

Produced by Pharmaceutical Affairs Section, Medical Bureau,
Health and Welfare Department, Ibaraki Prefecture (FY 2020)

ADVANCE DISTRIBUTION OF STABLE IODINE

- Nuclear Disaster Countermeasures
- Stable Iodine Effects & Precautions
- Precautions After Receipt

Major Disaster Prevention Measures and Nuclear Disaster Countermeasures (Nuclear Regulatory Commission)



Measures to prevent major accidents (preemptive measures)

Strengthened safety regulations in nuclear facilities
(new regulatory standards)

- Strengthened standards to prevent severe accidents
- New standards for dealing with severe accidents and terrorism

Measures such as these have made it very unlikely there will be a serious accident on the same scale as the Fukushima Daiichi Nuclear Power Plant disaster.



Nuclear disaster countermeasures (preparation for accidents)

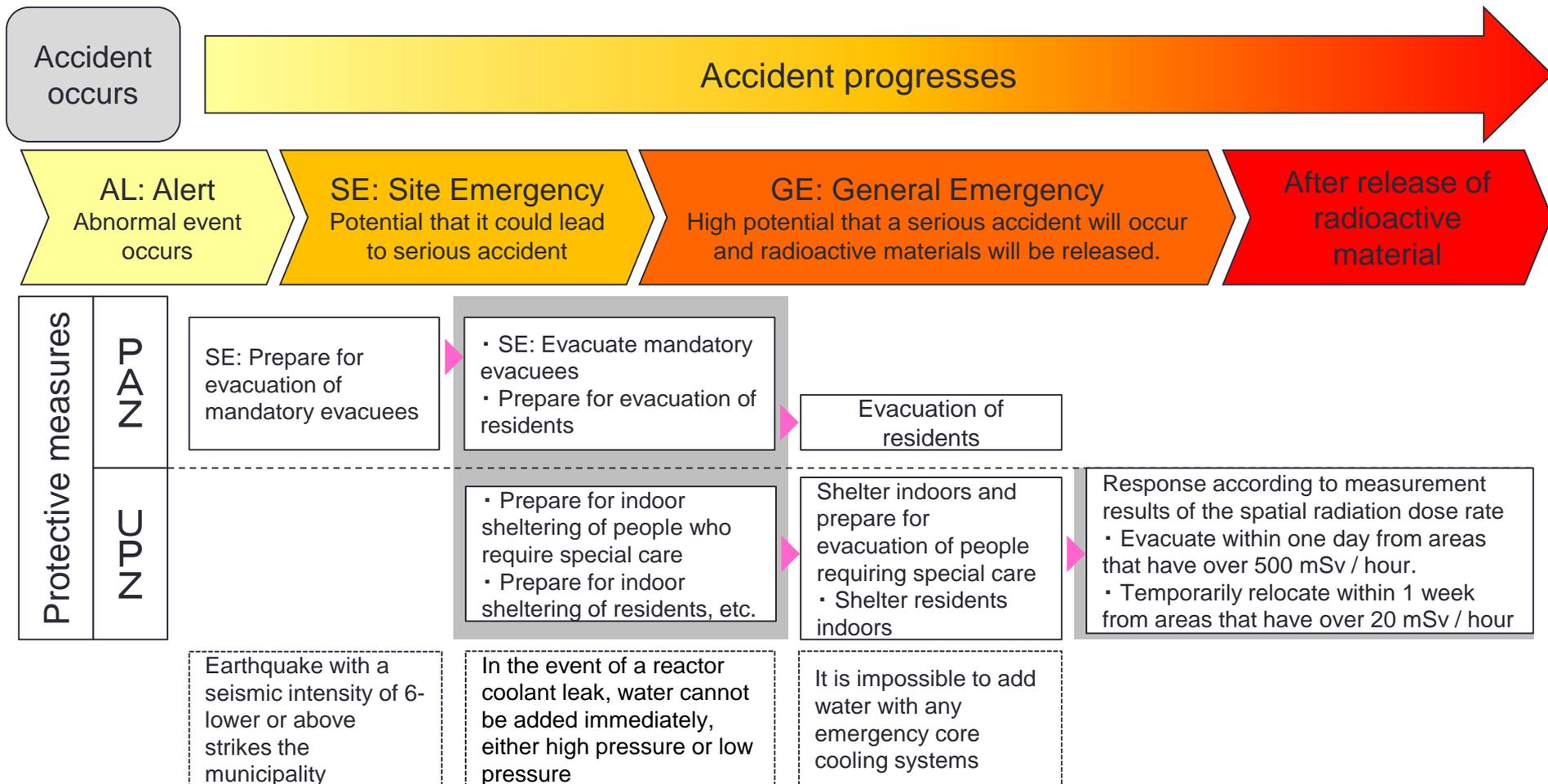
Strengthened disaster countermeasures
(guidelines for nuclear disaster countermeasures)

