Radioactive Iodine (I-131) and Thyroid Cancer

AN EDUCATION RESOURCE

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
NATIONAL INSTITUTES OF HEALTH • NATIONAL CANCER INSTITUTE

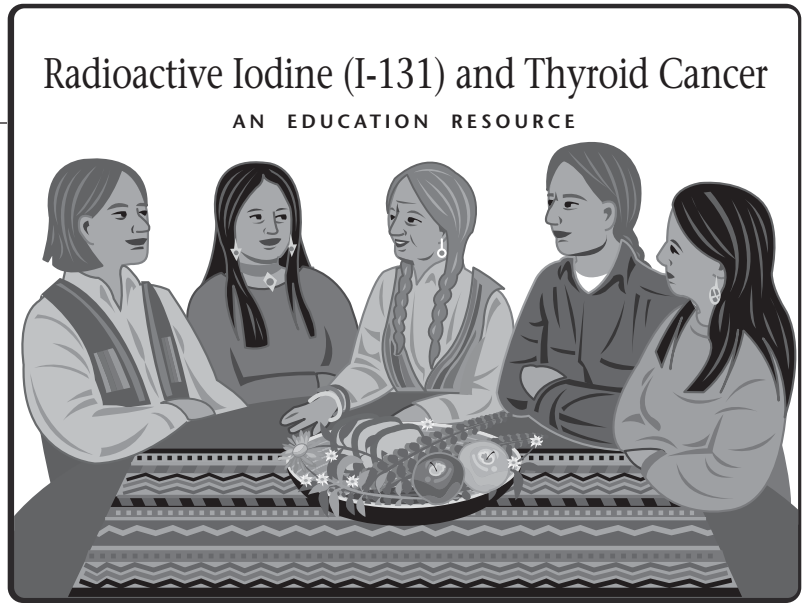
Notes for Presenter

The National Cancer Institute (NCI) commends your efforts to educate people about iodine-131 (I-131) in fallout from nuclear testing and related thyroid cancer risks. To assist you, NCI is pleased to provide *Radioactive Iodine (I-131) and Thyroid Cancer.*

Designed to address Native Americans' concerns about I-131 and thyroid cancer, this flip chart illustrates key messages to help people understand their possible risks. Talking points that can be addressed while presenting the information are included.

This flip chart is designed for use in small groups of up to 10 people. The intended audience is people most likely to have been exposed to I-131 from aboveground nuclear testing in Nevada in the 1950s and 1960s. Risk of exposure to I-131 is based on three key factors: 1) age, 2) childhood milk drinking habits, and 3) location of childhood residence:

1. People who are now 40 years of age or older, particularly those born between 1936 and 1963, who were children at the time of testing are more at risk.
2. Childhood milk drinkers, particularly those who drank large quantities of milk or those who drank unprocessed milk from farm or backyard cows and goats, have increased risk.
3. Finally, where people lived as children is a factor. The Mountain West, Midwest, East, and Northeast areas of the United States generally were more affected by I-131 fallout from nuclear testing.



To help you become acquainted with some of the concepts presented in this flip chart, you may want to read the following publications available from the National Cancer Institute:

- *Get the Facts About Exposure to I-131 Radiation,* NIH Publication No. 02-5111
- *Making Choices: Screening for Thyroid Disease,* NIH Publication No. 02-5276
- *What You Need to Know About Thyroid Cancer,* NIH Publication No. 01-4994

To order these publications, please call NCI's Cancer Information Service at 1-800-4-CANCER or visit NCI's Web site at *www.cancer.gov.*

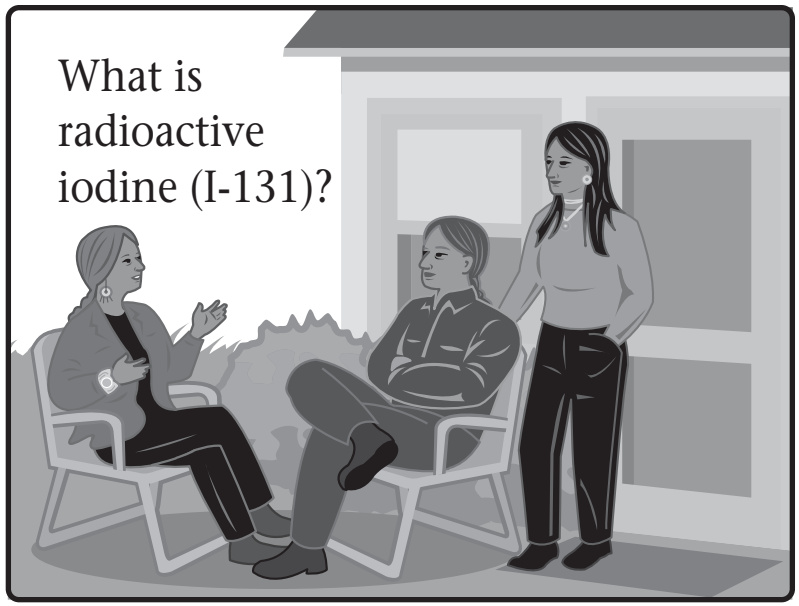
Radioactive Iodine (I-131) and Thyroid Cancer

