We envision that this technology will yield a quick and simple point-of-use diagnostic test similar to home pregnancy tests, which could then be administered at the physician’s office, the patient’s bedside, or even at home.

Advantages over current processes:
- A simple, quick, reliable, and accurate test for the detection of Bcl-2 levels in urine
- Extremely cost-effective
- May drastically reduce the number of ovarian cancer cases that go undetected
- Non-invasive: Use of the patient’s urine allows for quick and painless diagnosis and monitoring of the disease

Urine samples were examined by ELISA for Bcl-2 levels in normal controls, women with benign gynecologic disease and ovarian cancer patients. Samples were examined in triplicate and the data expressed as the average ng/ml of Bcl-2 ± S.E. Bcl-2 levels in benign, cancer and normal individuals ranged from 0.115-1.016 ng/ml, 1.12-9.8 ng/ml and 0-1.26 ng/ml and averaged 0.62 ng/ml, 3.4 ng/ml and 0.21 ng/ml, respectively.