In the event of a nuclear disaster, assuming that a serious accident on the same scale as the Fukushima Daiichi Nuclear Power Plant disaster could occur, we have determined our emergency response.

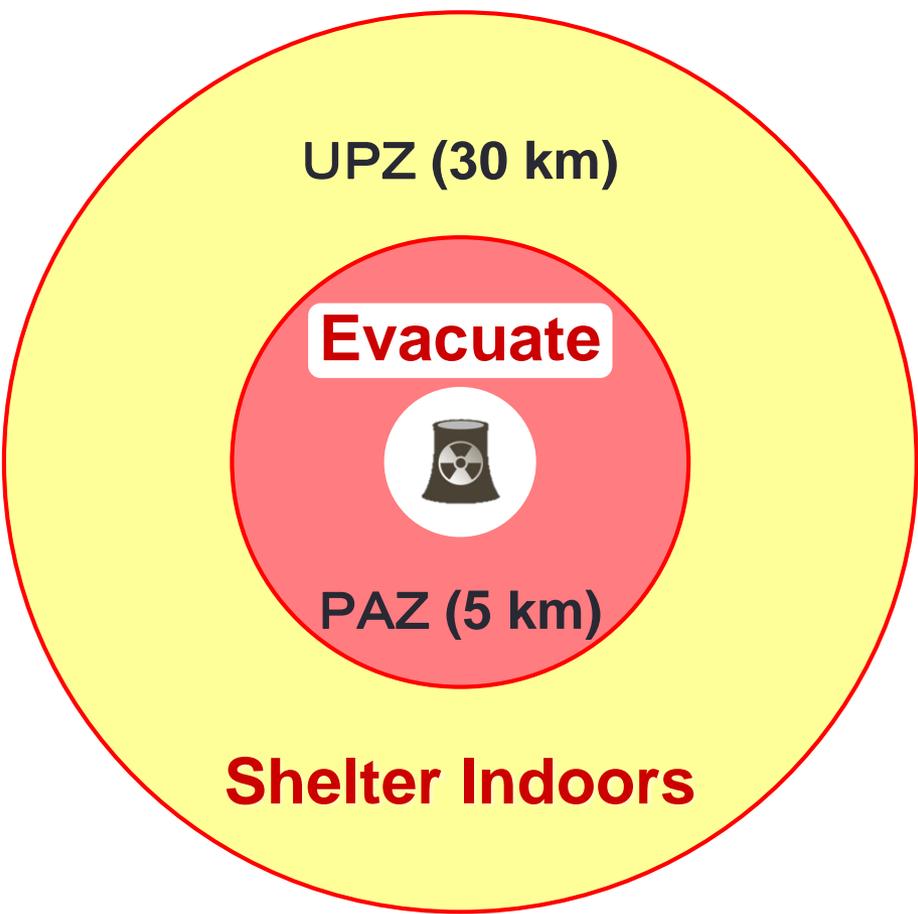
Principles of Guidelines for Nuclear Disaster Countermeasures

Take various protective measures according to the condition of the facility and the spatial radiation dose rate.

- Within approx. 5 km radius from the nuclear power plant (PAZ) : Evacuate the area
- Within approx. 30 km from the nuclear power plant (UPZ): Shelter indoors



Principles of Guidelines for Nuclear Disaster Countermeasures

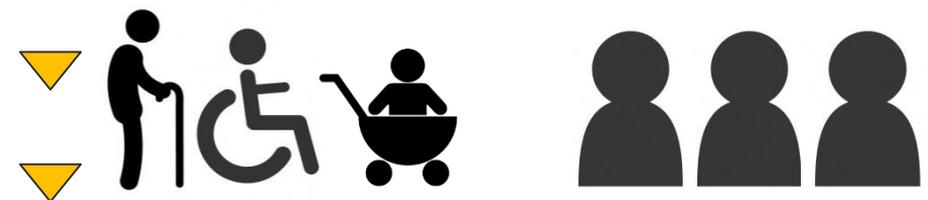


AL: Alert



In 5 km radius (r): Prepare to evacuate

SE: Site Emergency



In 5 km r: Evacuate

In 5 km r: Prepare to...

