1. Which of the following is not indicative of high-risk stage II colorectal cancer (CRC)?
   a. Presence of T4 tumor(s)
   b. Presence of poorly differentiated tumor(s)
   c. Retention of 18q alleles
   d. Presence of lymphovascular invasion

**Explanation:** The presence of T4 tumors, poorly differentiated tumors, and lymphovascular invasion are all indicative of high-risk stage II CRC. Retention of 18q alleles, however, is indicative of low-risk stage II colon cancer. Conversely, heterozygous 18q loss would be considered indicative of high-risk disease.

**Reference**

2. The presence of microsatellite instability (MSI) in patients with CRC is associated with which of the following?
   a. A genetic predisposition to CRC
   b. A lower probability of resection
   c. A better prognosis
   d. Both A and B
   e. Both A and C

**Explanation:** The presence of MSI is associated with both a genetic predisposition to CRC and a better overall prognosis.

**References:**

3. All of the following are true about epidermal growth factor receptor (EGFR) inhibitors except:
   a. EGFR inhibitors have been associated with erythematous rash
   b. According to data from the EPIC trial, the addition of EGFR inhibitors to chemotherapy showed a statistically significant difference in overall survival compared to chemotherapy alone
   c. K-ras status is predictive of response to EGFR inhibitors
   d. According to data from the EPIC trial, the addition of EGFR inhibitors to chemotherapy did not show a statistically significant difference in overall survival compared to chemotherapy alone

**Explanation:** According to the EPIC data, the addition of the EGFR inhibitor cetuximab to irinotecan chemotherapy did not show a statistically significant difference in overall survival compared to chemotherapy alone, which was the primary endpoint of the study; however, the combination of cetuximab and irinotecan did show significant improvement in progression-free survival (55%) and a fourfold improvement in response rates.

Additionally, studies have shown that the presence of a K-ras mutation is a predictor of lack of response to EGFR inhibitors, and that EGFR inhibitors are associated with erythematous rash.

**References**
4. Which of the following facts about chemotherapy treatment holidays is false?
A chemotherapy treatment holiday involves withholding the most toxic component of chemotherapy for a period of time
a. Calcium-magnesium infusions have shown no neuromodulatory effects in chemotherapy-induced neurotoxicity
b. Treatment holidays do not tend to make oxaliplatin less effective when it is readministered
c. Patients generally like chemotherapy treatment holidays

Explanation: A chemotherapy treatment holiday is defined as a period in which the most toxic component of chemotherapy—oxaliplatin—is withheld. Several neuromodulatory agents, such as calcium-magnesium infusions, antiepileptic drugs, and alpha-lipoic acid, have shown prophylactic activity against oxaliplatin-induced neuropathy.¹

The efficacy of oxaliplatin does not tend to decrease after it is reinitiated,² and patients generally like the break from chemotherapy.³

References:

5. Which of the following is true about B-raf status in CRC?
   a. An increasing number of medications are being developed that target B-raf
   b. B-raf status may not be a negative predictor of CRC, but it has been shown to be a prognostic marker of disease
   c. B-raf mutation has been shown to decrease the overall survival time of CRC patients
   d. B-raf and K-ras status are mutually exclusive
   e. All of the above

Explanation: B-raf is an important biomarker in CRC. Although B-raf status may not necessarily be a negative predictor of CRC, it has been shown to be a prognostic marker of disease.¹² B-raf mutation has also been shown to decrease the overall survival time of CRC patients,³ so many new medications that target B-raf are under investigation. Furthermore, B-raf and K-ras status are mutually exclusive, suggesting that they may have different roles in targeted CRC treatment.⁴

References: