

# Practice Exam Questions



AOCNP

Advanced Oncology Certified Nurse Practitioner



**EXAMAIDES**

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## Total Question: 165 QAs

Question No: 1

Which of the following cancers is the leading killer worldwide?

- A. Stomach.
- B. Lung.
- C. Colorectal.
- D. Liver.

Answer: B

Explanation: The three cancers that lead to the most deaths globally are lung (19.4%), colorectal (9%), and stomach (8.3%). The industrialized countries account for the highest rates while the lowest rates tend to be in northern Africa and southern and eastern Asia. Worldwide cancer rates are expected to increase in the near term because of aging populations and unhealthy lifestyles such as smoking and probably obesity. Tobacco use alone is responsible for 480,000 deaths per year in the U.S, according to the CDC in 2020. Although cancer rates (usually expressed as number per 100,000 population) in the United States have declined somewhat, there has been a drastic increase in liver cancer from 2000 to 2016, according to the CDC.

Question No: 2

Cancer incidence is:

- A. The same as prevalence
- B. The number or percent of people alive in the population who have had a diagnosis of cancer
- C. The number of new cancers of a specific site/type in the population during 1 year
- D. Each time a new cancer of a specific site/type is diagnosed

Answer: C

Explanation: Cancer statistics are published annually by the American Cancer Society (ACS) and are expressed as incidence and prevalence. Incidence refers to the number of new cancers of a specific site or type in a population per year. The numbers may refer to a general population or be divided into subgroups based on age, geography, gender, ethnicity, socioeconomic group, or other distinguishing categories. Carcinomas in situ (except bladder) and basal and squamous cell skin cancers are usually excluded from the general numbers because of their frequency. The number or percent of people alive on a certain date in the population who have a diagnosis of cancer is referred to as prevalence. This includes new and existing cases. The National Cancer Institute estimate of cancer prevalence in the United States at January 1, 2000 was 9.6 million with average age for men 69 and women 64.

Question No: 3

Which of the following cancer types has decreased the most in incidence during the previous decade?

- A. Prostate.
- B. Lung.
- C. Female breast.
- D. Melanoma.

Answer: A

Explanation: Overall cancer incidence has declined somewhat in men (1.5%) and has stabilized for women. Prostate cancer has declined the most in recent years; there are about 3% fewer cases per year. The incidence

of liver cancer has increased the most, approximately 3.9% per year. Other cancers with reduced rates include Hodgkin lymphoma and leukemia, male lung cancer, and stomach and uterine cancers. Melanomas, kidney, and thyroid have also shown a slightly increased incidence. Do not confuse incidence with survival rates. Cancer survival rates are usually expressed as five-year survival and include persons with disease still getting treatment and those who are alive at 5 years after diagnosis with no evidence of disease (NED). Improvements in the survival rate may reflect better treatments or perhaps earlier diagnosis.

Question No: 4

Which of the following races has the highest mortality due to cancer?

- A. African American.
- B. Hispanic.
- C. Caucasian.
- D. Asian/Pacific Islanders.

Answer: A

Explanation: According to statistics from 2013-2017, African American men had the highest cancer mortality, 227.3 per 100,000 population, while women in this group recorded 153.4. Caucasians and then Hispanics were next most frequent, while mortality among Asian/ Pacific Islanders was the lowest of the major races, 117.3 for men and 85.6 for women. The mortality rate among African American men is about 20% higher than that for Caucasians, while for women it is 12% higher in the African American community. Interestingly, American Indians and Alaskan natives show a mortality rate lower than that of Caucasians: 173.1 versus 189.6 for men and 123.0 versus 136.4 for women.

Question No: 5

Female breast cancer:

- A. Accounts for 30% of all cancer-related deaths among women
- B. Will develop in one out of eight or nine women during her lifetime
- C. The five-year survival rate is about 50%
- D. Accounts for 10% of all cancer cases in women

Answer: B

Explanation: Breast cancer accounts for about one-third of all cancer cases in women and about 15% of cancer-related deaths. Modern statistics indicate that the disease will occur in one out of eight or nine women during her lifetime. The five-year survival among Caucasian women is about 88% for all stages but less among African American women (73%), possibly due to the later diagnosis and more advanced disease among the latter group. Recent data show a small downward trend in the incidence of this disease. Median age of diagnosis in women is 63 years. Male breast cancer is quite rare but does appear to be increasing among men younger than 40. Numerous risk factors for the disease have been identified in women, including increasing age, estrogen treatment, early menarche or late menopause (possibly related to duration of exposure to estrogen), nulliparity, family history of breast cancer, radiation exposure, and genetic factors such as the BRCA1 and BRCA2 genes.