GE: General Emergency

- In 5 km r: Evacuate everyone
- In 30 km r: Shelter indoors

Q: Why distribute stable iodine in advance?

-  Stable iodine is a medicine with **the effect of suppressing the uptake of radioactive iodine into the thyroid gland and preventing or reducing internal exposure to the thyroid gland**. Radioactive iodine is a radioactive substance released in serious accidents at nuclear facilities.
-  In the event of a nuclear disaster requiring evacuation, people within 5 km of a nuclear facility must evacuate before radioactive materials are released.
-  In that case, we will distribute stable iodine in advance so people can take them as soon as possible.

Q: When should I take stable iodine ?

🥚 The national, prefectural, or municipal government will give instructions when it is necessary to take stable iodine .

🥚 Instructions will be given on the emergency broadcast system, television, radio, internet, etc.

🥚 **Do not take it at your own discretion.**



Stable iodine should be taken as instructed

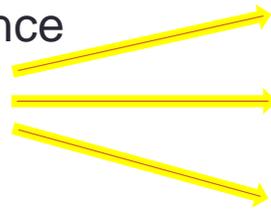
➤ If you experience side effects due to taking stable iodine according to the instructions, the national government will compensate you for medical expenses.

Q: What is important in order to prevent exposure in the event of a nuclear disaster?

- There are two main types of **“radiation exposure”**.

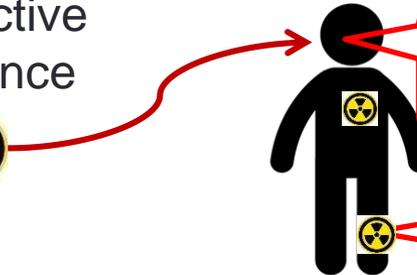
External Exposure

Radioactive
Substance



Internal Exposure

Radioactive
Substance



Inhalation /
Consumption

Wounds

- Radiation exposure to the outside of your body is called **“external exposure”**.
- If you inhale radioactive substances scattered in the air or consume food or drink contaminated with radioactive substances, you will be exposed to radiation from inside your body. Radioactive material can also enter your body through wounds. This type of radiation exposure is called **“internal exposure”**.

Q: What is important in order to prevent exposure in the event of a nuclear disaster?

- 🧐 In the event of a nuclear disaster, you must prevent both external and internal exposure.

How to prevent
external exposure

Get far away
Block radiation
Leave early



**Evacuate or
shelter indoors**

How to prevent
internal exposure

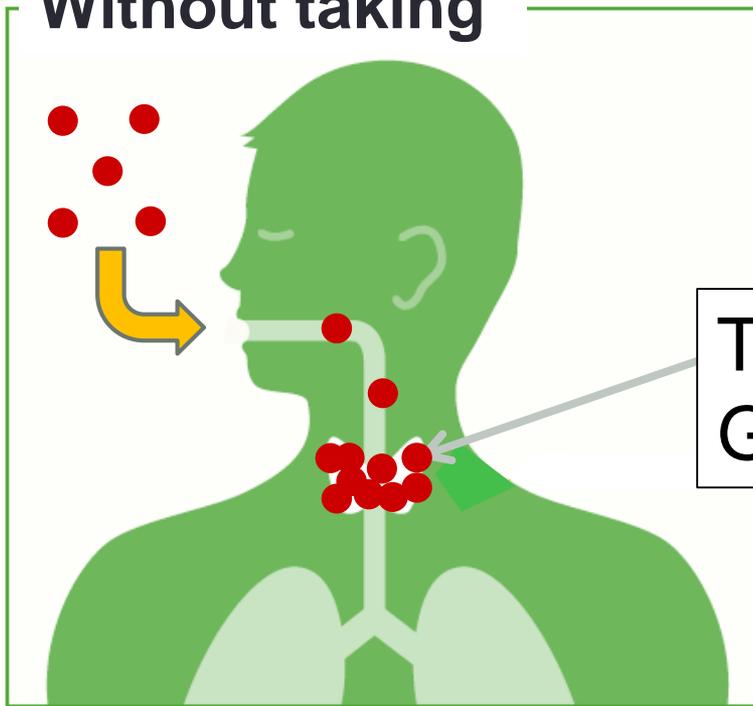
Restrict food consumption
Gargle and wash hands