AN EDUCATION RESOURCE

1. What is radioactive iodine (I-131)?

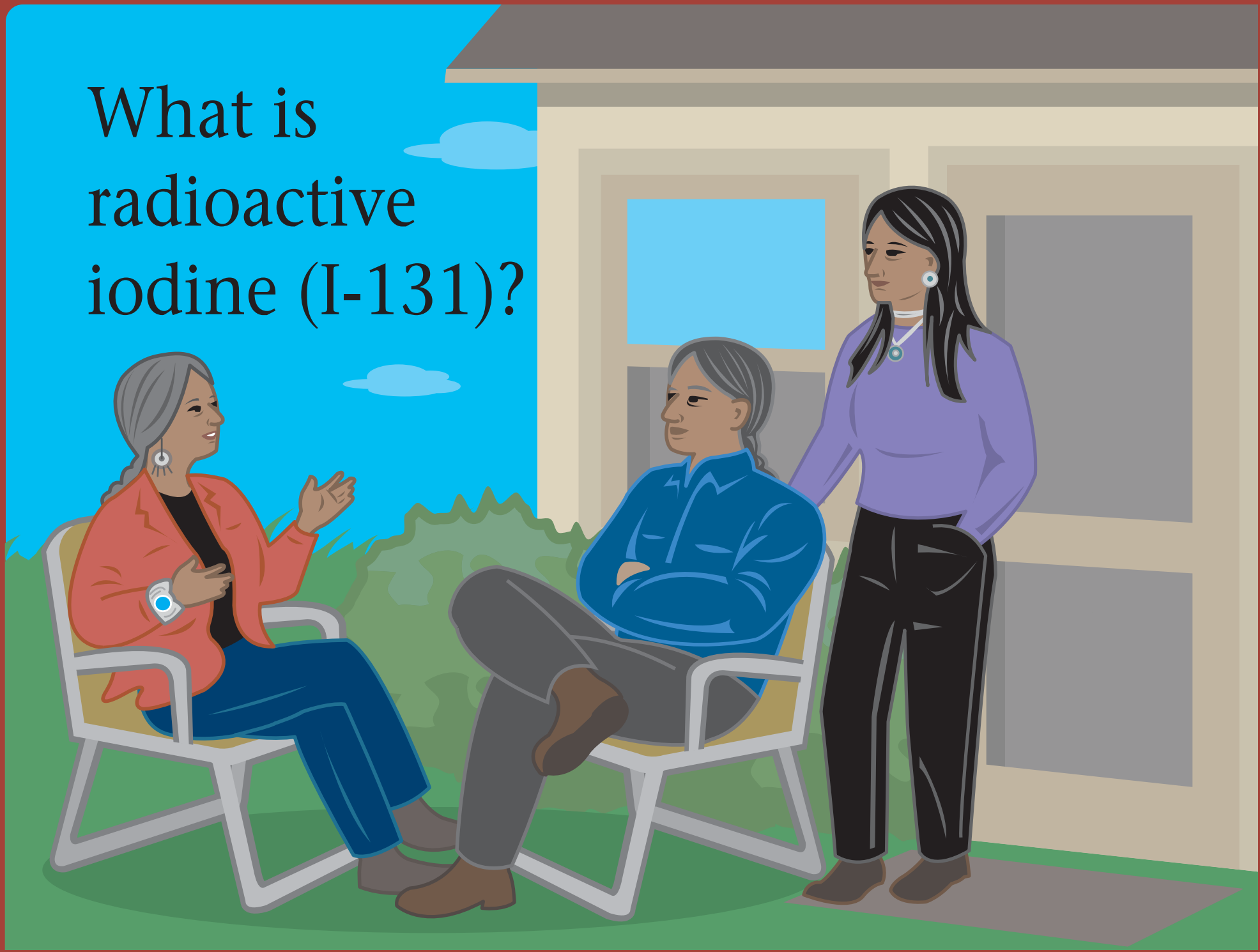
TALKING POINTS

- Today I'd like to talk to you about I-131 in fallout and its possible effects on thyroid cancer risk.
- During the Cold War in the 1950s and early 1960s, the U.S. government conducted about one hundred nuclear weapons (atomic bomb) tests in the atmosphere at a test site in Nevada.
- The radioactive substances released by these tests are known as "fallout." They were carried thousands of miles away from the test site by winds. As a result, people living in the United States at the time of the testing were exposed to varying levels of radiation.
- A form of iodine—called iodine-131, or I-131—was among the radioactive substances released in fallout. I-131 has been the subject of a great deal of concern and study.
- Congress directed government health agencies to investigate the I-131 problem many years ago, and to make recommendations to Americans who might have related health risks. Gathering information turned out to be very complex. Despite many challenges, government agencies organized expert scientific teams that have devoted many years to learning more about I-131.



This flip chart continues the effort to educate the American people about the potential health risks from exposure to I-131 from the Nevada Test Site during the Cold War years.

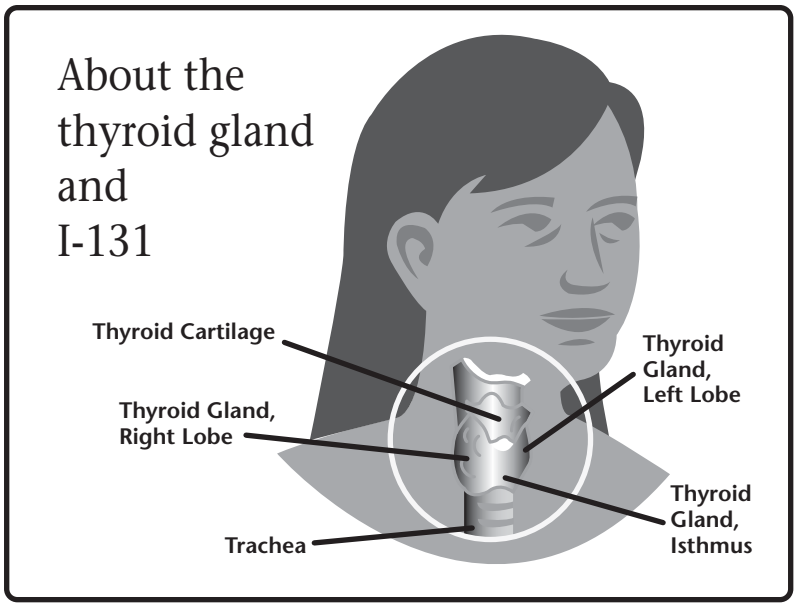
What is radioactive iodine (I-131)?



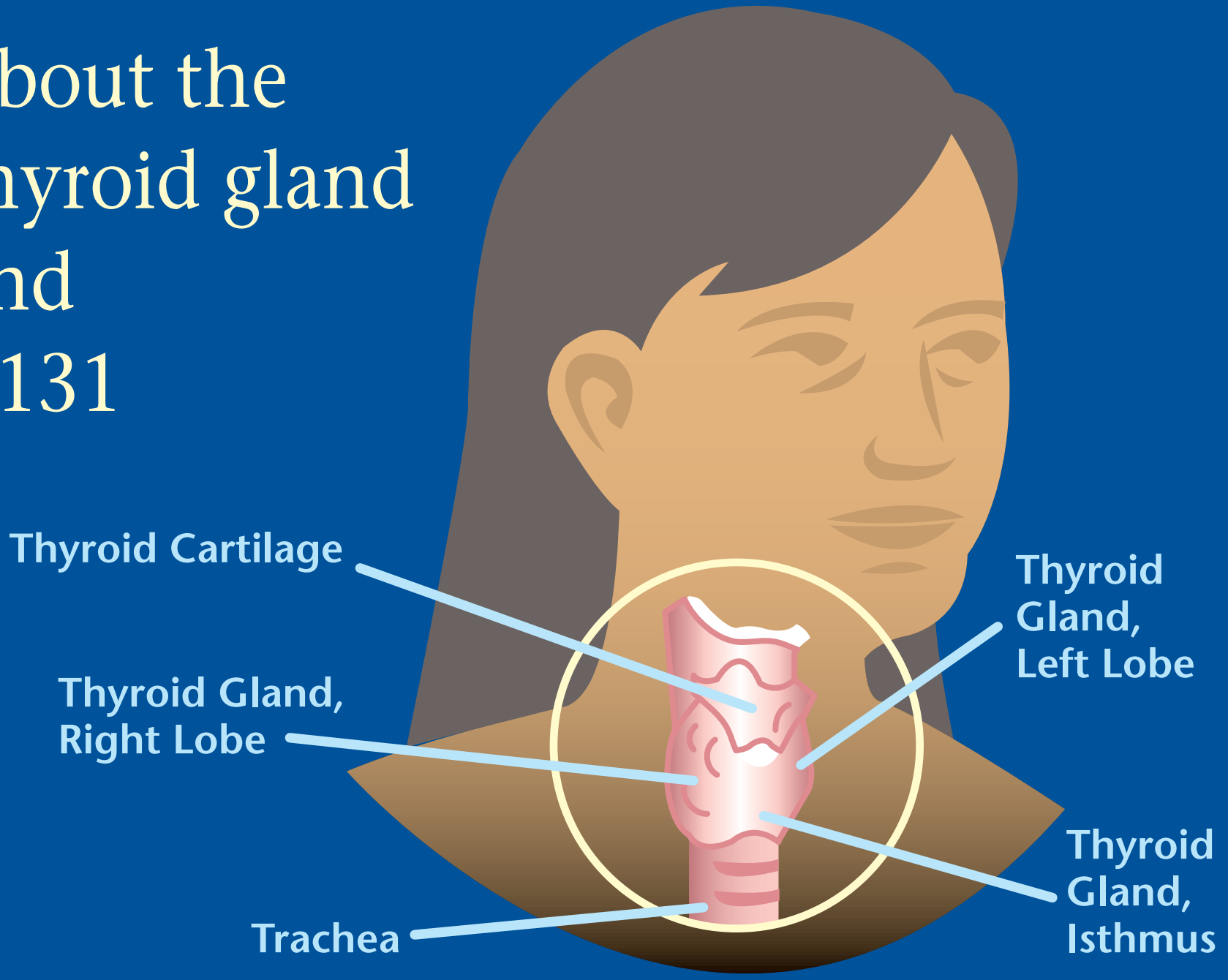
2. About the thyroid gland and I-131

TALKING POINTS

- The thyroid gland controls a person's heart rate, blood pressure, and body temperature, as well as childhood growth and development. It is located in the front of the neck, just above the top of the breastbone and overlying the windpipe.
- Iodine collects in the thyroid gland, and is needed for normal growth. But people exposed to I-131, especially during childhood, may have an increased risk of thyroid disease, including thyroid cancer.
- Thyroid cancer is not common. It is highly treatable, and with treatment, it is usually curable. Of those people who have had thyroid cancer that might be linked to I-131, most are alive and, if treated, cancer-free today.
- Although a person's chance of getting thyroid cancer from exposure to I-131 is small, Americans who grew up during the atomic bomb testing between 1951 and 1963 should be aware of risks.



