

## FEATURE ARTICLE

# Ovarian Cancer Screening: A Look at the Evidence

Margaret M. Fields, MSN, ACNP, AOCNP, and Eric Chevlen, MD

In 2005, more than 22,000 American women were diagnosed with ovarian cancer and 16,000 women died from the disease. The five-year relative survival rate for stage III and IV disease is 31%, and the five-year relative survival rate for stage I is 95%. Early diagnosis should lower the fatality rate. Unfortunately, early diagnosis is difficult because of the physically inaccessible location of the ovaries, the lack of specific symptoms in early disease, and the limited understanding of ovarian oncogenesis. Screening tests for ovarian cancer need high sensitivity and specificity to be useful because of the low prevalence of undiagnosed ovarian cancer. Because currently available screening tests do not achieve high levels of sensitivity and specificity, screening is not recommended for the general population. The theoretical advantage of screening is much higher for women at high risk (such as those with a strong family history of ovarian cancer and those with *BRCA 1* or *BRCA 2* mutations). However, even for women at high risk, no prospective studies have shown benefits of screening. The public health challenge is that 90% of ovarian cancer occurs in women who are not in an identifiable high-risk group, and most women are diagnosed with advanced-stage disease. Currently available tests (CA-125, transvaginal ultrasound, or a combination of both) lack the sensitivity and specificity to be useful in screening the general population. Ongoing clinical trials are assessing whether new tumor markers, including those generated by proteomic and genomic studies, will prove useful.

Ovarian cancer is the leading cause of death from gynecologic malignancies. The American Cancer Society (2005) estimated more than 22,000 new cases of ovarian cancer and 16,000 deaths from ovarian cancer in the United States in 2005. The five-year relative survival rate for all stages combined is 53%. Patients with advanced disease (stage III or IV) have a 31% five-year relative survival rate, and the five-year relative survival rate for early-stage or localized disease (stage I or II) is as high as 95%. Unfortunately, only 29% of ovarian cancers are detected during early stages (American Cancer Society). Women dying from ovarian cancer lose an average of 18 years of life, perhaps the most alarming statistic of all (Duffy, 2001).

The data suggest that an effective screening test resulting in earlier diagnosis would decrease the fatality rate. However, screening for ovarian cancer is a difficult problem (see Figure 1) because of the location of the ovaries deep in the pelvis among the viscera. Unlike the circumstances in screening for cervical, vaginal, and vulvar cancers, no direct visualization or tissue sampling is possible in ovarian cancer without invasive procedures. Additionally, symptoms of ovarian cancer are vague and nonspecific, and they often do not occur until late in the course of the disease (Wenham, Lancaster, & Berchuck, 2002). Early signs and symptoms of ovarian cancer include early satiety; mild abdominal discomfort lasting more than four to five days; changes in bowel habits, including diarrhea and constipation;

### At a Glance

- ◆ Most ovarian cancer is diagnosed at stage III or IV in women who are not identified as being at high risk for the disease.
- ◆ Early diagnosis is difficult because of the inaccessibility of the ovaries for screening and the vague symptoms of early-stage disease.
- ◆ Screening is not recommended for the general population because of the high number of false negatives and false positives generated by currently available tests. However, new tumor markers and proteomic analysis are being studied for ovarian cancer screening.

Margaret M. Fields, MSN, ACNP, AOCNP, is an acute care nurse practitioner in Houston, TX, and Eric Chevlen, MD, is the medical director for oncology services at Meadville Medical Center in Pennsylvania. Mention of specific products and opinions related to those products do not indicate or imply endorsement by the *Clinical Journal of Oncology Nursing* or the Oncology Nursing Society. (Submitted December 2004. Accepted for publication May 21, 2005.)

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