Take stable iodine

Functions and effects of stable iodine

● Radioactive iodine

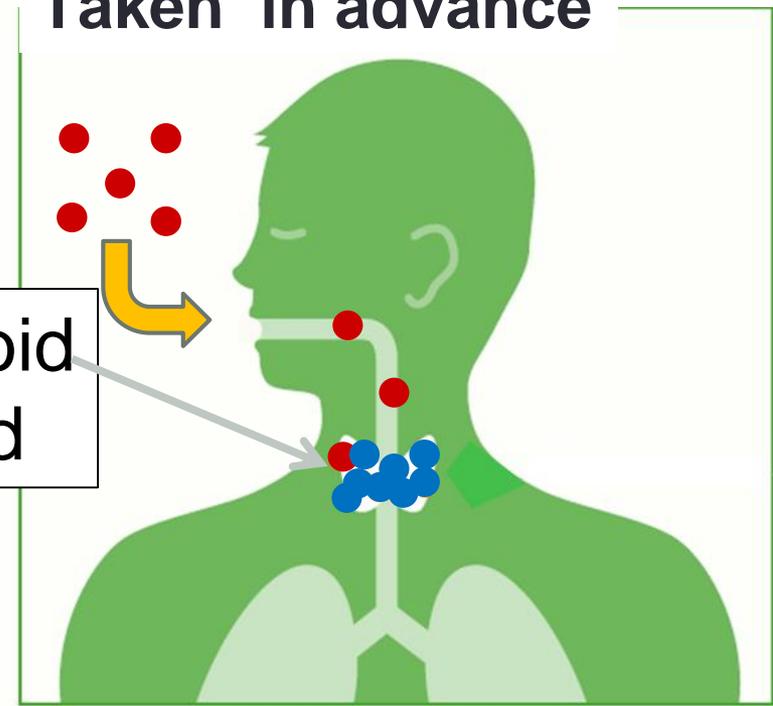
Without taking



When radioactive iodine is taken into the body and **accumulates in the thyroid gland** over a certain threshold, the possibility of **getting thyroid cancer** cannot be ruled out.

● Stable iodine

Taken in advance



The thyroid gland can be filled with **stable iodine** in advance to reduce the **accumulation of radioactive iodine**.

The main role of the thyroid gland is to produce thyroid hormones from iodine. Thyroid hormones have several functions, such as promoting metabolism.

Functions and Effects of Stable Iodine

-  The amount of radioactive iodine that accumulates in the thyroid gland can be reduced by taking stable iodine before radioactive iodine is taken into the body.

(Some benefits can be expected even if stable iodine is taken after inhaling radioactive iodine)

⇒ **Internal exposure to the thyroid gland can be reduced.**

-  However, stable iodine is only effective in preventing and reducing internal radiation exposure of the thyroid gland from radioactive iodine.

It cannot reduce exposure from radioactive substances other than radioactive iodine.



Dosage of stable iodine

Potassium iodide tablets (50 mg)

- 🥚 Age 13 or older: 2 tablets
- 🥚 Ages 3 – 13: 1 tablet



Potassium Iodide Tablets

Potassium Iodide Oral Jelly

- 🥚 Under 3 years old: 1 packet
(According to age)



Potassium Iodide Oral Jelly
(Example)

*** Please see the back of the check sheet for dosage.**

Side Effects of Stable Iodine (1)

- 🥚 The following symptoms have been reported.
 - Hypersensitivity: rashes, etc.
 - Gastrointestinal Symptoms: nausea and vomiting, stomach pain, diarrhea, etc.
 - Other Symptoms: Hypothyroidism, headaches, shortness of breath, etc.
- 🥚 While it is necessary to pay attention to changes in physical condition after taking this medicine. It has been reported that the potential of suffering side effects from one dose is extremely low.

