Medications are not used or eliminated immediately by the body. The biological half-life of a medication is the time taken for the quantity of the medication in a patient to decrease to half the original quantity as a result of biological processes. Different medications have different biological half-lives.

The thyroid gland, located in the front of the neck, produces hormones that we need to live. The two most important thyroid hormones have the abbreviated names T4 and T3. Thyroid gland problems are very common, affecting about 5% of the Canadian population. One type of problem is called hypothyroidism, in which the thyroid gland produces too little hormone. The usual treatment is to take medications that contain synthetic T4 hormone. The body is able to convert some of the T4 to T3.

In the Modelling Math questions on pages 25, 60, and 80, you will solve the following problem and other problems that can be modelled algebraically.

The biological half-life of thyroid hormone T4 is about 6.5 days. If a dose of T4 was not followed by repeat doses,

a) what fraction of the original dose would remain in the body after 19.5 days?

b) how long would it take until only 6.25% of the original dose would remain in the body?

Use your research skills to answer the following questions now.

1. Find the biological half-life of another medication. Compare your findings with your classmates'.

2. Explain how and why the biological half-life of a medication is allowed for when repeated doses of the medication are prescribed.