Master 4.6 Answer Key
Thyroid Cancer, Men II, and Genetic Testing: Checking for Understanding

1. What is MEN II? Although many kinds of cancer are linked with MEN II, 100 percent of people with the gene for MEN II will get cancer of what organ?

MEN II is multiple endocrine neoplasia 2. People with this disease almost always develop a certain type of thyroid cancer and may also develop other kinds, such as adrenal gland, brain, and bone cancer.

2. The Alzheimer’s disease genetic test doesn’t predict Alzheimer’s disease with certainty; a person who tests positive for E4 has only a 13-to-57-percent lifetime risk of Alzheimer’s disease. If a person tests positive for the mutation that causes MEN II, what is the chance that the person will get thyroid cancer?

100 percent.

3. There is no followup medical procedure that will prevent onset of Alzheimer’s disease. What followup medical options are there for a person who has tested positive for the mutation that causes MEN II?

The thyroid can be removed before any sign of cancer. Therefore, the person will never get thyroid cancer. Because the person doesn’t have a thyroid gland anymore, they need to take a daily medication.

4. As noted, this type of thyroid cancer is caused by an autosomal dominant mutation. What does this mean? (What does autosomal mean? What does dominant mean?)

An autosomal gene is a gene that is not on the X or Y chromosome. If one inherits the dominant version of the gene from one or both biological parents, he or she will develop the disease.

5. Other than the predictive value of the test and the options for followup medical care, what is another difference between Alzheimer’s disease and the type of thyroid cancer associated with MEN II?

The most typical type of Alzheimer’s arises at older ages (age 65 or older); the type of thyroid cancer associated with MEN II arises by a person’s 30s. Alzheimer’s involves brain degeneration; MEN II leads to an aggressive cancer if left untreated.

6. If Max were to test positive for the mutation, would he know anything more about anyone else in his family? Explain, and be as specific as possible.

If Max tests positive, that means that others in his family could also have inherited the same mutation. For example, his aunt and uncle could both have inherited this mutation, along with his cousins. This means that others in the family may want to follow up with their own genetic tests for the MEN II mutation.