Question 1.

• A; Counseling and genetic testing
Manage a patient with newly diagnosed breast cancer who meets criteria for genetic testing

- Inherited genetic mutations account for <10% of all breast cancers
  - BRCA 1 and 2
  - Li-Fraumeni
  - Cowden syndrome
- Results of testing may determine surgical planning:
  - Breast conserving surgical resection with intensive surveillance for a second breast primary and ovarian cancer
  - Prophylactic bilateral mastectomy and SO without surveillance

Who to test?

Personal history of breast cancer PLUS (NOT all criteria are listed):

- Diagnosed ≤ age 45
- Diagnosed ≤ age 50
  - ≥ 1 first, second, or third degree relative with breast cancer ≤ age 50 or
  - ≥ 1 first, second, or third degree relative with ovarian, PPC, or fallopian tube cancer at any age or
  - 2 or more breast primaries
- Diagnosed age ≤ 60
  - with triple negative breast cancer (ER-PR-Her2-)
Health Care Providers

What is Hereditary Breast and Ovarian Cancer Syndrome (HBOC)?

Although multiple factors have been associated with increased risk for breast and ovarian cancer, family history remains the most significant and consistent predictor of disease development. (1-4) It is estimated that 2-7% of breast cancers, and 10-15% of ovarian cancers are the result of an inherited mutation in one of two major hereditary breast/ovarian cancer susceptibility genes, BRCA1 and BRCA2 (BRCA1/2). (5-11) Women who carry a mutation in one of the BRCA genes have a lifetime risk for breast cancer ranging from 45-90%, with over half occurring under the age of 50. (11-16) The risk for ovarian cancer in gene mutation carriers is as high as 30 fold that of the general population. (9, 11-17, 16)

Family history clues that indicate a possible risk for HBOC include a personal or family history of:

- Breast cancer diagnosed before the age of 50
- Ovarian cancer diagnosed at any age
- Both breast and ovarian cancer in the same person
- Bilateral or multiple primary breast cancers
- Ashkenazi Jewish heritage with a history of breast and/or ovarian cancer
- Presence of male breast cancer in the family
- A known BRCA1 or BRCA2 mutation identified in the family
- Breast cancer diagnosed prior to age 60 with triple negative pathology (ER -, PR -, HER2 -)

How will this knowledge benefit my patient?

- Potential benefits of identifying individuals at hereditary risk for breast and ovarian cancer are well-documented (18-31) and include management options for BRCA1/2 mutation carries such as:
  - Prophylactic mastectomy
  - Bilateral salpingo-oophorectomy
  - Breast MRI
  - Tamoxifen
- Identification of a BRCA1/2 mutation also allows for accurate testing of family members to identify who is and is not at increased risk for cancer.

Should I refer my patient for cancer genetic counseling?
Breastcancergenesscreen.org

Screening Results:

Patient Name: N/A
Date of Screen: 3/28/2016
B-RST™ #: 1016437

B-RST™ Result = Positive Screen

What does this result mean?

- You have a 5-10% chance or greater to have a genetic mutation (change) in one of the BRCA genes.
- You are at increased risk for Hereditary Breast/Ovarian Cancer
  - Read more about Hereditary Breast/Ovarian Cancer and Genetic Testing
- Your risks for breast and/or ovarian cancer may be greatly increased over the general population.
- Cancer Genetic Counseling is recommended to carefully review your family history in more detail, assess cancer and genetic risks, and discuss the benefits and limitations of BRCA genetic testing.

Keep in mind that B-RST™ is a screen - not a "yes or no" diagnostic test.
This result does not mean that you will get cancer. It only means that you have a higher chance to have a BRCA mutation and may be at increased risk for developing early onset breast cancer or ovarian cancer.

Talk with your doctor if you have questions about your B-RST™ result, or require help in setting up a cancer genetic counseling appointment.

Note: People who screen positive on the B-RST™ may not be found to be good candidates for BRCA genetic testing when a comprehensive cancer risk assessment is performed.

Resources To Locate a Cancer Genetics Professional
Question 2.

- B; 5-Fluorouracil, leucovorin, and oxaliplatin (FOLFOX)
Manage stage III colon cancer

### NCCN Guidelines Version 3.2013 Staging Colon Cancer

#### Table 1. Definitions for T, N, M

<table>
<thead>
<tr>
<th>Primary Tumor (T)</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>Primary tumor cannot be assessed</td>
</tr>
<tr>
<td>T0</td>
<td>No evidence of primary tumor</td>
</tr>
<tr>
<td>T1s</td>
<td>Carcinoma in situ: intraepithelial or invasion of lamina propria</td>
</tr>
<tr>
<td>T1</td>
<td>Tumor invades submucosa</td>
</tr>
<tr>
<td>T2</td>
<td>Tumor invades muscularis propria</td>
</tr>
<tr>
<td>T3</td>
<td>Tumor invades through the muscularis propria into the pericolorectal tissues</td>
</tr>
<tr>
<td>T4a</td>
<td>Tumor penetrates to the surface of the visceral peritoneum</td>
</tr>
<tr>
<td>T4b</td>
<td>Tumor directly invades or is adherent to other organs or structures</td>
</tr>
</tbody>
</table>

#### Regional Lymph Nodes (N)

| N0                | No regional lymph node metastasis |
| N1                | Metastasis in 1-3 regional lymph nodes |
| N1a               | Metastasis in one regional lymph node |
| N1b               | Metastasis in 2-3 regional lymph nodes |
| N1c               | Tumor deposit(s) in the subserosa, mesentery, or nonperitonealized pericoic or perirectal tissues without regional nodal metastasis |
| N2                | Metastasis in 4 or more regional lymph nodes |
| N2a               | Metastasis in 4-6 regional lymph nodes |
| N2b               | Metastasis in 7 or more regional lymph nodes |

#### Distant Metastasis (M)

| M0                | No distant metastasis |
| M1                | Distant metastasis |
| M1a               | Metastasis confined to one organ or site (eg, liver, lung, ovary, nonregional node) |
| M1b               | Metastases in more than one organ/site or the peritoneum |

#### Table 2. Anatomic Stage/Prognostic Groups

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
<th>Dukes*</th>
<th>MAC*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>T1s</td>
<td>N0</td>
<td>M0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>II</td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
<td>A</td>
<td>B1</td>
</tr>
<tr>
<td>IIA</td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
<td>B</td>
<td>B2</td>
</tr>
<tr>
<td>IIB</td>
<td>T4a</td>
<td>N0</td>
<td>M0</td>
<td>B</td>
<td>B2</td>
</tr>
<tr>
<td>IIC</td>
<td>T4b</td>
<td>N0</td>
<td>M0</td>
<td>B</td>
<td>B3</td>
</tr>
<tr>
<td>IIIA</td>
<td>T1-T2</td>
<td>N1/N1c</td>
<td>M0</td>
<td>C</td>
<td>C1</td>
</tr>
<tr>
<td></td>
<td>T1</td>
<td>N2a</td>
<td>M0</td>
<td>C</td>
<td>C1</td>
</tr>
<tr>
<td>IIIB</td>
<td>T3-T4a</td>
<td>N1/N1c</td>
<td>M0</td>
<td>C</td>
<td>C2</td>
</tr>
<tr>
<td>IIIIC</td>
<td>T4a</td>
<td>N2a</td>
<td>M0</td>
<td>C</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>T4b</td>
<td>N1-N2</td>
<td>M0</td>
<td>C</td>
<td>C3</td>
</tr>
<tr>
<td>IVA</td>
<td>Any T</td>
<td>Any N</td>
<td>M1a</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IVB</td>
<td>Any T</td>
<td>Any N</td>
<td>M1b</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: cTNM is the clinical classification, pTNM is the pathologic classification. The y prefix is used for those cancers that are classified after neoadjuvant pretreatment (e.g., ypTNM). Patients who have a complete pathologic response are ypT0N0M0 that may be similar to Stage Group 0 or I. The r prefix is to be used for those cancers that have recurred after a disease-free interval (rtNM).

*Dukes B is a composite of better (T3 NO M0) and worse (T4 NO M0) prognostic groups, as is Dukes C (Any TN1 M0 and Any T N2 M0). MAC is the modified Astler-Coller classification.*
Adjuvant chemotherapy has been shown to improve survival in stage III (node positive) colon cancer:
- 30% reduction in disease recurrence
- 20-30% reduction in mortality

Adjuvant chemo should be started within 6 to 8 weeks of surgery.

A 6 month course of oxaliplatin-based regimen (FOLFOX) is preferred (superior to 5-FU and leukovorin alone).

Radiation therapy is not used in stage III colon cancer, but is used in stage II and III rectal cancer.
Question 3.

- A; Chemotherapy with adjunctive radiation therapy
Diagnose and Manage Limited Stage Small Cell Lung Cancer

NCCN Guidelines Version 2.2013
Small Cell Lung Cancer

**DIAGNOSIS**

Small cell or combined small cell lung cancer on biopsy or cytology of primary or metastatic site

**INITIAL EVALUATION**

- H&P
- Pathology review
- CBC with differential, platelets
- Electrolytes, liver function tests (LFTs), Ca, LDH
- BUN, creatinine
- Chest/liver/adrenal CT with IV contrast whenever possible
- Brain MRI\(a, b\) (preferred) or CT with IV contrast whenever possible
- PET-CT scan (if limited stage is suspected)\(a, c\)
- Smoking cessation counseling and intervention

**STAGE**

- Limited stage\(d\)
  - (T any, N any, M0; except T3-4 due to multiple lung nodules that do not fit in a tolerable radiation field)
  - See Additional Workup (SCL-2)

- Extensive stage\(d\)
  - (T any, N any, M1a/b; T3-4 due to multiple lung nodules)
  - See Initial Treatment (SCL-4)

\(a\) If extensive stage is established, further staging evaluation is optional. However, brain imaging, MRI (preferred) or CT with IV contrast, should be obtained in all patients.

\(b\) Brain MRI is more sensitive than CT for identifying brain metastases and is preferred over CT.

\(c\) If PET/CT not available, bone scan may be used to identify metastases. Pathologic confirmation is recommended for lesions detected by PET/CT that alter stage.

\(d\) See Staging on page SCL-1.

Note: All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
**TNM staging system for lung cancer (7th edition)**

### Primary tumor (T)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Tumor ≤3 cm diameter, surrounded by lung or visceral pleura, without invasion more proximal than lobar bronchus*</td>
</tr>
<tr>
<td>T1a</td>
<td>Tumor ≤2 cm in diameter</td>
</tr>
<tr>
<td>T1b</td>
<td>Tumor ≥2 cm but ≤3 cm in diameter</td>
</tr>
<tr>
<td>T2</td>
<td>Tumor &gt;3 cm but ≤7 cm, or tumor with any of the following features:</td>
</tr>
<tr>
<td>T2a</td>
<td>Involves main bronchus, ≥3 cm distal to carina</td>
</tr>
<tr>
<td>T2b</td>
<td>Associated with atelectasis or obstructive pneumonitis that extends to hilar region but does not involve entire lung</td>
</tr>
<tr>
<td>T3</td>
<td>Tumor &gt;7 cm or any of the following:</td>
</tr>
<tr>
<td>T3a</td>
<td>Directly invades any of the following: chest wall, diaphragm, phrenic nerve, mediastinal pleura, pericardium, main bronchus ≥2 cm from carina (without involvement of carina)</td>
</tr>
<tr>
<td>T3b</td>
<td>Atelectasis or obstructive pneumonitis of the entire lung</td>
</tr>
<tr>
<td>T4</td>
<td>Tumor of any size that invades mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body, carina, or with separate tumor nodules in a different ipsilateral lobe</td>
</tr>
</tbody>
</table>

### Regional lymph nodes (N)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N0</td>
<td>No regional lymph node metastases</td>
</tr>
<tr>
<td>N1</td>
<td>Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph node(s) and intrapulmonary nodes, including involvement by direct extension</td>
</tr>
<tr>
<td>N2</td>
<td>Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)</td>
</tr>
<tr>
<td>N3</td>
<td>Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supracarinal lymph node(s)</td>
</tr>
</tbody>
</table>

### Distant metastasis (M)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0</td>
<td>No distant metastasis</td>
</tr>
<tr>
<td>M1</td>
<td>Distant metastasis</td>
</tr>
<tr>
<td>M1a</td>
<td>Separate tumor node(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural or pericardial effusion</td>
</tr>
<tr>
<td>M1b</td>
<td>Distant metastasis (in extrathoracic organs)</td>
</tr>
</tbody>
</table>

### Stage groupings

<table>
<thead>
<tr>
<th>Stage IIIA</th>
<th>N1, N2</th>
<th>M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage IIIB</td>
<td>N1, N2</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIIC</td>
<td>N3</td>
<td>M1a or M1b</td>
</tr>
</tbody>
</table>

Limited Stage is I-IIIB except for T3 and T4
Table 1 - Definition of small cell lung cancer consists of two stages:

1. Limited-stage: AJCC (7th edition) Stage I-II (T any, N any, M0) that can be safely treated with definitive radiation doses. Excludes T3-4 due to multiple lung nodules that are too extensive or have tumor/nodal volume that is too large to be encompassed in a tolerable radiation plan.
2. Extensive-stage: AJCC (7th edition) Stage IV (T any, N any, M1a/b), or T3-4 due to multiple lung nodules that are too extensive or have tumor/nodal volume that is too large to be encompassed in a tolerable radiation plan.

---

**a** If extensive stage is established, further staging evaluation is optional. However, brain imaging, MRI (preferred) or CT with IV contrast, should be obtained in all patients.

**b** Brain MRI is more sensitive than CT for identifying brain metastases and is preferred over CT.

**c** If PET/CT not available, bone scan may be used to identify metastases. Pathologic confirmation is recommended for lesions detected by PET/CT that alter stage.

**d** See Staging on page ST-1.

---

Note: All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Manage limited-stage small cell lung cancer

Don’t forget to add prophylactic whole brain radiation in this patient!
Question 4.

- **C; Surgery and adjuvant chemotherapy**
# NCCN Guidelines Version 2.2013 Staging Non-Small Cell Lung Cancer

## Table 1. Definitions for T, N, M*

<table>
<thead>
<tr>
<th>T</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>Primary Tumor</td>
</tr>
<tr>
<td>TX</td>
<td>Primary tumor cannot be assessed, or tumor proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy</td>
</tr>
<tr>
<td>T0</td>
<td>No evidence of primary tumor</td>
</tr>
<tr>
<td>Tis</td>
<td>Carcinoma in situ</td>
</tr>
<tr>
<td>T1</td>
<td>Tumor ≤ 3 cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus)(^a)</td>
</tr>
<tr>
<td>T1a</td>
<td>Tumor ≤ 2 cm in greatest dimension</td>
</tr>
<tr>
<td>T1b</td>
<td>Tumor &gt; 2 cm but ≤ 3 cm in greatest dimension</td>
</tr>
<tr>
<td>T2</td>
<td>Tumor &gt; 3 cm but ≤ 7 cm or tumor with any of the following features:(^b)</td>
</tr>
<tr>
<td>T2a</td>
<td>Involves main bronchus, ≥ 2 cm distal to the carina</td>
</tr>
<tr>
<td>T2b</td>
<td>Tumor &gt; 5 cm but ≤ 7 cm in greatest dimension</td>
</tr>
<tr>
<td>T3</td>
<td>Tumor &gt; 7 cm or one that directly invades any of the following: chest wall (including superior sulcus tumors), diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium; or tumor in the main bronchus &lt; 2 cm distal to the carina(^a) but without involvement of the carina; or associated atelectasis or obstructive pneumonia of the entire lung or separate tumor nodule(s) in the same lobe</td>
</tr>
<tr>
<td>T4</td>
<td>Tumor of any size that invades any of the following: mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body; carina; separate tumor nodule(s) in a different ipsilateral lobe</td>
</tr>
</tbody>
</table>

| N    | Regional Lymph Nodes                                                     |
| N0   | No regional lymph node metastasis                                        |
| N1   | Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension |
| N2   | Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)    |
| N3   | Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s) |

| M    | Distant Metastasis                                                       |
| M0   | No distant metastasis                                                    |
| M1   | Distant metastasis                                                       |
| M1a  | Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural (or pericardial) effusion\(^c\) |
| M1b  | Distant metastasis                                                       |

\(^a\) The uncommon superficial spreading tumor of any size with its invasive component limited to the bronchial wall, which may extend proximally to the main bronchus, is also classified as T1.

\(^b\) T2 tumors with these features are classified T2a if ≤ 5 cm or if size cannot be determined, and T2b if > 5 cm but ≤ 7 cm.

\(^c\) Most pleural (and pericardial) effusions with lung cancer are due to tumor. In a few patients, however, multiple cytopathologic examinations of pleural (pericardial) fluid are negative for tumor, and the fluid is nonbloody and is not an exudate. Where these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a staging element and the patient should be classified as T1, T2, T3, or T4.

---

Treat a patient with early-stage non-small cell lung cancer (NSCLC)

Surgery is indicated for patients with stage I and II disease with no mediastinal involvement.

Adjuvant chemotherapy with a cisplatin-based regimen should be given to patients with surgically resected NSCLC in stage II to reduce recurrent disease and mortality. (5% reduction in risk of death at 5 years).

Adjuvant chemotherapy should be considered in high risk stage 1B patients after surgery for benefit. (> 4 cm, et cetera)
Question 5.

- A; Endoscopic evaluation of the oropharynx
Evaluate a patient for head and neck cancer

- FIRST step would be ENT consult for triple scope endoscopy to look for a primary cancer; *if the endoscopy is negative, pursue FNA of node*

- Excisional biopsy of node would potentially alter tissue planes needed for better resection

- PET/CT could be done AFTER tissue diagnosis is made
Question 6.

- C; Non-seminoma germ cell tumor
Diagnose Testicular Cancer:

**AFP is the KEY to NON-Seminoma Pathology!**

### NCCN Guidelines Version 1.2013

#### Testicular Cancer

<table>
<thead>
<tr>
<th>WORKUP</th>
<th>PRIMARY TREATMENT</th>
<th>PATHOLOGIC DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspicious testicular mass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• H&amp;P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Alpha-fetoprotein (AFP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• beta-hCG*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• LDH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chemistry profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chest x-ray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Testicular ultrasound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Discuss sperm banking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Radical inguinal orchiectomy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Consider inguinal biopsy of contralateral testis if:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Suspicious ultrasound for intratesticular abnormalities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cryptorchid testis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Marked atrophy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Pure seminoma (pure seminoma histology and AFP negative; may have elevated beta-hCG)

- See Postdiagnostic Workup and Clinical Stage (TEST-2)

#### Nonseminomatous germ cell tumor (NSGCT) (includes mixed seminoma/ nonseminoma tumors and seminoma histology with elevated AFP)

- See Postdiagnostic Workup and Clinical Stage (TEST-6)

---

*Quantitative analysis of beta subunit.