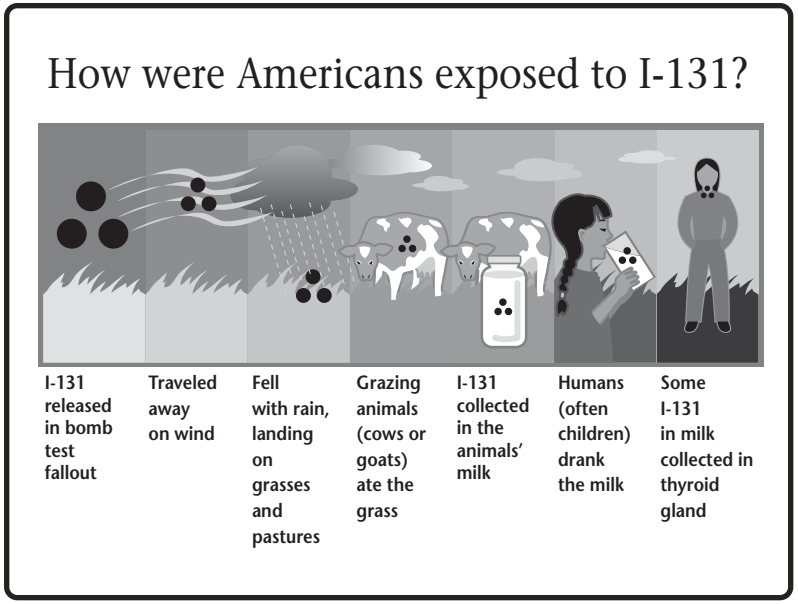
About the thyroid gland and I-131



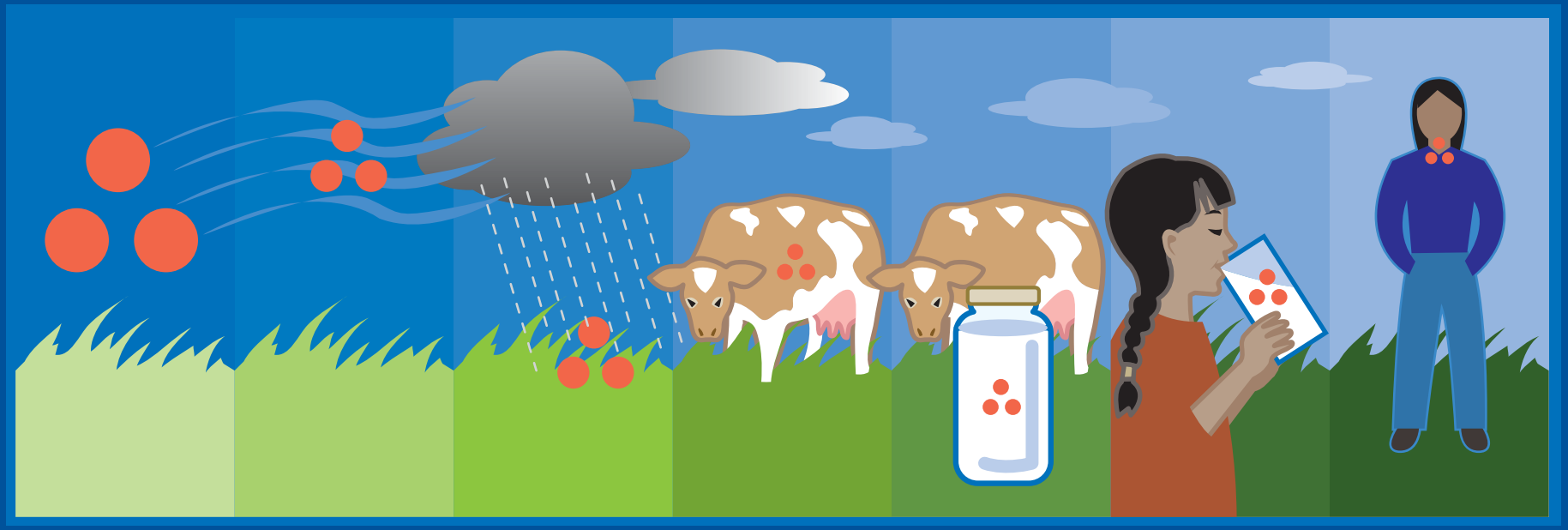
3. How were Americans exposed to I-131?

TALKING POINTS

- I-131 released by the atomic bomb tests was carried thousands of miles away from the test areas on the winds.
- Some of the I-131 fell on pastures and on grasses. Cows and goats ate the grass.
- When consumed by cows or goats, I-131 collected in the animals' milk. Much of the health risk associated with I-131 occurred among milk drinkers—usually children.
- Exposure to I-131 in drinking water likely carried little risk as compared to fresh milk consumption. And eating beef from cows exposed to I-131 carried little risk.



How were Americans exposed to I-131?



I-131 released in bomb test fallout

Traveled away on wind

Fell with rain, landing on grasses and pastures

Grazing animals (cows or goats) ate the grass

I-131 collected in the animals' milk

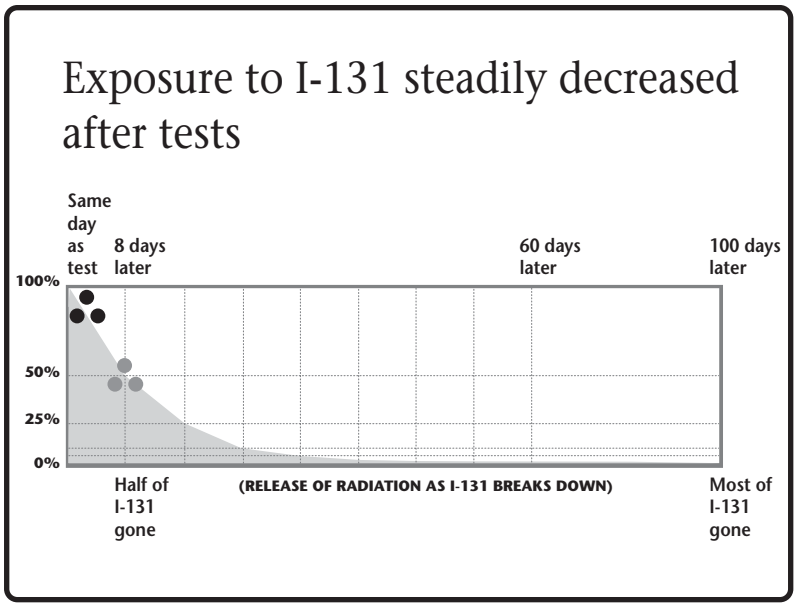
Humans (often children) drank the milk

Some I-131 in milk collected in thyroid gland

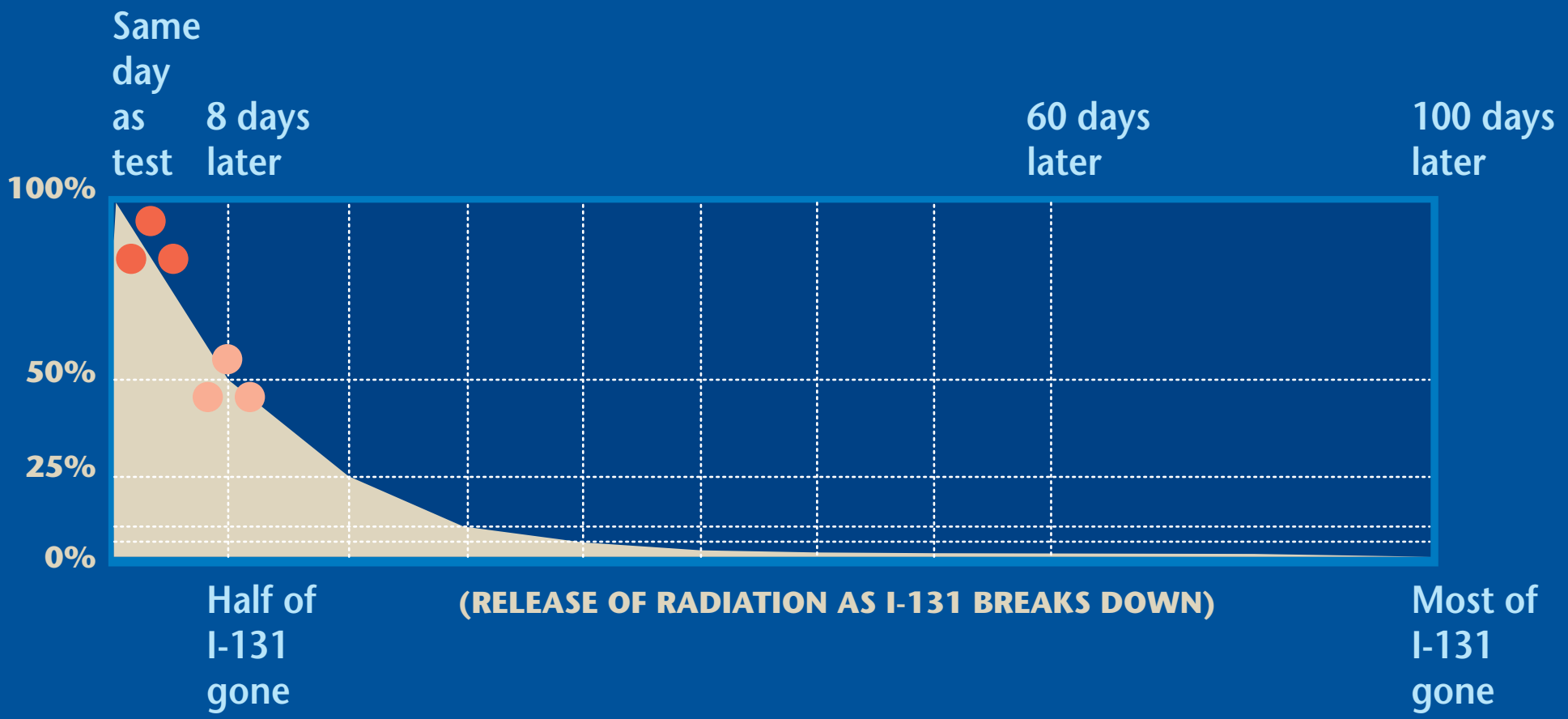
4. Exposure to I-131 steadily decreased after tests

TALKING POINTS

- The "active" in "radioactive" means that unstable substances produced in nuclear reactions break down and change. Over time, they become stable and no longer release radioactivity.
- The rate of breakdown can occur quickly in some radioactive substances, often within a few days. Half of the I-131 released during an atomic bomb test was gone in about 8 days. Almost all of it was gone (less than 1 percent remained) 80 days after the test.
- Like all radioactive substances, however, I-131 releases radiation as it breaks down. It is this radiation that can injure human tissues.
- But I-131's steady breakdown means that the amount of I-131 released by a bomb test *steadily decreased* after the test. Therefore, farm animals that grazed in fields within a few days after a test would have consumed higher levels of I-131 than animals grazing later.



Exposure to I-131 steadily decreased after tests

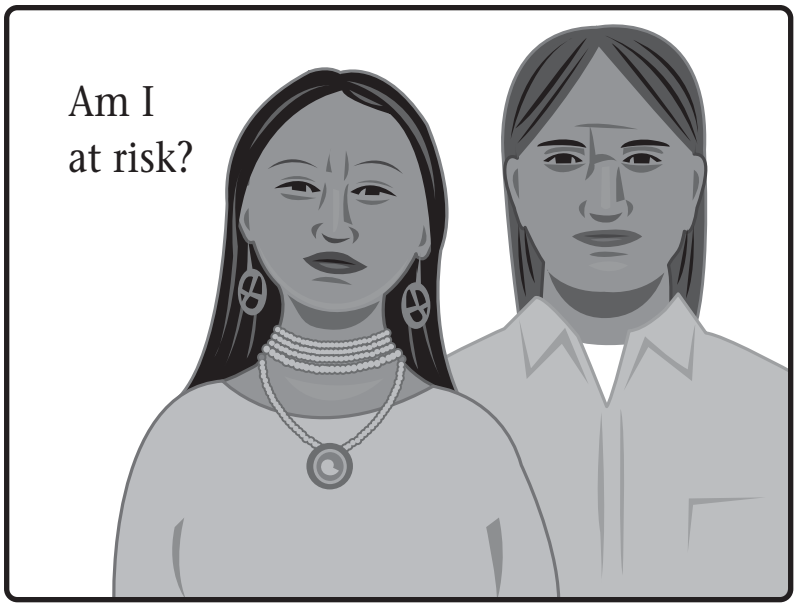


5. Am I at risk?

TALKING POINTS

The amount of I-131 people absorbed depended on:

1. Their age during the testing period (between 1951 and 1963)
2. The amount and source of milk they drank in those years
3. Where they lived

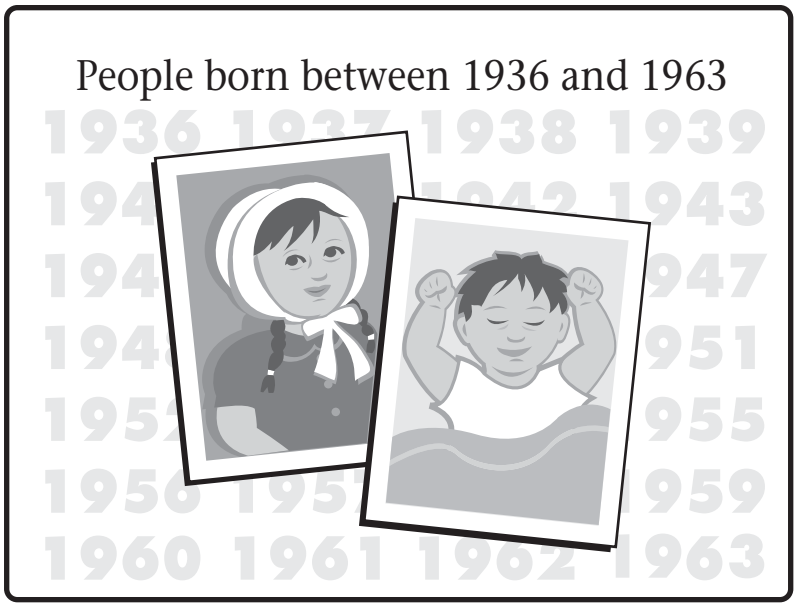


Am I
at risk?

6. People born between 1936 and 1963

TALKING POINTS

- People with the highest risk of developing thyroid cancer from exposure to I-131 were children during the period of atomic bomb testing, and are now 40 years of age or older.
- People younger than 15 at the time of testing (between 1951 and 1963) probably have a higher thyroid cancer risk from exposure to I-131 fallout than other people.

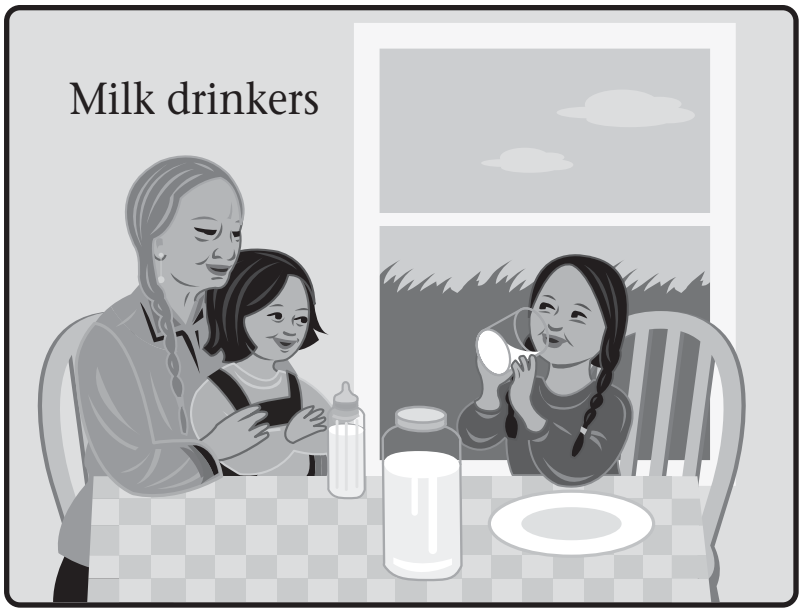


People born between 1936 and 1963

7. Milk drinkers

TALKING POINTS

- Children's thyroid glands were smaller and still growing when they were exposed to I-131. And children were more likely to have consumed milk, which could have exposed them to I-131.
- Babies who were breastfed may have been exposed to two to three times as much I-131 as their mothers. But if their mothers did not drink large amounts of fresh milk, babies likely received little additional exposure from breast milk.
- Babies who drank formula or condensed milk were not exposed at all.
- People received little exposure from eating fruits and leafy vegetables as compared to drinking fresh milk. This is because I-131 fell on the surface of the fruits and vegetables. So peeling or washing them removed most of the I-131. Little I-131 was transferred to the inside of the plant.