Question No: 6

All of the following are among the risk factors for prostate cancer except:

- A. Family history of the disease
- B. Caucasian heritage

C. Increasing age

D. High-fat diet

Answer: B

Explanation: Prostate cancer is the second leading cause of death from cancer in American men despite the fact that only about 3% of those afflicted die of the disease. This is of great interest since about 20% of American men will be diagnosed with the disease during their lifetime. The disease appears to be indolent among older men and often they die of another disease before the prostate cancer becomes life-threatening. The disease tends to be more aggressive among younger men, possibly related to testosterone levels. African American men have a higher incidence and mortality rate than Caucasian men. This may be partially related to delay in diagnosis. Risk factors include advancing age, family history of the disease, a high-fat diet, and perhaps obesity. Genetic factors are suspected to increase risk but no definite genes have as yet been identified.

Question No: 7

All of the following have been shown to reduce the risk of breast cancer EXCEPT:

A. bilateral mastectomy.

B. tamoxifen (Nolvadex).

C. vitamin B12 and folic acid.

D. raloxifene (Evista).

Answer: C

Explanation: Preventive measures for those at high risk of developing cancer have been the subject of a variety of clinical studies. Bilateral mastectomy, though extreme, has been used for those women who have developed a cancer in one breast and/or have a very strong family history of the disease, usually two or more direct relatives such as mother and sister. Women with the BRCA1 and BRCA2 genes may be candidates as well. Tamoxifen, a drug that interferes with estrogen activity, has been used for 30 years to treat breast cancer and for 10 years to decrease the incidence in high-risk individuals. Raloxifene hydrochloride is a selective estrogen receptor modulator (SERM) originally developed to treat osteoporosis but has been found to be useful in breast cancer prevention, with possibly an even greater efficacy than tamoxifen. Vitamin B12 and folic acid do not prevent breast cancer.

Question No: 8

According to recent studies, modification of lifestyle (stopping smoking, better diet, more exercise) and access to proven screening methods could save this percentage of cancer deaths annually:

A. 25%

B. 50%

C. 75%

D. 33%

Answer: B

Explanation: Behavioral changes, though often difficult to maintain, may be the first line of defense in cancer prevention. Tobacco use, for example, has been associated not only with an increased risk of lung cancer but many other types of cancer as well. Recently dietary measures to avoid obesity have been the subject of several cancer prevention studies. Persuading people to go for proven screening tests such as Pap smears, colonoscopies, and PSA levels may also play a larger role in detecting precancerous lesions and lead to earlier treatment. Newer techniques, such as breath analysis for lung cancer, testing for blood tumor markers, or urinary DNA for bladder cancer, may increase the potential of this approach. According to a study conducted

by Harvard University in 2016, 50% of cancer deaths could be prevented in the United States (and 20-40% of cancer cases could be prevented), if behavioral changes and better access to screening tests occur widely.

Question No: 9

Which of the following is NOT a risk factor for colorectal cancer?

- A. High-fiber diet.
- B. Familial polyposis.
- C. Adenomatous polyps of the colon.
- D. Low selenium level.

Answer: A

Explanation: Most clinical studies of high-fiber diets have concluded that this dietary change may reduce the incidence of colon cancer and colonic adenomatous polyps, a known precursor of cancer of the large bowel. One study of 500,000 individuals in 10 countries documented a 25% decrease in the incidence of colon cancer in those individuals who ate 33 g/day of fiber versus those who ate 12 g/day. Low selenium levels have been correlated with an increased risk of colon cancer, although the mechanism is uncertain. Both calcium and nonsteroidal anti-inflammatory drugs (NSAIDs) may also have protective properties. Adenomatous polyps, especially those greater than 1 cm in size, are potential precursors of colon cancer and should be removed via colonoscopy. Those individuals with familial polyposis have a very high risk of colorectal cancer and colectomy is often required for prevention.

Question No: 10

Human papilloma virus quadrivalent vaccine, recombinant (Gardasil):

- A. eliminates the need for Pap smears.
- B. prevents cervical cancers caused by papilloma virus types 6, 11, 16, and 18.
- C. should be given to all premenopausal women.
- D. has no effect on genital warts.

Answer: B

Explanation: The new vaccine Gardasil is effective against the two types of HPV that cause 70% of cervical cancers (16 and 18) and 90% of genital warts (6 and 11). Originally intended for girls prior to sexual activity, the indication has now been expanded to the 9- to 26-year-old age range. There are about 30 types of HPV, so the vaccine may protect against those types that have not yet infected an individual. It is given in three doses over six months. Since the vaccine only protects against 70% of cervical cancers, the need for Pap smears is not eliminated. Side effects include pain or erythema at the injection site, headache, fever and occasional dizziness, vomiting, or fainting.

