What to Know

ASCO’s Guideline on Tumor Markers for Gastrointestinal Cancers

OCTOBER 2006

KEY MESSAGES

- A tumor marker is a substance produced by the tumor or a person’s body in response to cancer.
- Tumor markers can help your doctor plan and monitor treatment.
- This patient guide recommends the use of different tumor markers for different types of gastrointestinal cancers; talk with your doctor about which tests are most appropriate for you.

IMPORTANT NOTE. The recommendations for KRAS use in people with metastatic colorectal cancer who may receive anti-EGFR antibody therapy, such as cetuximab (Erbitux) and panitumumab (Vectibix), have been updated since the publication of this guideline. The new recommendations are now reflected in a Provisional Clinical Opinion (PCO) on KRAS Testing found at www.asco.org/guidelines.

To help doctors give their patients the best possible care, the American Society of Clinical Oncology (ASCO) asks its medical experts to develop recommendations for specific areas of cancer care. ASCO developed a clinical practice guideline about tumor markers for colorectal and pancreatic cancers. This guide for patients is based on ASCO’s recommendations.

BACKGROUND

A tumor marker is a substance found in a person’s blood, urine, or the tumor itself. It is produced by the tumor or the body in response to cancer, or a noncancerous condition, such as inflammation. Your doctor may suggest tumor marker tests at various stages in the diagnosis and treatment of cancer. When used with other medical tests, a tumor marker test can provide helpful information about the cancer and its treatment.

Tumor markers for gastrointestinal cancers may be used for one or more of the following reasons:

- Screening, to find early evidence of cancer

- Staging and treatment planning (staging is a way of describing a cancer, such as where it is located, if or where it has spread, and if it is affecting the functions of other organs in the body).
• After surgery, to learn whether the cancer has returned or spread

• To check how the treatment is working

The following gastrointestinal tumor markers are discussed in this patient guide:

Carcinoembryonic antigen (CEA) is a tumor marker that is measured using a blood test. High levels of CEA may indicate that cancer has spread; however, other medical conditions and some treatments, including certain types of chemotherapy, may raise CEA levels.

Cancer antigen 19-9 (CA 19-9) is a tumor marker that is also measured using a blood test. High levels of CA 19-9 may indicate that cancer has spread, but other medical conditions may cause high levels of CA 19-9.

DNA ploidy is a test that measures the amount of DNA (genetic material) in cancer cells.

The p53 gene is often missing or mutated (changed) in cancer cells.

The ras gene (sometimes called KRAS) is often mutated in colorectal cancers.

Thymidine synthase (TS), dihydropyrimidine dehydrogenase (DPD), and thymidine phosphorylase (TP) are enzymes (specialized proteins) that may be important for the development of colorectal cancer and may indicate how well the chemotherapy used to treat the cancer is working.

Microsatellite instability (MSI) is a measure of the tumor’s ability to repair mutations (changes) in the DNA. Cancer cells typically have more mutations than noncancerous cells.

### RECOMMENDATIONS

#### Table 1. Tumor Marker Recommendations for Colorectal Cancer

<table>
<thead>
<tr>
<th>Tumor Marker</th>
<th>Screening</th>
<th>Staging/Treatment Planning</th>
<th>Testing for the Spread of Cancer After Surgery</th>
<th>Finding out how the Treatment Is Working</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA</td>
<td>No</td>
<td>Only to assist in treatment planning or staging; not to make decisions about adjuvant therapy (additional treatment after surgery)</td>
<td>Yes, every three months, for at least three years after diagnosis, for patients with stage II or III cancer</td>
<td>Yes, every one to three months during treatment, for patients with metastatic cancer</td>
</tr>
<tr>
<td>CA 19-9</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>DNA ploidy</td>
<td>Not applicable (N/A)</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>p53</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>ras</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>TS, DPD, TP</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>MSI</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
<td>No</td>
</tr>
<tr>
<td>18q-LOH/DCC</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Table 2. Tumor Marker Recommendations for Pancreatic Cancer

<table>
<thead>
<tr>
<th>Tumor Marker</th>
<th>Screening</th>
<th>Staging/Treatment Planning</th>
<th>Finding out if the Cancer Has Come Back</th>
<th>Finding out how the Treatment Is Working</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA 19-9</td>
<td>No</td>
<td>No</td>
<td>No, need to confirm with additional tests, such as a biopsy or imaging tests</td>
<td>Yes, every one to three months during treatment, for patients with metastatic cancer</td>
</tr>
</tbody>
</table>
**QUESTIONS TO ASK THE DOCTOR**

- What tumor marker tests do you recommend? Which ones have already been performed?
- How are these tests performed?
- How often do I need these tests?
- What are the results of these tests, and how will the results affect my treatment?
- What health conditions or medications may interfere with these tests?
- What clinical trials are open to me?
- Where can I find more information?

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**18q-loss of heterozygosity/ deleted in colorectal cancer** (18q-LOH/DCC) are markers for the loss of or mutation of genes. 18q refers to the place on the chromosome where the genes are lost, and DCC is one of the genes located at 18q that plays a role in the development of colorectal cancer.

**WHAT THIS MEANS FOR PATIENTS**

For patients with stage II or III colorectal cancer, CEA testing after surgery is recommended every three months, for at least three years after diagnosis. Along with other tests, CEA tests are one way doctors can find out whether the cancer has spread or returned. Cancer that has spread or returned can be treated successfully for many patients. For more information about the recommended tests after treatment for colorectal cancer, read What to Know: ASCO’s Guideline on Follow-Up Care for Colorectal Cancer at www.cancer.net/whattoknow.

For patients with metastatic pancreatic cancer (cancer that has spread outside the pancreas to other parts of the body), CA 19-9 may be measured at the beginning of treatment and every one to three months during treatment. Other tests may be used along with the CA 19-9 test to decide the best treatment.

The other tumor markers in this guide require further research before they can be recommended. It is important to talk with your doctor about what tumor marker tests are most appropriate for your situation. Patients are also encouraged to talk with their doctor about enrolling in clinical trials of tumor marker tests.

**HELPFUL LINKS**

Read the entire clinical practice guideline at www.asco.org/guidelines/gitm.

Guide to Colorectal Cancer
www.cancer.net/colorectal

Guide to Pancreatic Cancer
www.cancer.net/pancreatic

ASCO Expert Corner: KRAS Testing in People with Colorectal Cancer
www.cancer.net/features

Understanding Tumor Markers
www.cancer.net/features

**ABOUT ASCO’S GUIDELINES**

To help doctors give their patients the best possible care, ASCO asks its medical experts to develop evidence-based recommendations for specific areas of cancer care, called clinical practice guidelines. Due to the rapid flow of scientific information in oncology, new evidence may have emerged since the time a guideline or assessment was submitted for publication. As a result, guidelines and guideline summaries, like this one, may not reflect the most recent evidence. Because the treatment options for every patient are different, guidelines are voluntary and are not meant to replace your physician’s independent judgment. The decisions you and your doctor make will be based on your individual circumstances. These recommendations may not apply in the context of clinical trials.

The information in this guide is not intended as medical or legal advice, or as a substitute for consultation with a physician or other licensed health care provider. Patients with health care-
related questions should call or see their physician or other health care provider promptly, and should not disregard professional medical advice, or delay seeking it, because of information encountered in this guide. The mention of any product, service, or treatment in this guide should not be construed as an ASCO endorsement. ASCO is not responsible for any injury or damage to persons or property arising out of or related to any use of this patient guide, or to any errors or omissions.

RESOURCES
Good cancer care starts with good cancer information. Well-informed patients are their own best advocates, and invaluable partners for physicians. ASCO’s patient website, Cancer.Net, brings the expertise and resources of the world’s cancer physicians to people living with cancer and those who care for and care about them. ASCO is composed of more than 28,000 oncologists globally who are the leaders in advancing cancer care. All the information and content on Cancer.Net was developed and approved by the cancer doctors who are members of ASCO, making Cancer.Net the most up-to-date and trusted resource for cancer information on the Internet. Cancer.Net is supported by The ASCO Cancer Foundation, which provides funding for cutting-edge cancer research, professional education, and patient and family support. People in search of cancer information can feel secure knowing that the programs supported by The ASCO Cancer Foundation provide the most thorough, accurate, and up-to-date cancer information found anywhere.

Visit Cancer.Net to find guides on more than 120 types of cancer and cancer-related syndromes, clinical trials information, coping resources, information on managing side effects, medical illustrations, cancer information in Spanish, podcasts, videos, the latest cancer news, and much more. For more information about ASCO’s patient information resources, call toll free 888-651-3038.