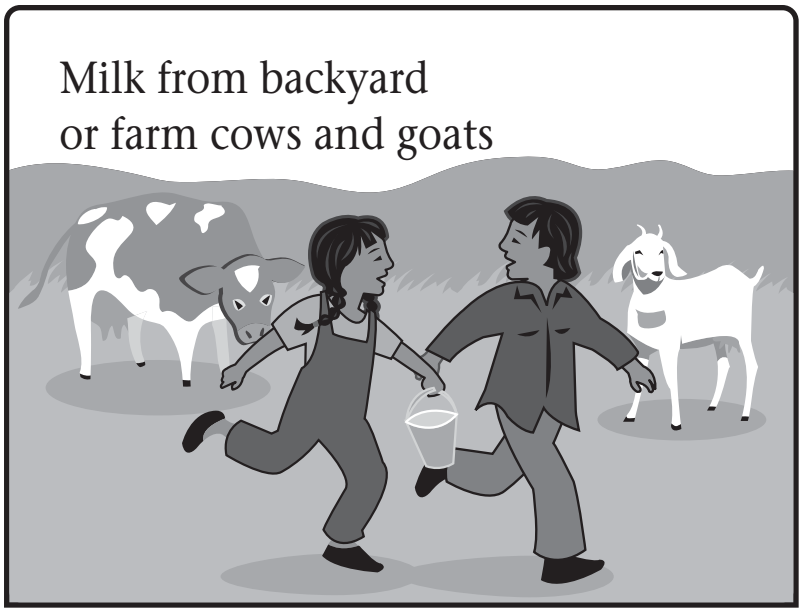


Milk drinkers

8. Milk from backyard or farm cows and goats

TALKING POINTS

- The amount of milk people drank played a role in how much I-131 they were exposed to. So did the source of the milk.
- Fresh milk from backyard or farm cows and goats usually contained more I-131 than store-bought milk. This is because processing and shipping milk allowed more time for the I-131 to break down.
- Goat's milk generally contained more I-131 because goats concentrate significantly more I-131 in their milk than cows do.



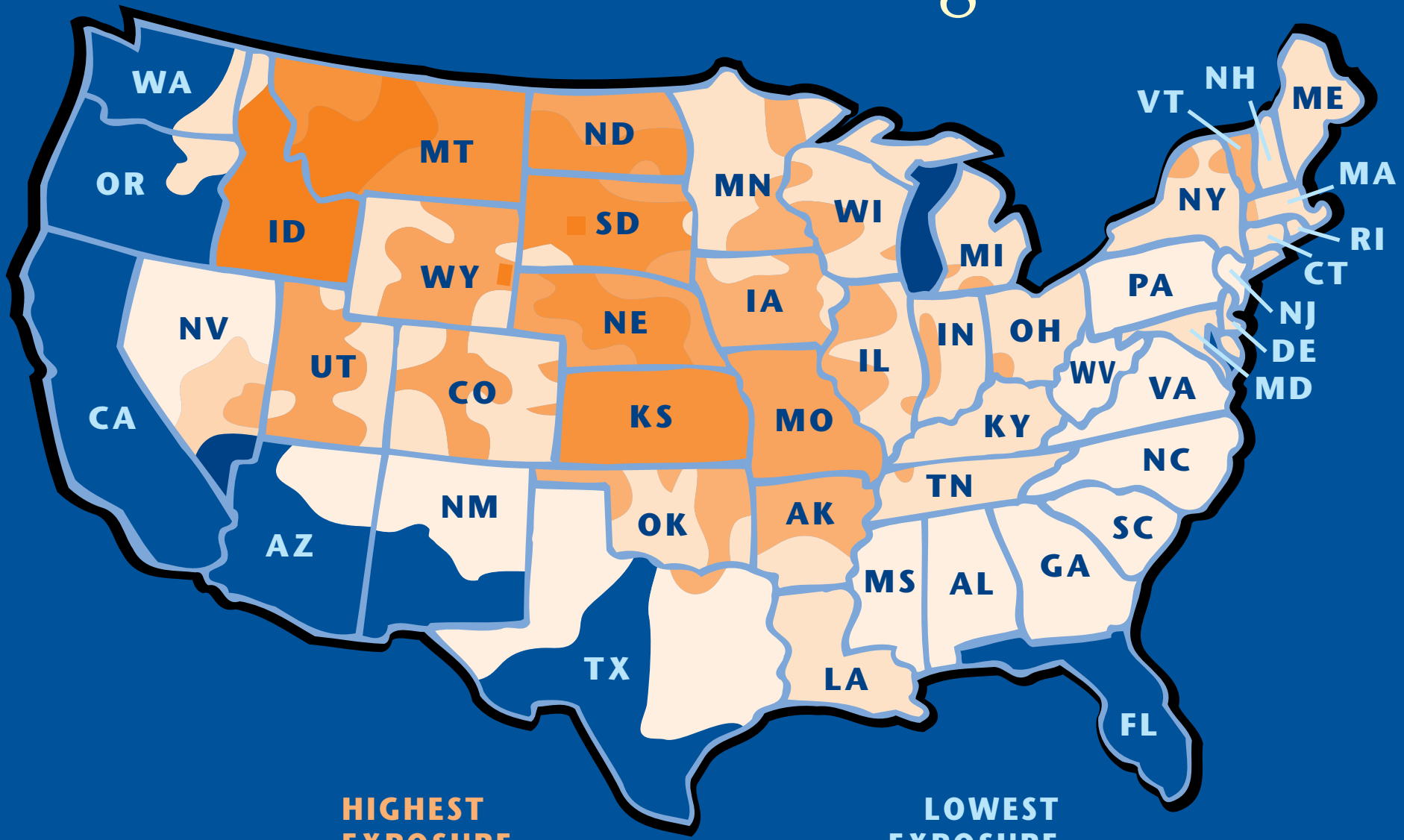
Milk from backyard
or farm cows and goats

9. Where did I-131 go?

TALKING POINTS

- Where people lived as children is another risk factor.
- I-131 was carried thousands of miles away from the test site by winds.
- Because of wind and rainfall patterns, the distribution of fallout varied widely after each test. Therefore, certain areas of North America received more fallout than other areas.
- Scientists think that the largest amount of I-131 fell over parts of Utah, Colorado, Idaho, Nevada, and Montana. But I-131 traveled to all states, especially those in the Midwest, East, and Northeast United States.

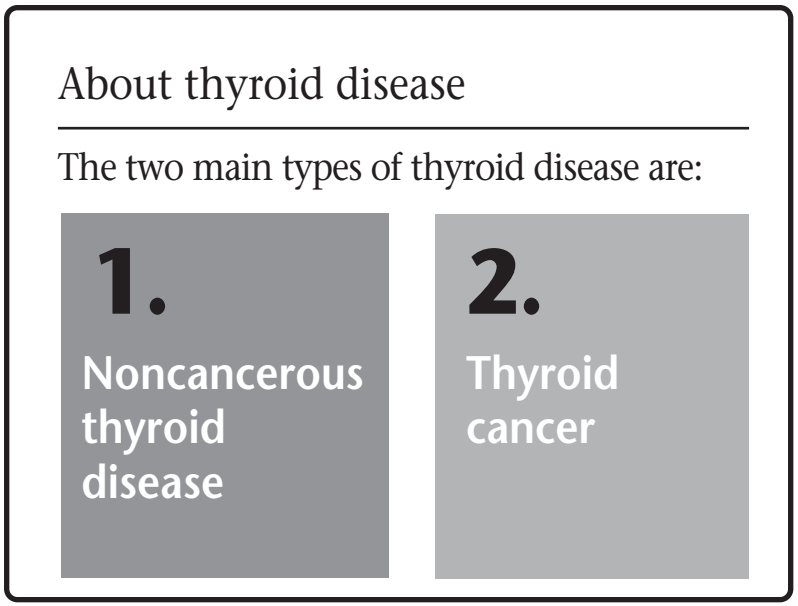
Where did I-131 go?