Question No: 11

Which of the following is not a definite environmental risk factor for cancer?

- A. Asbestos.
- B. Sun exposure.
- C. Electromagnetic field exposure.
- D. Radon gas.

Answer: C

Explanation: Numerous environmental factors increase the risk of specific cancers and cancer generally. Asbestos exposure is perhaps the most documented environmental carcinogen for mesothelioma and lung

cancer and may have a synergistic effect with smoking-related lung cancer. Melanoma has been firmly linked to excessive sun exposure, especially youthful sunburn, and probably plays some role in squamous and basal cell skin cancers. Radon gas exposure, especially in miners and those workers involved with nuclear waste, most likely increases the risk of lung cancer. Whether proximity to electromagnetic fields (e.g., power lines) results in an increased cancer risk has been debated for many years and studies have mostly been observational with conflicting results. The advent of widespread cell phone use has added to the controversy but no definite statement about their cancer risk may be made at this time.

Question No: 12

Which of the following viruses is most closely linked to Burkitt lymphoma?

- A. Human immunodeficiency virus (HIV).
- B. Epstein-Barr virus.
- C. Hepatitis B.
- D. Human papilloma virus (HPV).

Answer: B

Explanation: Viral etiology of cancer has been studied extensively over the past two decades and links with a variety of well-established cancers. This does not imply that the virus is always a direct cause of the cancer; it may act along with genetic or environmental entities or degrade immune surveillance. HIV has been associated with Kaposi sarcoma, especially in young homosexual males. It also may increase the risk of B-cell lymphoma. Hepatitis B and C viruses may cause or lead to hepatocellular carcinoma, which accounts for the largest majority of viral-linked cancers. Epstein Barr virus, the cause of infectious mononucleosis, has been linked to Burkitt lymphoma, predominantly in Africans, and several other cancers, including nasopharyngeal and parotid. HPV, especially type 16, is a major cause of cervical neoplasia, and the virus has also been detected in a substantial number of squamous cell carcinomas of the oral cavity, head, and neck.

Question No: 13

Which of the following statements about tobacco use is NOT true?

- A. It is the single most important cause of cancer mortality in the United States.
- B. Inhaled tobacco smoke but not chewing tobacco is highly carcinogenic.
- C. Smokers who quit before age 50 halve their risk of dying in the next 15 years.
- D. Secondary smoke has not been established as carcinogenic.

Answer: B

Explanation: Tobacco use accounts for 30% of all cancer deaths and almost 90% of lung cancer deaths. In addition to lung, cancers of the upper airway and esophagus, bladder, pancreas, kidney, and perhaps cervix and colon have been shown to be increased in smokers. While cigarette use is far and away the most important source, cigars, chewing tobacco, snuff, and secondary smoke from others are all linked to a heightened risk of cancer. While many have quit smoking, about a quarter of the population still uses tobacco in the United States, and the number is higher in many other countries. Quitting before age 50 may halve the risk of dying in the next 15 years and those who have quit have a greatly decreased risk after age 70.

Question No: 14

Which of the following cancers does NOT have a well-established screening procedure?

- A. Lung.
- B. Breast.

- C. Cervix.
- D. Colon.

Answer: A

Explanation: Mammography has been the cornerstone of breast cancer screening for many years. The ACS recommends starting annually for women age 40 and older; NCI allows every 1 to 2 years for women older than 40. There has been a very recent conflict over these guidelines by a federal task force that suggested age 50 as the starting point for mammograms and every two years thereafter. Pap smears to detect cervical dysplasia and carcinomas at a very early stage have been well established for many years. While previously recommended for women when they become sexually active, one professional gynecology group has now stated that biannual smears starting at age 21 may be adequate. Colonoscopy with polypectomy has revolutionized colorectal cancer screening and prevention and has most likely led to the recent decline in this cancer. Lung cancer screening remains difficult. Chest x-rays and sputum cytology are inadequate and spiral CT or other sophisticated scanning techniques (e.g., PET scans) are still under evaluation.

Question No: 15

Tumor markers:

- A. include PSA, CEA, CA-125.
- B. may always distinguish benign from malignant conditions.
- C. are always useful for diagnosis of a specific cancer.
- D. are never useful gauges of effective therapy.