*Though rare, when a patient presents with rapidly increasing beta-hCG, symptoms related to disseminated disease and a testicular mass, chemotherapy can be initiated immediately without waiting for a biopsy diagnosis.

---

Note: All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Question 7.

• A; Chemotherapy and radiation therapy
For most patients with early-stage, favorable disease, (lack of B symptoms, bulky disease), treatment with combined chemo and radiation is preferred.
Manage a patient with early-stage Hodgkin lymphoma

**Favorable prognosis** — As described above, cooperative research groups have used varying definitions of favorable prognosis early stage disease. The following treatment options are generally used in patients with favorable prognosis stage I-II disease. There are differences in relapse rates and toxicity between treatment approaches. (See "Treatment of favorable prognosis early (stage I-II) classical Hodgkin lymphoma".)

- **ABVD** (doxorubicin, bleomycin, vinblastine, dacarbazine) for three (preferred) to four cycles, followed by involved field irradiation to 30 Gy with fields encompassing the initially involved lymph node site (involved-site radiation therapy). This approach has the lowest relapse rate.

- **ABVD** for two cycles, followed by involved-field (or perhaps involved-site) irradiation with 20 Gy may be sufficient treatment for patients with favorable disease as defined by the GHSG. This regimen has lower toxicity.

- **ABVD** for four to six cycles without radiation therapy. This is an emerging option for patients at risk of long-term complications from radiotherapy. However, this option is associated with higher recurrence rates compared with combined modality therapy. There are several trials studying the use of ABVD alone versus ABVD and radiation therapy in patients who are PET negative after two to three cycles of chemotherapy. Two of these trials (EORTC H10 trial and UK RAPID trial) show fewer early recurrences in patients assigned to combined modality therapy. The impact on late toxicities and survival is not yet known. Both trials need much longer follow-up before firm recommendations can be made regarding the role of PET scanning in making initial treatment decisions. (See "Treatment of favorable prognosis early (stage I-II) classical Hodgkin lymphoma", section on 'Chemotherapy alone'.)
Hodgkin Lymphoma International Prognostic Score (IPS)

The International Prognostic Score for Hodgkin lymphoma

A point is given for each of the characteristics below present in the patient, for a total score ranging from zero to seven:

- Serum albumin < 4 g/dL
- Hemoglobin < 10.5 g/dL
- Male gender
- Age > 45 years
- Stage IV disease
- White blood cell count ≥ 15,000/microl 
- Absolute lymphocyte count < 600/microl and/or < 8 percent of the total white blood cell count

When applied to an initial group of 5141 patients with advanced Hodgkin lymphoma treated prior to 1992 with combination chemotherapy with or without radiation therapy, five-year overall survival (OS) and freedom from progression (FFP) rates according to score were as follows:\(^1\):

<table>
<thead>
<tr>
<th>Score</th>
<th>Five-year FFP, percent</th>
<th>Five-year OS, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>84</td>
<td>89</td>
</tr>
<tr>
<td>1</td>
<td>77</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>67</td>
<td>81</td>
</tr>
<tr>
<td>3</td>
<td>60</td>
<td>78</td>
</tr>
<tr>
<td>4</td>
<td>51</td>
<td>61</td>
</tr>
<tr>
<td>5 or more</td>
<td>42</td>
<td>56</td>
</tr>
</tbody>
</table>

When applied to 740 patients with advanced Hodgkin lymphoma treated with curative intent with doxorubicin, bleomycin, vinblastine, and dacarbazine (ABVD) from 1980 to 2010, five-year OS and FFP rates according to score were as follows:\(^2\):

<table>
<thead>
<tr>
<th>Score</th>
<th>Five-year FFP, percent</th>
<th>Five-year OS, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>88</td>
<td>98</td>
</tr>
<tr>
<td>1</td>
<td>84</td>
<td>97</td>
</tr>
<tr>
<td>2</td>
<td>80</td>
<td>93</td>
</tr>
<tr>
<td>3</td>
<td>74</td>
<td>89</td>
</tr>
<tr>
<td>4</td>
<td>67</td>
<td>85</td>
</tr>
<tr>
<td>5 or more</td>
<td>62</td>
<td>67</td>
</tr>
</tbody>
</table>

≥ 4 risk factors in stage III and IV disease changes the preferred chemo regimen!
Question 8.

- D; No further treatment
**Risk factors for melanoma:**

- Personal history of melanoma
- Family history
- Intermittent, intense sun exposure (> 5 sunburns as a child: risk 2x)
- Multiple atypical moles

### Table: Primary tumor (T)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TX</td>
<td>Primary tumor cannot be assessed (e.g., curtaged or severely regressed primary)</td>
</tr>
<tr>
<td>T0</td>
<td>No evidence of primary tumor</td>
</tr>
<tr>
<td>Tis</td>
<td>Melanoma in situ</td>
</tr>
<tr>
<td>T1</td>
<td>≤1.0 mm</td>
</tr>
<tr>
<td></td>
<td>a: without ulceration and mitoses &lt; 1/mm²</td>
</tr>
<tr>
<td></td>
<td>b: with ulceration or mitoses ≥ 1/mm²</td>
</tr>
<tr>
<td>T2</td>
<td>1.01-2.0 mm</td>
</tr>
<tr>
<td></td>
<td>a: without ulceration</td>
</tr>
<tr>
<td></td>
<td>b: with ulceration</td>
</tr>
<tr>
<td>T3</td>
<td>2.01-4.0 mm</td>
</tr>
<tr>
<td></td>
<td>a: without ulceration</td>
</tr>
<tr>
<td></td>
<td>b: with ulceration</td>
</tr>
<tr>
<td>T4</td>
<td>&gt; 4.0 mm</td>
</tr>
<tr>
<td></td>
<td>a: without ulceration</td>
</tr>
<tr>
<td></td>
<td>b: with ulceration</td>
</tr>
</tbody>
</table>