10. About thyroid disease

TALKING POINTS

- Some thyroid diseases are caused by changes in the amount of thyroid hormones that enter the body from the thyroid gland. Doctors can screen for these diseases with a simple blood test. These diseases are not cancer.
- Noncancerous thyroid disease also can include lumps, or nodules, in the thyroid gland that are benign and not cancer.
- But sometimes a lump, or nodule, in the thyroid gland is cancer.



About thyroid disease

The two main types of thyroid disease are:

1.

Noncancerous thyroid disease

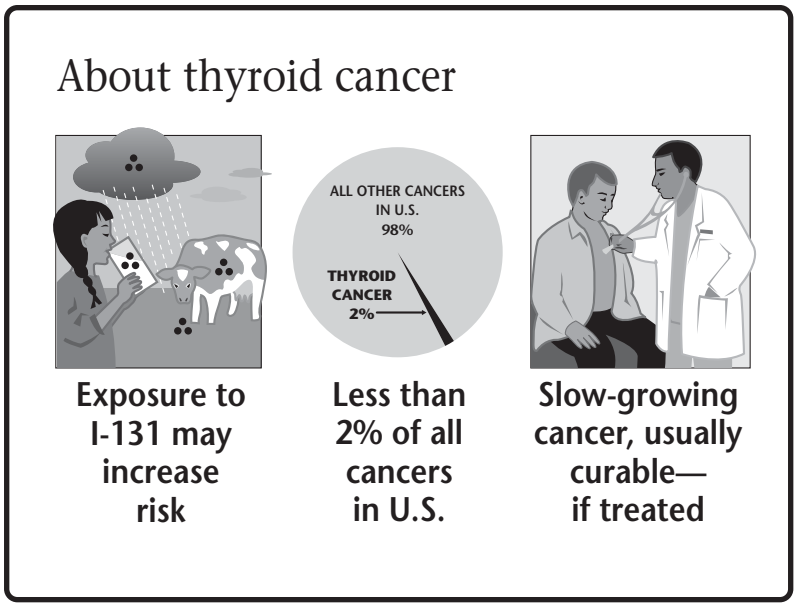
2.

Thyroid cancer

11. About thyroid cancer

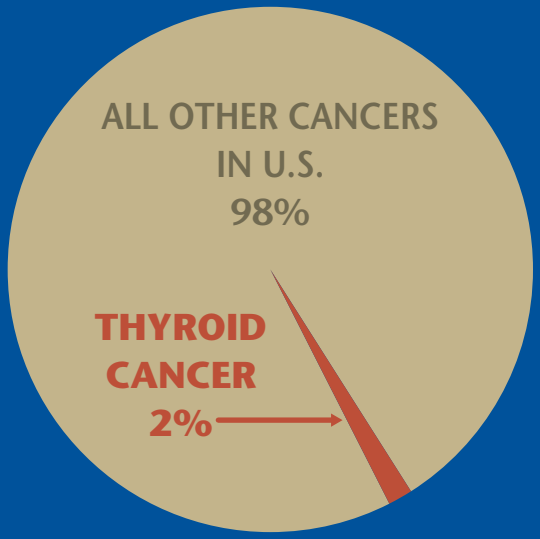
TALKING POINTS

- Exposure to I-131 may increase a person's risk of getting thyroid cancer.
- Thyroid cancer accounts for less than 2 percent of all cancers diagnosed in the United States.
- Most of the time, thyroid cancer is a slow-growing cancer. With treatment, it can usually be cured.



About thyroid cancer

Exposure to I-131 may increase risk



Less than 2% of all cancers in U.S.

Slow-growing cancer, usually curable—if treated

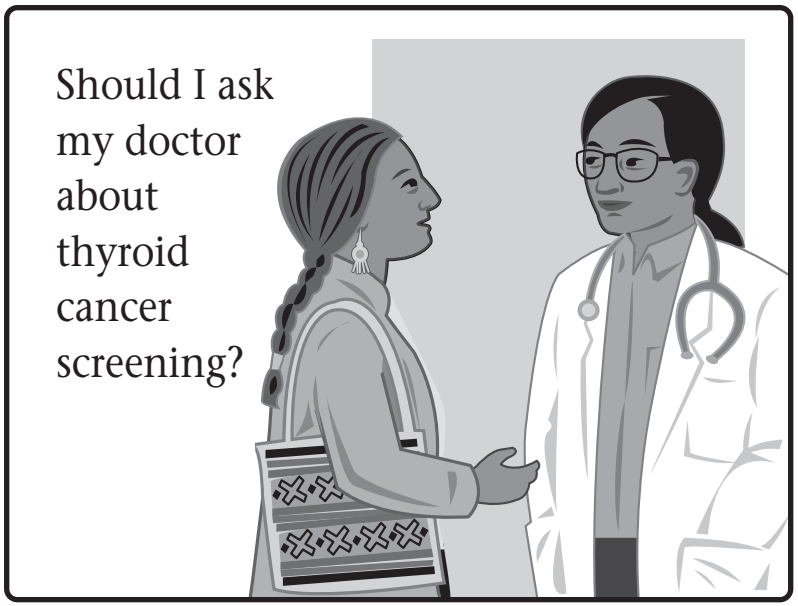
12. Should I ask my doctor about thyroid cancer screening?

TALKING POINTS

You may want to visit a doctor based on 4 key factors:

1. **Age**—if you are 40 or older, especially if you were born between 1936 and 1963
2. **Milk drinking**—if you drank a lot of milk as a child, especially milk from farm or backyard cows and goats
3. **Where you lived as a child**—if you lived in the Mountain West, Midwest, East, or Northeast U.S.
4. **Medical signs**—if you have a lump in your thyroid gland

People who think they may be at risk for thyroid cancer should discuss this concern with their doctor. The doctor may suggest a schedule for checkups.

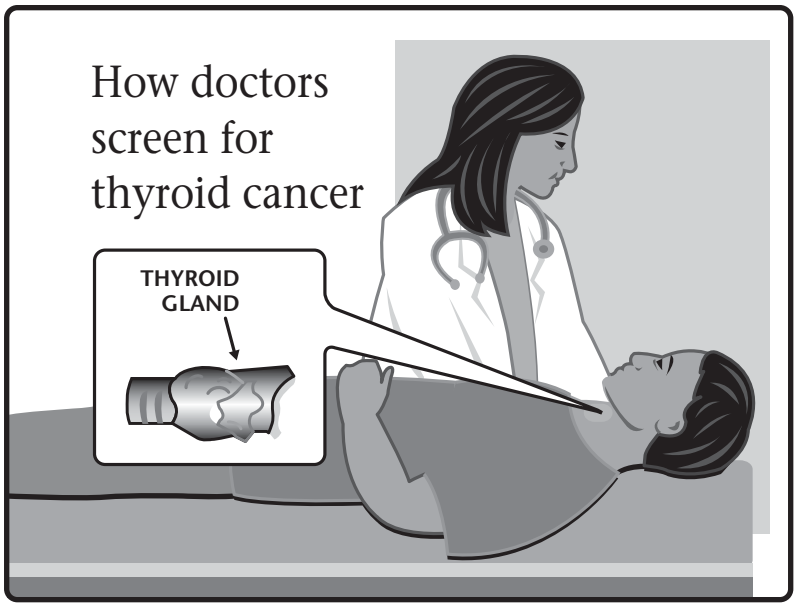


Should I ask my doctor about thyroid cancer screening?