Answer: A

Explanation: Along with imaging studies and biopsy-cytology, tumor markers are playing an important role in cancer diagnosis and treatment. These are products in the blood either produced directly by the tumor or reflecting the body's reaction to the tumor. Some of the well-known ones are PSA, CEA, alpha-fetoprotein, CA-125, and CA 19-9. Unfortunately, they are often nonspecific and may be produced by benign conditions. PSA may be elevated in benign prostatic hypertrophy, as well as in prostate cancer, and this has led to quite a controversy over the value of annual PSA screening tests for men. Too often, false-positives and false-negatives confound a specific diagnosis so these markers are best used as confirmatory to other diagnostic measures. Once a definite diagnosis is made, the level of the marker may often be used as an indicator of treatment efficacy. Sometimes decisions regarding treatment (e.g., surgery) are influenced by the magnitude of the tumor marker.

Question No: 16

Which of the following is most recommended for early detection of colorectal cancer in normal-risk persons?

- A. Fecal occult blood test (FOBT) every five years starting at age 45.
- B. Virtual colonoscopy every 5 years starting at age 45.
- C. Colonoscopy every 10 years starting at age 50.
- D. Double-contrast barium enema (DCBE) every 10 years starting at age 50.

Answer: C

Explanation: For many years, annual fecal occult blood testing was the only routine method of screening for early colon cancer. Unfortunately, there are many false-positives and false-negatives with this technique, although it still has a role in the detection of bowel neoplasia with annual testing. Virtual colonoscopy using computerized tomography and bowel contrast media is still under evaluation as a screening tool but is associated with high radiation exposure and the discomfort of a contrast enema. Colonoscopy every 10 years



is the currently the most favored method for both sexes starting at age 50. It has the advantages of being performed under anesthesia, routine examination of the entire colon is possible, and the immediate excision of polyps or other premalignant lesions. Double-contrast barium enema has largely been replaced by colonoscopy, but when used (e.g., those with tortuous colons that are hard to colonoscope) it should be done every five years.

Question No: 17

Which of the following would be the best approach to early diagnosis of prostate cancer?

- A. Prostate-specific antigen (PSA) annually starting at age 40
- B. PSA and digital rectal examination (DRE) annually in men starting at age 50 who have 10 or more years of life expectancy
- C. Prostate biopsy every 5 years
- D. DRE annually starting at age 40

Answer: B

Explanation: The best early-detection method for prostate cancer remains controversial and different professional associations differ in their recommendations. One problem is that the PSA test may be elevated more than 4 ng/ml with benign lesions, so some authorities suggest further investigation only if the level is rising over time. Also, mortality from the disease is relatively low and older men tend to have indolent disease and often die of another cause. The ACS currently recommends PSA and DRE annually for men at age 50 who have 10 or more years of life expectancy. For higher-risk individuals, those with a family history or African American heritage, starting annual testing starting at age 45 is suggested. Men with even higher risk (first-degree relative who was diagnosed with prostate cancer at a young age), are recommended to begin screening at age 40.

Question No: 18

The term lead-time bias in cancer screening refers to:

- A. cancer is detected early but this does not affect mortality; survival appears longer but is not.
- B. cancer is detected when cure is still possible but treatment does not result in a cure.
- C. survival is actually shortened by early detection and too aggressive therapy.
- D. those cancers that are very slow growing compared with more aggressive ones.

Answer: A

Explanation: The concept of lead-time bias in cancer refers to an early detection of the cancer that has no impact on true survival. For example, a five -year survival rate may appear to be improved by earlier diagnosis but actual lifespan is not prolonged. This fact must be taken into consideration when evaluating cancer treatments, especially those that include five-year survival rates as an end point.

There are other potential pitfalls in analyzing the efficiency of cancer screening tests and early treatment. Length bias refers to the presence of both symptomatic, aggressive cancers in a population and those with asymptomatic, less-aggressive disease. Screening may detect both but those with less-aggressive disease will appear to have a better survival. For this reason, clinical trials usually compare new treatments versus older ones with groups of patients that are as close to identical as possible (e.g., age, sex, stage of tumor, metabolic data, and performance status).

Question No: 19

Colposcopy refers to:



- A. diagnosis of pancreatic cancer via CT examination.
- B. diagnosis of ovarian cancer with laparoscopy.
- C. endometrial biopsy of the uterus.
- D. microscopic examination of the cervix.

