New cases
In 2015, approximately 12,900 new cases of invasive cervical cancer will be diagnosed, with pre-cancer cervical cases diagnosed more often, according to the American Cancer Society (ACS). About 4,100 women will die from the disease. While cervical cancer was, at one time, the most common cancer death for American women, that is no longer the case due to the increased use of the Pap test. Most cases of cervical cancer are found in women under the age of 50, with 15% of cases being diagnosed in women over 65. In the United States, Hispanic women are diagnosed more often than women of other ethnicities.

Risk factors
The ACS identifies numerous risk factors associated with cervical cancer, including:
- Human papilloma virus infection
- Smoking
- Immunosuppression
- Chlamydia infection
- A diet low in fruits and vegetables
- Being overweight
- Long-term use of oral contraceptives
- Intrauterine device use
- Having multiple full-term pregnancies
- Being younger than 17 at your first full-term pregnancy
- Poverty
- Exposure to diethylstilbestrol
- Family history of cervical cancer

Symptoms
Patients with early stage and pre-cancerous cervical cancers usually do not have symptoms. When symptoms begin to occur it is because the cancer has spread to nearby tissue. The symptoms associated with cervical cancer include abnormal vaginal bleeding, unusual discharge and pain during intercourse.

Diagnosis
An abnormal Pap test is the first step in the diagnosis of cervical cancer. Following diagnosis, it is appropriate for a patient to be referred to a gynecologic oncologist for further testing. This testing can include a physical exam, colposcopy and biopsy. The types of biopsies available for cervical cancer diagnosis are colposcopic biopsy, endocervical curettage and cone biopsy, such as a loop electrosurgical procedure or a cold knife cone biopsy. Diagnostic tests are also used in the diagnosis of cervical cancer. Once diagnosed, cervical cancer is staged using the International Federation of Gynecology and Obstetrics (FIGO) and American Joint Committee on Cancer (AJCC) staging systems. Cervical cancer is staged from 0 through IV based on the clinical findings.

Treatment
Treatment of cervical cancer is decided based on the stage of the cancer. The treatment team can include a gynecologist, a gynecologist oncologist, a radiation oncologist and a medical oncologist. The types of treatment for cervical cancer are surgery, radiation therapy, chemotherapy and targeted therapy. Targeted therapies work by targeting specific changes in cancer cells. The early stages of cervical cancer are often treated with surgery or radiation therapy (RT), combined with chemotherapy. Later stages typically are treated using radiation and chemotherapy combined.

Survival rates
The five-year survival rate for cancer refers to the percentage of patients who live for at least five years after their diagnosis. The National Cancer Data Base (NCDB) compiles observed survival rates (see the following chart).

<table>
<thead>
<tr>
<th>Stage</th>
<th>NCDB 5-year observed survival rate*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>93%</td>
</tr>
<tr>
<td>IA</td>
<td>93%</td>
</tr>
<tr>
<td>IB</td>
<td>80%</td>
</tr>
<tr>
<td>IIA</td>
<td>63%</td>
</tr>
<tr>
<td>IIB</td>
<td>58%</td>
</tr>
<tr>
<td>IIIA</td>
<td>35%</td>
</tr>
<tr>
<td>IIIB</td>
<td>32%</td>
</tr>
<tr>
<td>IVA</td>
<td>16%</td>
</tr>
<tr>
<td>IVB</td>
<td>15%</td>
</tr>
</tbody>
</table>

*Source: American Cancer Society
Novant Health Presbyterian Cancer Center cases and outcomes

In 2014, 23 cervical cancer patients were diagnosed and treated at Novant Health Charlotte-area cancer facilities, Novant Health Presbyterian Medical Center, Novant Health Huntersville Medical Center and Novant Health Matthews Medical Center (greater Charlotte). The median age of the patients was 49 years old. Sixteen of the patients were white and seven were black.

A comparison was done of the greater Charlotte cervical cancer cases using the most current data available (year 2013) in the NCDB, which provides the national data used for comparative purposes.

Women ages 40 to 59 made up 52% of cervical cancer diagnoses in the greater Charlotte facilities and 47% of those in the NCDB. Women ages 60 to 79 made up 21% of the greater Charlotte cervical cancer cases and 25% of NCDB cases (see figure 1). The percentage of blacks diagnosed with cervical cancer in the NCDB was 13%, and in greater Charlotte, 30% (see figure 2).
Both the greater Charlotte and NCDB data show almost half of all cases diagnosed were stage I. While the NCDB has a 15% incidence rate of stage IV cases, the greater Charlotte data shows only a 4% rate. In greater Charlotte, 17% of the patients were found incidentally during surgery or at an unknown clinical stage (see figure 3).

Commission on Cancer Standard 4.6 study results
Each year, a physician member of our greater Charlotte Novant Health cancer committee performs a study to assess our adherence to nationally recognized treatment guidelines. The treatment of cervical cancer patients in greater Charlotte was compared with guidelines set forth by the National Comprehensive Cancer Network (NCCN). Using version 2.2015 of the NCCN guidelines, each stage of cervical cancer was compared with the appropriate treatment standards. The review included 20 patients (three patients’ treatment pathways were not reviewed due to the diagnosis of cervical dysplasia and/or no access to the patients’ records). The median age of the patients was 49 and, as previously reported, 70% were Caucasian and 30% African American (see figure 2). The stage breakdown reported in figure 3 indicates almost half of our patients were diagnosed at stage I.

Only one patient was diagnosed at stage IV. The histologies of the cancer were 77% squamous, 22% adenocarcinoma and 4% other.

In addition, 52% of the patients had surgery, 4% had surgery and chemotherapy, 35% had chemotherapy and radiation therapy, and 9% had surgery and radiation therapy. All stage IA and IA2 patients were treated with hysterectomies, including lymph node dissection, and followed with observation. stage IB1 patients were recommended treatment initially with hysterectomies followed either by observation, pelvic RT, pelvic RT/brachytherapy and cisplatin chemotherapy as recommended in the guidelines. Pelvic RT/brachytherapy and cisplatin were the treatment courses for those staged IB2, IIB and IIIB. The stage IV case was appropriately planned for the carbo-Taxol chemotherapy regimen but entered hospice care before treatment started.

Four of the cervical cancer cases were found incidentally during hysterectomy. The stage IA1 patient was followed with observation and the IB1 patients either had pelvic lymph node dissections and observation or pelvic RT/brachytherapy. The only case not meeting NCCN guidelines was staged IA2 and followed with observation after a hysterectomy. This is a controversial topic, as the risk of lymphatic invasion and/or parametrial invasion is rare in early disease. Following a multidisciplinary team discussion, it was decided that the patient should be very closely followed, with CT scans and repeat Pap tests. When analyzing the care of our cervical patient population and comparing our treatment with NCCN guidelines, appropriate care was given to the medically fit patients in the population and as appropriate multidisciplinary team decisions were followed.