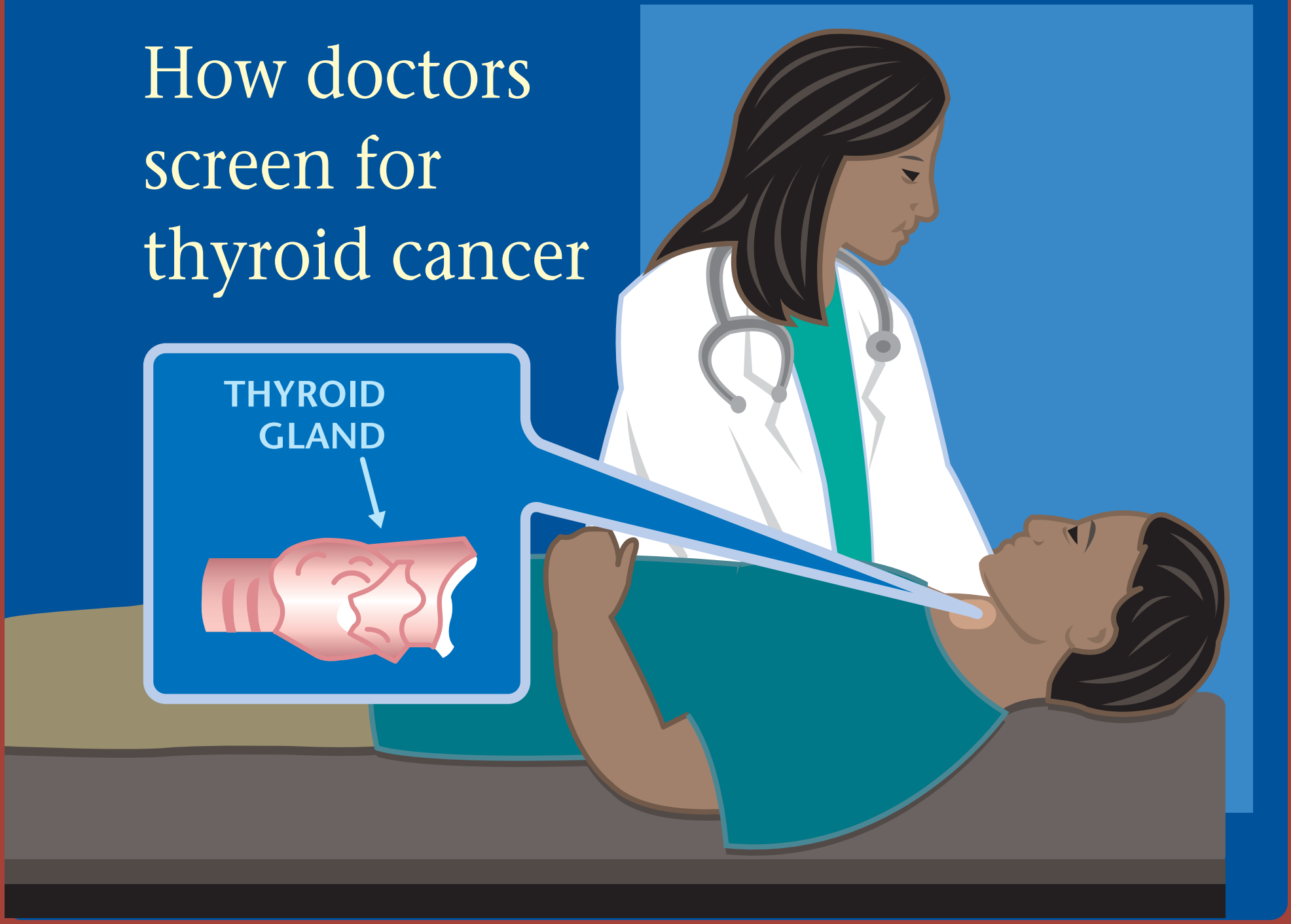
13. How doctors screen for thyroid cancer

TALKING POINTS

- There is no single or specific symptom of thyroid cancer.
- Doctors first screen for thyroid cancer by feeling the gland, to check for a lump or nodule.
- If a doctor feels a nodule, it does not mean cancer is present. Most thyroid nodules found during a medical exam are not cancer.



How doctors screen for thyroid cancer



14. What if my doctor finds a thyroid lump?

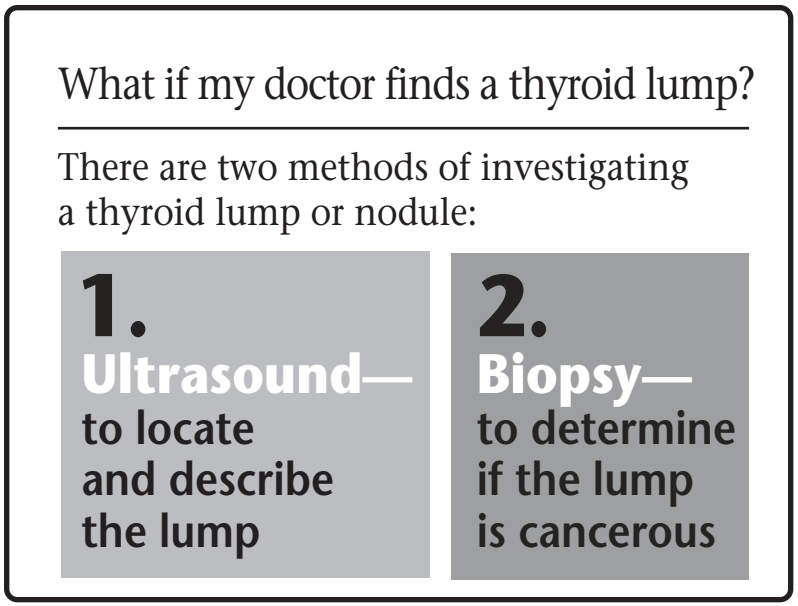
TALKING POINTS

Doctors have two ways to find out more about a thyroid lump or nodule:

1. **Ultrasound**—to locate and describe the lump

2. **Biopsy**—to see if the lump is cancer

Most people with a thyroid nodule turn out not to have thyroid cancer. But even nodules that are not cancer require medical follow-up.



What if my doctor finds a thyroid lump?

There are two methods of investigating a thyroid lump or nodule:

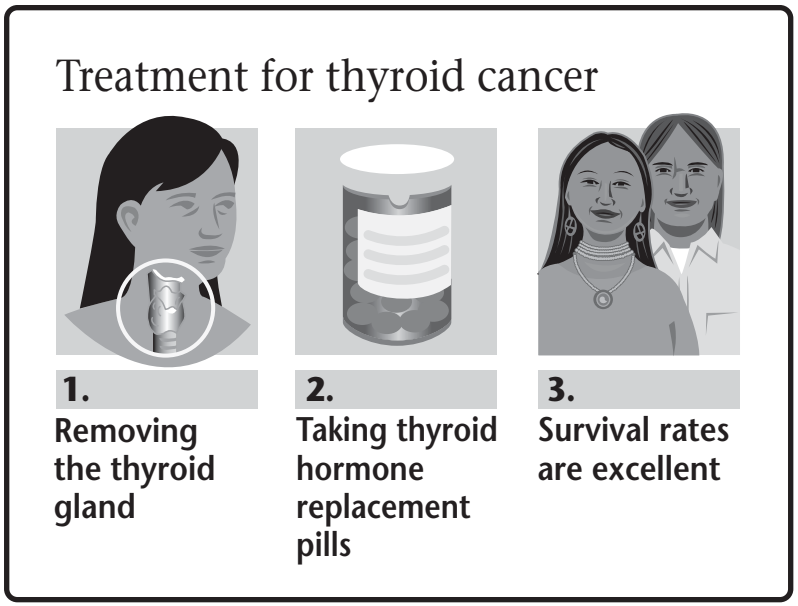
1. Ultrasound— to locate and describe the lump

2. Biopsy— to determine if the lump is cancerous

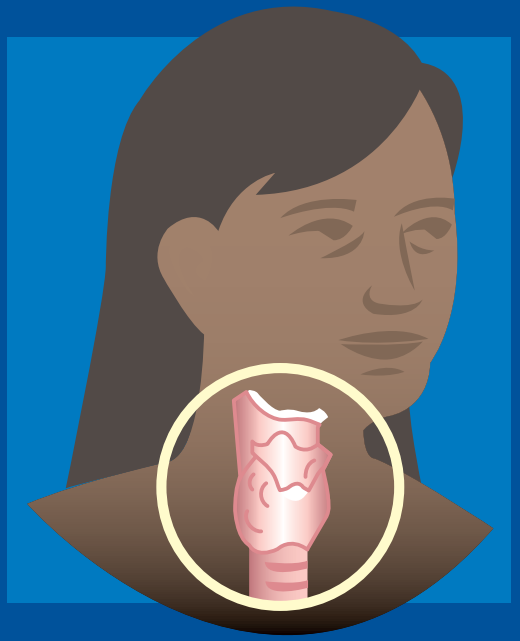
15. Treatment for thyroid cancer

TALKING POINTS

- If thyroid cancer is found, doctors treat it by taking out the thyroid gland. People who have this surgery will need to take thyroid hormone replacement pills for the rest of their lives. Although this is inconvenient and costly, cancer survival rates are excellent. In fact, the cause of death among people who once had thyroid cancer is rarely the result of the return or spread of the same cancer.