Answer: D

Explanation: The term for microscopic examination of the cervix is colposcopy. It is usually done after a positive Pap smear and employs a long focal length dissecting type microscope with a 10x to 16x magnification. The cervix is usually treated beforehand with 4% acetic acid solution, which allows directed biopsy of suspicious lesions. Ovarian cancer is often suspected by pelvic examination and confirmed by laparoscopic biopsy but does not employ colposcopy. Endometrial biopsy may be useful for detecting endometrial and occasionally cervical cancer at the margin but does not involve colposcopy. Diagnosis of pancreatic cancer may be made by CT examination or laparoscopy and then needle or surgical biopsy but this also does not involve colposcopy.

Question No: 20

Which of the following pairs of risk factors and specific cancers is not true?

- A. Alcohol consumption and cancer of the upper GI tract
- B. Inflammatory bowel disease and colon cancer
- C. Prior thoracic radiation and breast cancer
- D. Prior thoracic radiation and cancer of the esophagus

Answer: D

Explanation: Excess alcohol use is thought to be related to 3% of cancer mortality and includes cancers of the esophagus, upper gastrointestinal tract and colon, liver, and possibly breast. The exact mechanism is unknown and there is evidence for either a direct or indirect effect. It is often synergistic with tobacco. Patients with inflammatory bowel disease such as Crohn disease or ulcerative colitis have an increased risk of colon cancer and require earlier and more frequent colonoscopic screening than average risk individuals. Sometimes bowel resection is the only prophylactic treatment. Among the many risk factors for breast cancer, previous thoracic radiation, usually in treatment of lymphoma or thymoma, predisposes to breast cancer, often at an early age. Routine mammography should be started within 15 years of the radiation treatment or by age 40.

Question No: 21

According to a current theory of carcinogenesis, which of the following are not required to transform normal cells into malignant ones?

- A. A carcinogenic initiating agent
- B. A promoter
- C. Apoptosis
- D. Permanent DNA mutation

Answer: C

Explanation: According to the three-stage theory of carcinogenesis, malignant transformation of normal cells involves three distinct mechanisms. An initiator substance, which may be a chemical, physical, or biologic carcinogen, damages DNA that affects a genetic change. The damaged DNA may then undergo repair and no initiation occurs. However, if the damage is permanent (mutation), it may be subject to further modification of the cell physiology by a promoter substance that can lead to alterations in the cell's proliferative capacity or inhibit apoptosis (genetically programmed cell death). Some substances such as asbestos, tobacco smoke,

or alcohol have both initiator and promoter properties. It is believed there is a threshold dose for a promoter substance to alter cell physiology that in turn depends on the nature, dose, and duration of exposure.

Question No: 22

The ras oncogene that is found in many common human cancers, such as lung, colon, pancreas and leukemias, acts to alter cellular proliferation by which of the following mechanisms?

- A. Point mutation.
- B. Amplification.
- C. Translocation.
- D. Overexpression.

Answer: A

Explanation: Oncogenes arise from mutated proto-oncogenes that normally regulate cellular growth and repair. The ras family of proto-oncogenes may be transformed to an oncogene by a point mutation of its DNA. This may lead to unrestrained cellular proliferation. Amplification overexposure or translocation are other mechanisms of genetic alteration of growth factor receptors, signal transduction proteins (transmission of membrane information to the cell nucleus), or certain nuclear regulatory proteins that control cell division. Examples are the sis proto-oncogene transformed by overexpression and associated with astrocytomas; the N-myc utilizing an amplification mechanism and associated with neuroblastoma and small cell carcinoma of the lung; and ABL associated with chronic and acute leukemias utilizing a translocation mechanism for a non-receptor tyrosine kinase enzyme.

Question No: 23

The tumor suppressor gene p53:

- A. Is the least common mutated tumor suppressor gene found in human cancers
- B. When mutated, is associated with common human tumors, such as bladder, breast, colon, or lung
- C. When mutated, promotes apoptosis
- D. When mutated, carries out DNA repair

Answer: B

Explanation: Tumor suppressor genes refer to that portion of the genetic DNA that regulates cell division. Mutation or loss of these genes may lead to enhanced cell growth and proliferation. Some of these also carry out DNA repair, so that loss will lead to unregulated cell division. The mutated gene p53 is the most common tumor suppressor gene found in human cancers, including many solid malignancies, brain tumors, and hematologic cancers. It may also interfere with apoptosis, the genetically programmed mechanism to rid the tissue of old or defective cells. In addition to p53, some other well-described tumor suppressor genes are the BRCA1 and BRCA2 genes that are associated with breast and ovarian cancer. These have a DNA repair function. Several other tumor suppressor genes act by other mechanisms.

Question No: 24

Typical characteristics of malignant cells include the all of following EXCEPT:

- A. angiogenesis.
- B. invasion of surrounding structures.
- C. metastases.
- D. spontaneous regression.