### Table: Regional lymph nodes (N)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NX</td>
<td>Patients in whom the regional nodes cannot be assessed (e.g., previously removed for another reason)</td>
</tr>
<tr>
<td>N0</td>
<td>No regional metastases detected</td>
</tr>
<tr>
<td>N1</td>
<td>One lymph node</td>
</tr>
<tr>
<td></td>
<td>a: micrometastases*</td>
</tr>
<tr>
<td></td>
<td>b: macrometastases*</td>
</tr>
<tr>
<td>N2</td>
<td>Two or three lymph nodes</td>
</tr>
<tr>
<td></td>
<td>a: micrometastases*</td>
</tr>
<tr>
<td></td>
<td>b: macrometastases*</td>
</tr>
<tr>
<td></td>
<td>c: in-transit met(s)/satellite(s) without metastatic lymph nodes</td>
</tr>
<tr>
<td>N3</td>
<td>Four or more metastatic lymph nodes, or matted lymph nodes, or in-transit met(s)/satellite(s) with metastatic lymph node(s)</td>
</tr>
</tbody>
</table>

### Table: Distant metastasis (M)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0</td>
<td>No detectable evidence of distant metastases</td>
</tr>
<tr>
<td>M1a</td>
<td>Metastases to skin, subcutaneous, or distant lymph node, normal serum LDH</td>
</tr>
<tr>
<td>M1b</td>
<td>Lung metastases, normal LDH</td>
</tr>
<tr>
<td>M1c</td>
<td>Metastasis to other visceral metastases with a normal LDH, or any distant metastases and an elevated LDH</td>
</tr>
</tbody>
</table>
**Stage 0 in situ**

- **Stage IA**
  - ≤ 0.75 mm thick, no ulceration, mitotic rate < 1 per mm²
  - H&P
  - Routine imaging/lab tests not recommended
  - Imaging (CT scan, PET/CT, MRI) only to evaluate specific signs or symptoms

- **Stage IB**
  - ≤ 0.75 mm with ulceration, and/or mitotic rate ≥ 1 per mm²

**Stage IA (0.76-1.0 mm thick, no ulceration, mitotic rate < 1 per mm²)**

- Discuss and consider sentinel node biopsy
- Wide excision (category 1)
- Wide excision with sentinel node biopsy
- Sentinel node negative
- Sentinel node positive

**Stage IB (0.76-1.0 mm thick, ulceration, mitotic rate ≥ 1 per mm²)**

- Discuss and consider sentinel node biopsy
- Wide excision (category 1)
- Wide excision with sentinel node biopsy
- Sentinel node negative
- Sentinel node positive

**In general, SLNB is not recommended for primary melanomas ≤ 0.75 mm thick, unless there is significant uncertainty about the adequacy of microstaging. For melanomas 0.76-1.0 mm thick, SLNB may be considered in the appropriate clinical context. In patients with thin melanomas (≤ 1.0 mm), apart from primary tumor thickness, there is little consensus as to what should be considered “high-risk features” for a positive SLN. Conventional risk factors for a positive SLN, such as ulceration, high mitotic rate, and LVI, are very uncommon in melanomas ≤ 0.75 mm thick; when present, SLNB may be considered on an individual basis.**

**Decision to perform SLNB may be based on significant patient comorbidities, patient preference or other factors.**

**Sentinel node biopsy is an important staging tool, but the impact of SLNB on overall survival is unclear.**

**See Principles of Surgical Margins for Wide Excision of Primary Melanoma (ME-B).**

**Sentinel lymph nodes should be evaluated with multiple sectioning and immunohistochemistry.**
PRINCIPLES OF SURGICAL MARGINS FOR
WIDE EXCISION OF PRIMARY MELANOMA

<table>
<thead>
<tr>
<th>Tumor Thickness</th>
<th>Recommended Clinical Margins ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>In situ ¹</td>
<td>0.5 cm</td>
</tr>
<tr>
<td>≤ 1.0 mm</td>
<td>1.0 cm (category 1)</td>
</tr>
<tr>
<td>1.01 - 2 mm</td>
<td>1.0 cm (category 1)</td>
</tr>
<tr>
<td>2.01 - 4 mm</td>
<td>2.0 cm (category 1)</td>
</tr>
<tr>
<td>&gt; 4 mm</td>
<td>2.0 cm (category 1)</td>
</tr>
</tbody>
</table>

- Margins may be modified to accommodate individual anatomic or functional considerations.

Common Follow-up Recommendations For All Patients:
- At least annual skin exam for life
- Educate patient in monthly self skin exam (and monthly lymph node self exam for Stage IA - IV NED)
- Routine blood tests are not recommended
- Radiologic imaging is indicated to investigate specific signs or symptoms
- Follow-up schedule influenced by risk of recurrence, prior primary melanoma, and family history of melanoma, and includes other factors, such as atypical moles/dysplastic nevi, and patient/physician concern.
Question 9.

- D; Yearly mammogram and MRI of the breasts starting now
Manage a patient with the BRCA gene mutation who is at increased risk for developing ovarian cancer.

Risk reduction mastectomy reduces the risk of breast cancer > 90%.

Risk reduction bilateral salpingo-oopherectomy should be done by age 35-40 after childbearing and reduces the risk of ovarian and breast cancer.
Cancer screening in BRCA positive women who have NOT undergone risk-reduction surgery

- Yearly mammogram starting at age 25
- Yearly breast MRI starting at age 25, 6 months after mammogram
- Transvaginal ultrasound (day 1-10 of cycle) and Ca-125 (day 5 of cycle) every 6 months (or 5-10 years before family member with cancer)
- Tamoxifen chemoprophylaxis
- OCPs may reduce risk of ovarian cancer but may increase risk of breast cancer
Question 10.

- C; Perform endoscopic ultrasound of the pancreas
Diagnose pancreatic cancer using endoscopic ultrasound
Question 11.

• A; Contrast-enhanced CT
Diagnose and manage hepatocellular carcinoma

**Indications for surveillance for hepatocellular carcinoma**

- Cirrhosis from any cause
- Asian male hepatitis B carriers over age 40
- Asian female hepatitis B carriers over age 50
- Hepatitis B carriers with a family history of hepatocellular carcinoma
- African and North American blacks with hepatitis B

_ADAPTED FROM BRUX J, SHERMAN M; PRACTICE GUIDELINES COMMITTEE, AMERICAN ASSOCIATION FOR THE STUDY OF LIVER DISEASES. MANAGEMENT OF HEPATOCELLULAR CARCINOMA. HEPATOLOGY 2005; 42:1208-1236, WITH PERMISSION FROM JOHN WILEY AND SONS._

**TABLE 2**

**Treatments for hepatocellular carcinoma**

- **Surgical resection**
- **Orthotopic liver transplantation**

**Locoregional therapies**
- Ablative therapies
  - Radiofrequency ablation
  - Percutaneous ethanol injection
  - Microwave ablation, cryotherapy, laser ablation
  - Electroporation, light-activated drug therapy
- Perfusion-based therapies
- Transarterial chemoembolization
- Transarterial chemoembolization with doxorubicin-eluting beads
  - “Bland” embolization
- Radioembolization

**Systemic chemotherapy**
- Sorafenib
- Doxorubicin, everolimus, bevacizumab

---

**FIGURE 2.** Left, arterial hyperenhancement of hepatocellular carcinoma seen on dynamic computed tomography. Right, venous-phase washout of contrast medium.
Fig. 1. Diagnostic algorithm for suspected HCC. CT, computed tomography; MDCT, multidetector CT; MRI, magnetic resonance imaging; US, ultrasound.
Question 12.