Treatment for thyroid cancer

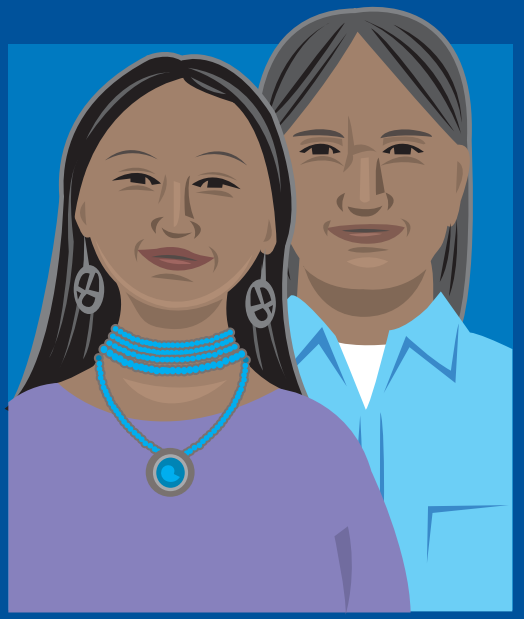


1.

Removing the thyroid gland

2.

Taking thyroid hormone replacement pills



3.

Survival rates are excellent

16. Finding support

TALKING POINTS

- Living with a serious disease like thyroid cancer isn't easy. A cancer diagnosis can be devastating. Some people find they need help coping with the emotional and practical aspects of their disease.
- Doctors and other health professionals can help with concerns about treatment and managing side effects.
- Support circles can help also. The National Cancer Institute's Cancer Information Service can help put you in touch with support circles in your community.

Finding support

17. Find out more

1-800-4-CANCER

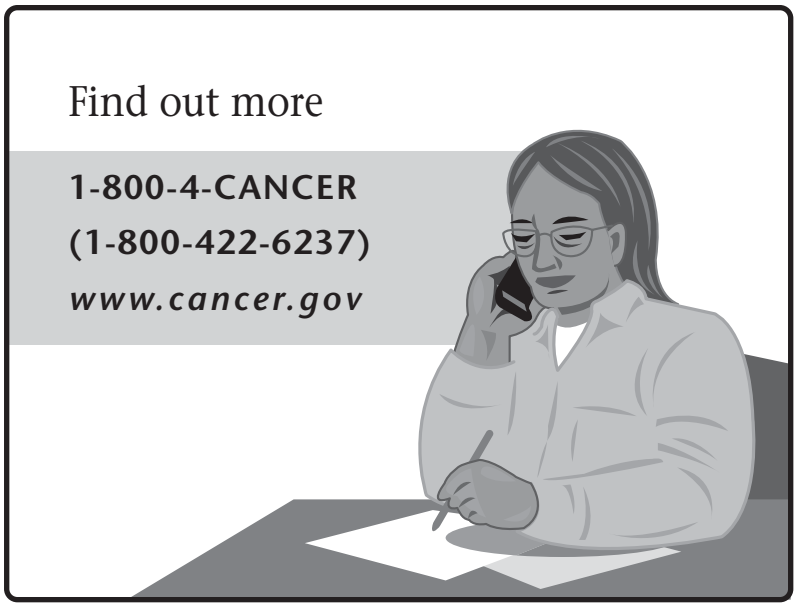
(1-800-422-6237)

www.cancer.gov

TALKING POINTS

Find out more:

- Talk to your doctor.
- For more about I-131 and thyroid cancer risk, call the National Cancer Institute's Cancer Information Service (CIS) at 1-800-4-CANCER (1-800-422-6237) or visit the Web site *www.cancer.gov*.



Find out more

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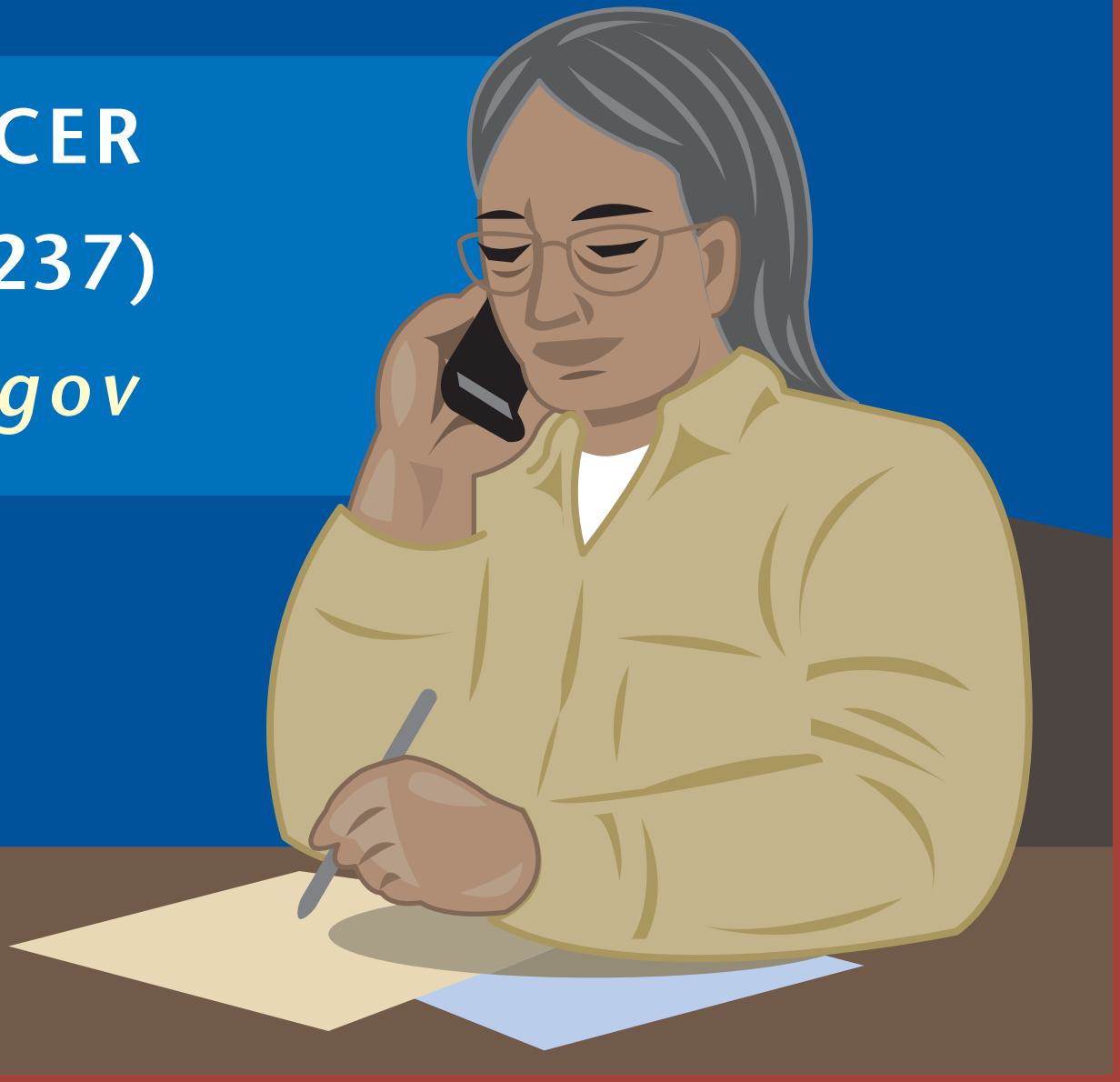

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