Answer: D

Explanation: Whatever the causative mechanism, malignant cells have a growth advantage over normal cells and have seemingly lost their response to growth and proliferation regulatory factors. As this unregulated growth continues, the tumor cells may compress and invade adjacent tissues or organs, sometimes by secreting enzymes that break down cellular barriers. Many tumors have the capacity to secrete substances called vascular endothelial growth factors (VEGF) that stimulate new blood vessel formation, a process called angiogenesis that allows the tumor an adequate blood supply as it grows. Several new chemotherapy agents are angiogenesis inhibitors and are directed at this process. The capacity for metastatic spread of cancer cells throughout the body, whether by direct invasion, seeding of body cavities, or lymphatic or hematogenous dissemination, is another distinguishing feature of most malignant tumors. Spontaneous regression of cancer, while described, is quite unusual.

Question No: 25

Which of the following well-documented carcinogens do not involve ionizing radiation:

- A. Radon gas
- B. Benzene
- C. X-rays
- D. Cosmic rays

Answer: B

Explanation: Carcinogens include ionizing radiation from natural (cosmic rays, radon gas) or diagnostic (x-rays, radioisotopes, radiation therapy) sources. Ultraviolet light is a complete carcinogen and probably causes most skin cancers including melanoma. Benzene is one of a long list of chemical carcinogens that includes such familiar substances as alcohol, arsenic, benzopyrene, beryllium, coal and tar pitch and soot, silica, smoked and pickled foods, vinyl chloride, and many others. Some therapeutic antineoplastic (e.g., alkylating agents) and immunosuppressant drugs (e.g., cyclosporine A) are also carcinogenic. Many of the common RNA viruses such as HBV, HCV, HIV and HPV are potential carcinogens. Some of the above factors act as initiators, promoters, or both; some may act by impairing immune surveillance by which the immune system is able to recognize and eliminate or inhibit growth of cancer cells.

Question No: 26

Sarcomas:

- A. always originate in bone.
- B. originate in connective tissue.
- C. originate in glandular epithelium.
- D. originate in squamous epithelium.

Answer: B

Explanation: Tumor nomenclature is usually based on the tissue of origin. Benign tumors are often named by adding the suffix-oma to the tissue of origin (e.g., lipoma from fat, neuroma from nerve) but there are exceptions. Malignant tumors are usually divided into carcinomas, which arise from epithelial tissue, and sarcomas, which are derived from connective tissue (including smooth and skeletal muscle, cartilage, bone, and fat). Carcinomas are usually subdivided into those arising in squamous epithelium (squamous cell carcinoma) and those arising in glandular epithelium (adenocarcinoma). Lymphatic and hematologic malignancies are referred to as leukemias (arising from blood cells), lymphomas (arising from lymph node tissue), and multiple myeloma (arising from plasma cells).

Question No: 27

Which pattern of cellular growth is characteristic of cancer cells?

- A. Hyperplasia.
- B. Metaplasia.
- C. Dysplasia.
- D. Anaplasia.

Answer: D

Explanation: Numerous cells undergo growth patterns that in some cases are normal responses to injury or irritation while in others they may be precursors to malignant changes. Hyperplasia, an increase in the number of cells in a tissue, may be a normal response in wound healing or a premalignant condition but is not a defining characteristic of cancer. Metaplasia is a potentially reversible process that involves the replacement of one type of mature cell with another not usually found in that tissue. Examples are squamous cell replacement of columnar epithelial cells in the airway of smokers, or the replacement of typical cells of the distal esophagus with intestinal epithelium in Barrett esophagus. Dysplasia refers to a loss of uniformity of particular cells with changes of size, shape, and architecture. Malignant cell growth is usually described as anaplastic, which is marked by extreme cellular disorganization, immature forms, and prominent nuclei.

Question No: 28

A staging workup of a patient with non-Hodgkin lymphoma (NHL) reveals disease in the cervical lymph nodes and enlargement of the hilar lymph nodes on CT scan of the chest. No mediastinal mass is seen and the rest of the examinations are negative. This would be consistent with:

- A. stage I.
- B. stage II.
- C. stage III.
- D. stage IV.