- B; Colonoscopy in 1 year
Manage post-colorectal cancer surveillance

80% of recurrent cancers recur in 3 years and 95% recur in 5 years!
Question 13.

- B; Bone biopsy
Manage a patient with recurrent breast cancer

NCCN Guidelines Version 2.2015
Invasive Breast Cancer

RECURRENT/STAGE IV DISEASE

CLINICAL STAGE

WORKUP

• History and physical exam
• CBC, platelets
• Liver function tests and alkaline phosphatase
• Chest diagnostic CT
• Abdominal or pelvic diagnostic CT or MRI
• Brain MRI if suspicious CNS symptoms
• Bone scan or sodium fluoride PET/CT\(^1\) (category 2B)
• FDG PET/CT\(^{1,PP}\) (optional, category 2B)
• X-rays of symptomatic bones and long and weight-bearing bones abnormal on bone scan

Recurrent or Stage IV disease

• First recurrence of disease should be biopsied
• Determination of tumor ER/PR and HER2 status on metastatic site\(^{b,qq,rr}\)
• Genetic counseling if patient is high risk for hereditary breast cancer\(^c\)

\(^{b}\)See Principles of HER2 Testing (BINV-9)
\(^{c}\)See NCCN Guidelines for Genetic/Familial High-Risk Assessment: Breast and Ovarian
\(^{1}\)If FDG PET/CT is performed and clearly indicates bone metastasis, on both the PET and CT component, bone scan or sodium fluoride PET/CT may not be needed. FDG PET/CT may also be helpful in identifying unsuspected regional nodal disease and/or distant metastases in locally advanced breast cancer when used in addition to standard staging studies.

**Note:** All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Question 14.

- A; CT annually for 3 years
Manage post-colorectal cancer surveillance

CT should be done with IV and oral contrast; If contrast contraindicated, non-contrast CT of chest with MRI of abdomen and pelvis with contrast is alternative; High risk includes lymphatic or venous invasion or poorly differentiated tumor
Question 15.

• C; Autologous hematopoietic stem cell transplant
Treat a patient with recurrent, chemotherapy-sensitive diffuse large cell B-cell lymphoma
Question 16.

• E; Surgical debulking followed by chemotherapy
Manage cancer of unknown primary type

Clinical Presentation

- Head and neck
- Supraclavicular (unilateral or bilateral)
- Localized adenocarcinoma or carcinoma not otherwise specified

Management Based on Workup Findings

- Treat per NCCN Guidelines for Head and Neck Cancers
- Treat per NCCN Guidelines for Head and Neck Cancers/Occult Primary
- Women:
  - Treat per NCCN Guidelines for Breast Cancer
  - Axillary node dissection, consider RT if clinically indicated ± chemotherapy (category 2B)
- Treat as poor-risk germ cell tumor per NCCN Guidelines for Testicular Cancer or germ cell tumor per NCCN Guidelines for Ovarian Cancer
- Treat as poor-risk germ cell tumor per NCCN Guidelines for Testicular Cancer or germ cell tumor per NCCN Guidelines for Ovarian Cancer or treat per NCCN Guidelines for Non-Small Cell Lung Cancer

Additional Consultation

- Consider additional consultation with pathologist to determine if further analysis would be helpful.

Note: All recommendations are category 2A unless otherwise indicated. Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

See NCCN Guidelines for Distress Management

See Follow-up (OCC-16)
NCCN Guidelines Version 1.2015
Occult Primary

CLINICAL PRESENTATION

Mediastinum

Adenocarcinoma or Carcinoma not otherwise specified

Chest (multiple nodules) or Pleural effusion

Peritoneal/Ascites

ADDITIONAL WORKUP

Men and women:
- Chest/abdominal/pelvic CT (if not done)
- Beta-hCG, alpha-fetoprotein

Women:
- Mammogram; if non-diagnostic and histopathologic evidence for breast cancer, breast MRI and/or breast ultrasound indicated
- Appropriate Immunohistochemistry

Men:
- >40 y: PSA
- Testicular ultrasound, if beta-hCG and alpha-fetoprotein markers elevated

Men and women:
- Chest/abdominal/pelvic CT (if not done)

Women:
- CA-125
- Appropriate Immunohistochemistry
- Consider gynecologic oncologist consult if clinically indicated

Mammogram; if non-diagnostic and histopathologic evidence for breast cancer, breast MRI and/or breast ultrasound indicated

Men:
- >40 y: PSA

Men and women:
- Chest/abdominal/pelvic CT (if not done)
- Urine cytology; cystoscopy if suspicious
- Serum CA19-9 level if pancreatic or biliary tract primary suspected

Women:
- CA-125
- Appropriate Immunohistochemistry
- Consider gynecologic oncologist consult if clinically indicated

Mammogram; if non-diagnostic and histopathologic evidence for breast cancer, breast MRI and/or breast ultrasound indicated

Men:
- >40 y: PSA

Symptom-directed endoscopy can be considered for individual patients based on clinical findings and immunohistochemical markers.

An expanded panel of immunohistochemical markers may be used as appropriate. See Immunohistochemistry Markers for Unknown Primary Cancers (OCC-A).

Note: All recommendations are category 2A unless otherwise indicated.

Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
NCCN Guidelines Version 1.2015
Occult Primary

CLINICAL PRESENTATION

- Lung nodules
  - Consider local management
  - Breast marker positive
  - Other

- Pleural effusion

- Peritoneal/Ascites
  - Histology consistent with ovary, negative for liver
  - Other

- Retroperitoneal mass
  - Non-germ cell histology
  - If histology consistent with germ cell tumor in both men and women

MANAGEMENT BASED ON WORKUP FINDINGS

- If resectable, consider surgery
- Clinical trial preferred
- Consider chemotherapy
- Symptom control
- Stereotactic body radiotherapy (SBRT)

Treat per NCCN Guidelines for Breast Cancer

- Clinical trial preferred
- Consider chemotherapy
- Symptom control

Treat per NCCN Guidelines for Ovarian Cancer

- Clinical trial preferred
- Consider chemotherapy
- Symptom control

Treat as poor-risk germ cell tumor per NCCN Guidelines for Testicular Cancer or germ cell tumor per NCCN Guidelines for Ovarian Cancer

- Surgery and/or RT
- Consider chemotherapy for selected patients (category 2B)

For many patients the apparent uncertainties surrounding the diagnosis of an unknown primary cancer may result in significant psychosocial distress and increased difficulty in accepting treatment options. Empathetic discussion about the natural history of these types of cancer and their prognosis, and the provision of support and counseling both by the primary oncology team and specialized services may help to alleviate this distress. See NCCN Guidelines for Distress Management.

See Follow-up (OCC-16)

Note: All recommendations are category 2A unless otherwise indicated.
Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Peritoneal carcinomatosis + malignant ascites with no extraovarian site determined should be treated as stage III ovarian cancer.

<table>
<thead>
<tr>
<th>CLINICAL PRESENTATION</th>
<th>WORKUP</th>
<th>PRIMARY TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suspicious/palpable pelvic mass detected on abdominal/pelvic exam and/or ascites, abdominal distention, and/or Symptoms such as bloating, pelvic or abdominal pain, difficulty eating or feeling full quickly, or urinary symptoms (urgency or frequency) without other obvious source of malignancy</td>
<td>Obtain family history Refer for genetic risk evaluation Abdominal/pelvic exam Chest imaging Complete blood count (CBC), chemistry profile with liver function test (LFT) GI evaluation as clinically indicated Ultrasound and/or abdominal/pelvic CT/MRI as clinically indicated CA-125 or other tumor markers as clinically indicated</td>
<td>Laparotomy/total abdominal hysterectomy (TAH)/bilateral salpingo-oophorectomy (BSO) with comprehensive staging or unilateral salpingo-oophorectomy (USO) (clinical stage 1A or 1C, all grades with comprehensive staging if patient desires fertility) Cytoreductive surgery if clinical stage II, III, IV Consider neoadjuvant chemotherapy (category I) primary interval cytoreduction (diagnosis by fine needle aspiration [FNA], biopsy, or paracentesis) for patients with bulky stage III/IV who are poor surgical candidates due to high-risk comorbidity conditions or disease factors.</td>
</tr>
</tbody>
</table>

Diagnosis by previous surgery or tissue biopsy (cytopathology) | Obtain family history Refer for genetic risk evaluation Chest imaging CBC, chemistry profile with LFTs Institutional pathology review Ultrasound and/or abdominal/pelvic CT/MRI as clinically indicated CA-125 or other tumor markers as clinically indicated | All patients with ovarian cancer, fallopian tube cancer, or primary peritoneal cancer should be referred for genetic risk evaluation |

Note: All recommendations are category 2A unless otherwise indicated. Clinical Trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.

See: Pathologic Staging (OV-3) See Findings and Primary Treatment (OV-2)
Question 17.

- B; Androgen deprivation therapy (ADT) and radiation therapy
Treat high-risk, locally advanced prostate cancer
NCCN Guidelines Version 1.2015
Prostate Cancer

INITIAL PROSTATE CANCER DIAGNOSIS

- Life expectancy ≤5 y and asymptomatic
- Life expectancy >5 y or symptomatic

INITIAL CLINICAL ASSESSMENT

- DRE
- PSA
- Gleason primary and secondary grade

STAGING WORKUP

<table>
<thead>
<tr>
<th>Bone scan if any of these:</th>
<th>Pelvic CT or MRI if any of these:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 and PSA ≥20</td>
<td>T3, T4</td>
</tr>
<tr>
<td>T2 and PSA ≥10</td>
<td>T1-T2 and nomogram indicated probability of lymph node involvement ≥10%</td>
</tr>
</tbody>
</table>

RISK GROUP

Clinically Localized:
- Very low:
  - T1c
  - Gleason score ≤6
  - PSA <10 ng/mL
  - Fewer than 3 prostate biopsy cores positive
  - ≤50% cancer in each core
- Low:
  - PSA density <0.15 ng/mL/g
- Intermediate:
  - T2a-T2c or Gleason score 7 or PSA 10-20 ng/mL
- High:
  - T3a or Gleason score 8-10 or PSA >20 ng/mL

Locally Advanced:
- Very high:
  - T3b-T4
  - Primary Gleason pattern 5 or >4 cores with Gleason score 8-10

Metastatic:
- Any T, N1
- Any T, Any N, M1

Preferred treatment for any therapy is approved clinical trial.

All others: no additional imaging

See Initial Therapy (PROS-2)
See Initial Therapy (PROS-3)
See Initial Therapy (PROS-4)
See Initial Therapy (PROS-5)

See Principles of Life Expectancy Estimation (PROS-A).
Men with clinically localized disease could consider use of a tumor-based molecular assay to stratify risk of adverse pathology at radical prostatectomy or chance of biochemical recurrence or disease-specific mortality after radical prostatectomy.

See Principles of Imaging (PROS-B).
In selected patients where complications such as hydronephrosis or metastasis can be expected within 5 y, androgen deprivation therapy (ADT) or radiation therapy (RT) may be considered. High-risk factors include bulky T3-T4 disease or Gleason score 8-10.

Patients with multiple adverse factors may be shifted into the next highest risk group.

Note: All recommendations are category 2A unless otherwise indicated. Clinical trials: NCCN believes that the best management of any cancer patient is in a clinical trial. Participation in clinical trials is especially encouraged.
Question 18.

- C; Surgical resection followed by chemotherapy
Table 1. Definitions for T, N, M∗

T
Primary Tumor
TX Primary tumor cannot be assessed, or tumor proven by the presence of malignant cells in sputum or bronchial washings but not visualized by imaging or bronchoscopy
T0 No evidence of primary tumor
Tis Carcinoma in situ
T1 Tumor ≤ 3 cm in greatest dimension, surrounded by lung or visceral pleura, without bronchoscopic evidence of invasion more proximal than the lobar bronchus (i.e., not in the main bronchus)∗
    T1a Tumor ≤ 2 cm in greatest dimension
    T1b Tumor > 2 cm but ≤ 3 cm in greatest dimension
T2 Tumor > 3 cm but ≤ 7 cm or tumor with any of the following features:
    Involves main bronchus, ≥ 2 cm distal to the carina
    Invades visceral pleura
    Associated with atelectasis or obstructive pneumonitis that extends to the hilar region but does not involve the entire lung
    T2a Tumor > 3 cm but ≤ 5 cm in greatest dimension
    T2b Tumor > 5 cm but ≤ 7 cm in greatest dimension
T3 Tumor > 7 cm or one that directly invades any of the following:
    chest wall (including superior sulcus tumors), diaphragm, phrenic nerve, mediastinal pleura, parietal pericardium; or tumor in the main bronchus < 2 cm distal to the carina∗ but without involvement of the carina; or associated atelectasis or obstructive pneumonitis of the entire lung or separate tumor nodule(s) in the same lobe
T4 Tumor of any size that invades any of the following:
    mediastinum, heart, great vessels, trachea, recurrent laryngeal nerve, esophagus, vertebral body, carina; separate tumor nodule(s) in a different ipsilateral lobe

N
Regional Lymph Nodes
NX Regional lymph nodes cannot be assessed
N0 No regional lymph node metastasis
N1 Metastasis in ipsilateral peribronchial and/or ipsilateral hilar lymph nodes and intrapulmonary nodes, including involvement by direct extension
N2 Metastasis in ipsilateral mediastinal and/or subcarinal lymph node(s)
N3 Metastasis in contralateral mediastinal, contralateral hilar, ipsilateral or contralateral scalene, or supraclavicular lymph node(s)

M
Distant Metastasis
MX Distant metastasis cannot be assessed
M0 No distant metastasis
M1 Distant metastasis
    M1a Separate tumor nodule(s) in a contralateral lobe; tumor with pleural nodules or malignant pleural (or pericardial) effusion∗
    M1b Distant metastasis

∗The uncommon superficial spreading tumor of any size with its invasive component limited to the bronchial wall, which may extend proximally to the main bronchus, is also classified as T1.

T2 tumors with these features are classified T2a if ≤ 5 cm or if size cannot be determined, and T2b if > 5 cm but ≤ 7 cm

Most pleural (and pericardial) effusions with lung cancer are due to tumor. In a few patients, however, multiple cytopathologic examinations of pleural (pericardial) fluid are negative for tumor, and the fluid is nonbloody and is not an exudate. Where these elements and clinical judgment dictate that the effusion is not related to the tumor, the effusion should be excluded as a staging element and the patient should be classified as T1, T2, T3, or T4.

Treat a patient with early-stage non-small cell lung cancer (NSCLC)

Surgery is indicated for patients with stage I and II disease with no mediastinal involvement.

Adjuvant chemotherapy with a cisplatin-based regimen should be given to patients with surgically resected NSCLC in stage II to reduce recurrent disease and mortality. (5% reduction in risk of death at 5 years).

Adjuvant chemotherapy should be considered in high risk stage 1B patients after surgery for benefit. (> 4 cm, et cetera)
Question 19.

- D; PSA measurement and digital rectal examination every 6 to 12 months
Manage prostate cancer follow up; 75% of recurrences occur within 5 years
Manage prostate cancer follow up;
75% of recurrences occur within 5 years
Question 20.

- D; Obtain Pap smear in 2 years
<table>
<thead>
<tr>
<th>Population</th>
<th>Page Numbers</th>
<th>Recommended Screening Method*</th>
<th>Management of Screen Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aged &lt;21 y</td>
<td>521-522</td>
<td>No screening</td>
<td></td>
<td>HPV testing should not be used for screening or management of ASC-US in this age group</td>
</tr>
<tr>
<td>Aged 21-29 y</td>
<td>522-523</td>
<td>Cytology alone every 3 y</td>
<td>HPV-positive ASC-US(^4) or cytology of LSIL or more severe: Refer to ASCCP guidelines(^2)</td>
<td>HPV testing should not be used for screening in this age group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cytology negative or HPV-negative ASC-US(^4): Rescreen with cytology in 3 y</td>
<td></td>
</tr>
<tr>
<td>Aged 30-65 y</td>
<td>523-529</td>
<td>HPV and cytology “cotesting” every 5 y (preferred)</td>
<td>HPV-positive ASC-US or cytology of LSIL or more severe: Refer to ASCCP guidelines(^2)</td>
<td>Screening by HPV testing alone is not recommended for most clinical settings</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HPV positive, cytology negative:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Option 1: 12-mo follow-up with cotesting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Option 2: Test for HPV16 or HPV16/18 genotypes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• If HPV16 or HPV16/18 positive: refer to colposcopy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• If HPV16 or HPV16/18 negative: 12-mo follow-up with cotesting</td>
<td></td>
</tr>
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<td>Cotest negative or HPV-negative ASC-US: Rescreen with cotesting in 5 y</td>
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<td>HPV-positive ASC-US(^4) or cytology of LSIL or more severe: Refer to ASCCP guidelines(^2)</td>
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<td>Cytology negative or HPV-negative ASC-US(^4): Rescreen with cytology in 3 y</td>
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<tr>
<td>Aged &gt;65 y</td>
<td>529-531</td>
<td>No screening following adequate negative prior screening</td>
<td>Women with a history of CIN2 or a more severe diagnosis should continue routine screening for at least 20 y</td>
<td>Applies to women without a cervix and without a history of CIN2 or a more severe diagnosis in the past 20 y or cervical cancer ever</td>
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<tr>
<td>After hysterectomy</td>
<td>531</td>
<td>No screening</td>
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<tr>
<td>HPV vaccinated</td>
<td>531-533</td>
<td>Follow age-specific recommendations (same as unvaccinated women)</td>
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</tbody>
</table>

ASCCP, American Society for Colposcopy and Cervical Pathology; ASC-US, atypical squamous cells of undetermined significance; CIN2, cervical intraepithelial neoplasia grade 2; HPV, human papillomavirus; LSIL, low-grade squamous intraepithelial lesion.

* Women should not be screened annually at any age by any method.

\(^{1}\) ASC-US cytology with secondary HPV testing for management decisions.