Answer: B

Explanation: Staging of NHL is usually based on criteria developed by the St. Jude staging system. This includes four stages, I to IV. The stage of the disease has major implications for both prognosis and treatment. Generally, stage I disease is limited to a single nodal or extranodal area; II reflects two nodal or non-nodal areas on the same side of the diaphragm; III indicates disease on both sides of the diaphragm or any intrathoracic tumor or extensive intraabdominal disease; IV means involvement of the central nervous system or bone marrow. Additionally, lymphoma staging may sometimes include a sub-staging of either A or B, where A lymphomas are generally asymptomatic, while B lymphomas will present with symptoms such as fever, night sweats, pruritus, or significant weight loss. This classification level, however, is utilized more often in Hodgkin's lymphoma. Regardless of staging, the total burden of disease is perhaps the most significant prognostic factor and may correlate with serum LDH and serum IL-2 receptor levels as well as stage and histologic type.

Question No: 29

B lymphocytes:

- A. dwell in lymphoid tissue.
- B. are associated with cellular immunity.
- C. may be subdivided into helper, cytotoxic, and natural killer cells.
- D. antigens can attach directly to the cell membrane and do not require macrophage presentation.

Answer: A

Explanation: The distinction between B lymphocytes associated with humoral immunity and T lymphocytes associated with cellular-mediated immunity is important in understanding the immune system. B cells originate in bone marrow and lymphatic tissue. Antigens are usually presented to B cells for processing by macrophages that acquire antigens and unused B cells react with specificity to one type of antigen. Some B lymphocytes differentiate into plasma cells and produce circulating protein antibodies while others retain the capacity to do so, called memory cells. T cells (originally thymus derived) are responsible for cellular immunity and may accept antigen from macrophages or via direct attachment to the cell membrane. T cells may be helper T cells that regulate cellular immunity by secretion of cytokines, or cytotoxic T cells that may kill target cells by several mechanisms. Natural killer (NK) cells are a form of T cell that attaches to and perforates target cell membranes and destroys them with granular enzymes.

Question No: 30

Which of the following would confer the worst prognosis for female breast cancer?

- A. Lobular carcinoma in situ.
- B. 1.0 cm tumor in left breast.
- C. Inflammatory histology.
- D. Estrogen-positive receptors.

Answer: C

Explanation: Numerous factors influence the prognosis for female breast cancer, including histology and grade, tumor size, lymph node involvement, hormone-receptor status, tumor proliferative index, and several others. Lobular carcinoma is often an incidental finding that does not show up on mammography and carries an increased risk for invasive breast cancer, approximately 1 % per year in either breast. Tumor size is an important marker for prognosis and tumors over 5 cm may increase the stage from II to III and worsen the prognosis. Inflammatory carcinoma of the breast often appears suddenly with skin changes but no discrete nodule and confers a poor prognosis. Tumors associated with estrogen and/or progesterone receptors tend to have a better prognosis than those that are receptor negative.

Question No: 31

A 60-year-old man with a 40 pack-year history of cigarette smoking presents with a chronic cough but little sputum, a 10 lb weight loss, and generalized fatigue. The chest x-ray shows a possible perihilar mass but clear peripheral lung fields. Which of the following procedures would most likely provide a definite diagnosis of lung cancer?

- A. Sputum examination with cytology.
- B. CT exam of the chest.
- C. Bronchoscopy with brush or needle biopsy.
- D. Transthoracic fine-needle biopsy.

Answer: C

Explanation: The clinical description in the question is classic for lung cancer but other possible causes such as chronic obstructive lung disease, sarcoidosis, lymphoma, metastatic cancer, and tuberculosis must be ruled out. Only a biopsy can confirm a diagnosis of lung cancer. Chest x-rays may show suspicious lesions but false positives and false negatives are common and can only suggest a diagnosis. CT scans of the chest tend to show most lung cancers well and are quite helpful in localizing the lesion(s) and assisting in staging. Both bronchoscopy with brush or needle biopsy and transthoracic fine needle biopsy may provide a definite

diagnosis. The latter is most useful in peripheral or diffuse lesions of the lung while the former tends to be more useful in centralized bronchogenic carcinomas. Sputum cytology may or may not be positive but usually cannot be relied upon for staging and in planning treatment.

Question No: 32

According to the TNM (Tumor, Node, Metastases) staging system in widespread use, which of the following would be expected to have the highest stage and most likely the worse prognosis in a case of gastric cancer?

- A. T1N0M0.
- B. T1N0M1.
- C. T2N2M0.
- D. T1N2M0.

Answer: B

Explanation: In the common TNM system for assessing stage. T refers to the size or degree of invasion of the primary tumor. In gastric cancer, T1 would show invasion of the lamina propria or submucosa while T2 would show invasion of the muscularis layer. N refers to nodal involvement with N0, indicating none, and N1 and N2, indicating perigastric nodal involvement with cancer: N1 within 3 cm of the primary tumor and N2 beyond 3 cm or in distant nodes. M refers to distant metastases: M0 none, M1 any metastases. Thus, answer A would be stage I A; B stage 4 because of metastatic disease, C stage III, and D stage II. Interestingly, this cancer is very common in Japan and relatively uncommon in the United States, though the incidence has been rising here recently. Dietary factors likely play a role.

Question No: 33

Cancer of the uterine cervix:

- A. is usually an adenocarcinoma.
- B. can be diagnosed by an abnormal Pap smear alone.
- C. has increased in incidence in the United States over the past 50 years.
- D. is often associated with certain strains of HPV.

Answer: D

Explanation: Cancer of the cervix is usually squamous in nature (85% to 90%), while adenocarcinoma tends to occur in younger women and carries a worse prognosis. Lesions may be exophytic, ulcerative and necrotic, or endophytic projecting into the cervical canal. The incidence has dramatically decreased in the United States since the advent of the Pap smear in the 1940s, though worldwide it remains a significant cause of morbidity and mortality. Pap smears may report abnormal cells but the usual diagnostic methods are cone biopsy, endocervical curettage, or colposcopy directed direct biopsy of a lesion. Recently, DNA testing for high-risk strains of HPV, considered the cause of cervical cancer, may contribute to the diagnostic arsenal.

Question No: 34

Which of the following is true for colon cancer?

- A. About two-thirds of these cancers occur in the cecum and ascending colon.
- B. Anemia without bowel symptoms may be a presenting sign.
- C. Five-year survival for those with stage I is only 50%.
- D. If the tumor perforates the bowel it is considered stage IV.

Answer: B

Explanation: Colon cancers are usually adenocarcinomas and some two-thirds arise in the rectosigmoid and

sigmoid sections of the colon. Only about 14% arise in the cecum and ascending colon. They most often arise in adenomatous polyps. Typical symptoms are abdominal pain, bowel obstruction, or changes in stool habits; however, the cancer may present without bowel symptoms and may be detected by stool positive for occult blood. Therefore, anemia may be the only presenting sign. This demands a bowel investigation such as barium enema or colonoscopy, especially in persons older than 40 or with a family history of bowel cancer. Five-year survival rates run from 90% to 95% for those with stage I (tumor limited to submucosal invasion with no nodal or metastatic disease) to 5% for those with stage IV (metastatic disease). Even if the tumor perforates the bowel but does not involve lymph nodes or have distant metastases it is considered stage II, which has a 75% to 80% five-year survival rate.

Question No: 35

All of the following are true for ovarian cancer EXCEPT:

- A. Elevated CA-125 is diagnostic.
- B. It is often diagnosed in a late stage.
- C. It may be suspected by a palpable ovary in a postmenopausal woman.
- D. It usually requires surgical staging before treatment.

Answer: A

Explanation: Ovarian cancer remains a highly lethal disease with a peak incidence in the 60- to 64-year old age group. One of the reasons for its lethality is that it often lacks symptoms until the disease is in an advanced stage. Although the CA-125 tumor marker and transvaginal ultrasound have been used as screening tools in high-risk women (e.g., those positive for BRCA genes or with a family history), their use for this purpose remains controversial. CA-125, like many tumor markers, is not specific for ovarian cancer. Bimanual pelvic exam remains the screening method most often leading to a suspected ovarian cancer, by palpation of an ovary in postmenopausal women or of a mass or irregular ovary. Surgical staging is usually required for pathologic examination of ovaries, tubes and uterus, and pelvic lymph nodes, and possible seeding of tumor into the abdominal cavity. Surgical debulking of tumor is also carried out.

Question No: 36

All of the following are true for prostate cancer EXCEPT:

- A. It may cause a rising PSA level.
- B. It is usually evaluated by grade as well as stage.
- C. Over half of men have this disease by age 90.
- D. Incidence is higher in Caucasians than African Americans.

Answer: D

Explanation: Prostate cancer tends to be more aggressive in younger men but may be present in more than 50% of men who reach the age of 90. Nearly 95% of these tumors are adenocarcinomas and most arise in the peripheral portion of the gland. Symptoms, if present, are most often referable to urinary function, although local invasion or distant metastases may give rise to other localizing symptoms, especially metastatic disease of bone. The disease is evaluated by 1) grade: Gleason score based on the sum of abnormality in two areas (primary and secondary) of biopsied specimens with higher scores indicating more aggressive disease and a poorer prognosis; and 2) stage by the usual TNM criteria. African Americans tend to have a higher incidence and poorer prognosis than Caucasian men.

Question No: 37