Side Effects of Stable Iodine (2)

Case: Poland during Chernobyl nuclear power plant accident

- Results of follow-up survey of people who took stable iodine:
- 4.6% of children had symptoms such as vomiting and skin rashes.
- It was not clear whether side effects were caused by stable iodine, but it has been reported that there were no lasting side effects.

Case: Accident at TEPCO Fukushima Daiichi Nuclear Power Station

- Approximately 2,000 workers took stable iodine for approximately 7 months after the accident.
- Transient hypothyroidism was observed in some people who took multiple doses of stable iodine.

People who cannot take stable iodine

-  People who have a history of hypersensitivity to the components of stable iodine ingredients or iodine itself cannot take it, so they cannot be given stable iodine.



Do the following items on the check sheet apply to you?

Disqualifying Items

Have you ever been told you are sensitive to the ingredients of stable iodine or iodine itself?

Have you ever experienced allergies such as hives, shortness of breath, or low blood pressure after taking povidone iodine, isodine, aqueous iodine solution, or potassium iodide pills?

⇒ If either applies to you, check the “Yes” box on the check sheet.

People who must be careful when taking stable iodine



If you have any of the illnesses below, check the “Yes” box for the relevant illnesses on the check sheet.

Next, seek consultation at the pharmacy or distribution meeting that distributed the stable iodine agent you have been informed about.

[Careful Administration Items]

- (1) History of iodine contrast media hypersensitivity
- (2) Thyroid diseases (hyperthyroidism, hypothyroidism)
- (3) Kidney disease or renal dysfunction
- (4) Myotonia congenita
- (5) Hyperkalemia
- (6) Hypocomplementemic urticarial vasculitis or history thereof
- (7) Pulmonary tuberculosis (including caries, pleurisy, etc.)
- (8) History of dermatitis herpetiformis

Medicines that require care when used in combination

If you are taking any of the following medicines, please seek consultation at the time of distribution of stable iodine.

■ Potassium supplements

- Preparations containing potassium

■ Hypertension drugs

- Angiotensin II inhibitor
- ACE inhibitors
- Antihypertensive agent (combined)
- Potassium-storing diuretics



Possibility of elevated blood potassium concentration

■ Bipolar disorder (manic depression) drugs

- Lithium formulations

■ Treatment for hyperthyroidism

- Antithyroid drugs



Possibility of hypothyroidism

Normally stable iodine is taken just once, so it has been reported that there is low concern of serious health effects when used in combination with other drugs.

Potassium content

In 2 potassium iodide tablets: **24 mg of potassium**

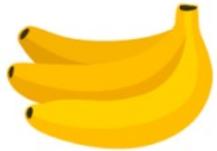
Potassium content / 100 g of food



30% apple juice: **24 mg**
(1/2 cup)



Bread: **97 mg**
(2 slices of 6 slice loaf)



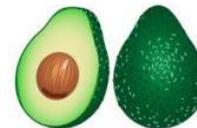
Banana: **360 mg**
(edible part of 1 banana)



Tuna (lean): **380 mg**
(Approx. 10 slices)



Baked sweet potato: **540 mg**
(1/2 to 1/3 of a sweet potato)



Avocado: **720 mg**
(Edible part of 1 avocado)

Amounts shown in (parentheses) are equivalent to about 100 g of that food.

Source: Standard Tables of Food Composition in Japan 2015 (7th edition)

The amount of potassium contained in the 2 tablets is not as high as the amount contained in these servings of food.

Minors / pregnant women / breastfeeding women

🥚 These people are given priority to receive stable iodine.

🥚 When a mother takes a single dose of stable iodine, the stable iodine transferred to breast milk has a small health effect on infant thyroid function. As such, mothers can continue breastfeeding will and the baby will also receive the prescribed dose of stable iodine. (Assuming possibility of internal exposure to maternal radioactive iodine is low.)



Precautions after receipt (1)

- 🥚 If you become sick as described on the check sheet after receiving stable iodine, or if you start taking new medicines described in the materials, please consult with a doctor or pharmacist.



Precautions after receipt (2)

- 🥚 Today, the dose of stable iodine to be distributed differs depending on age. (Check the description on the back of the check sheet.)
- 🥚 Store the stable iodine in a place with low humidity and out of direct sunlight.
- 🥚 Store the stable iodine in an easy to find place, such as a medicine box or a disaster bag, so it can be taken out immediately when needed in an emergency.

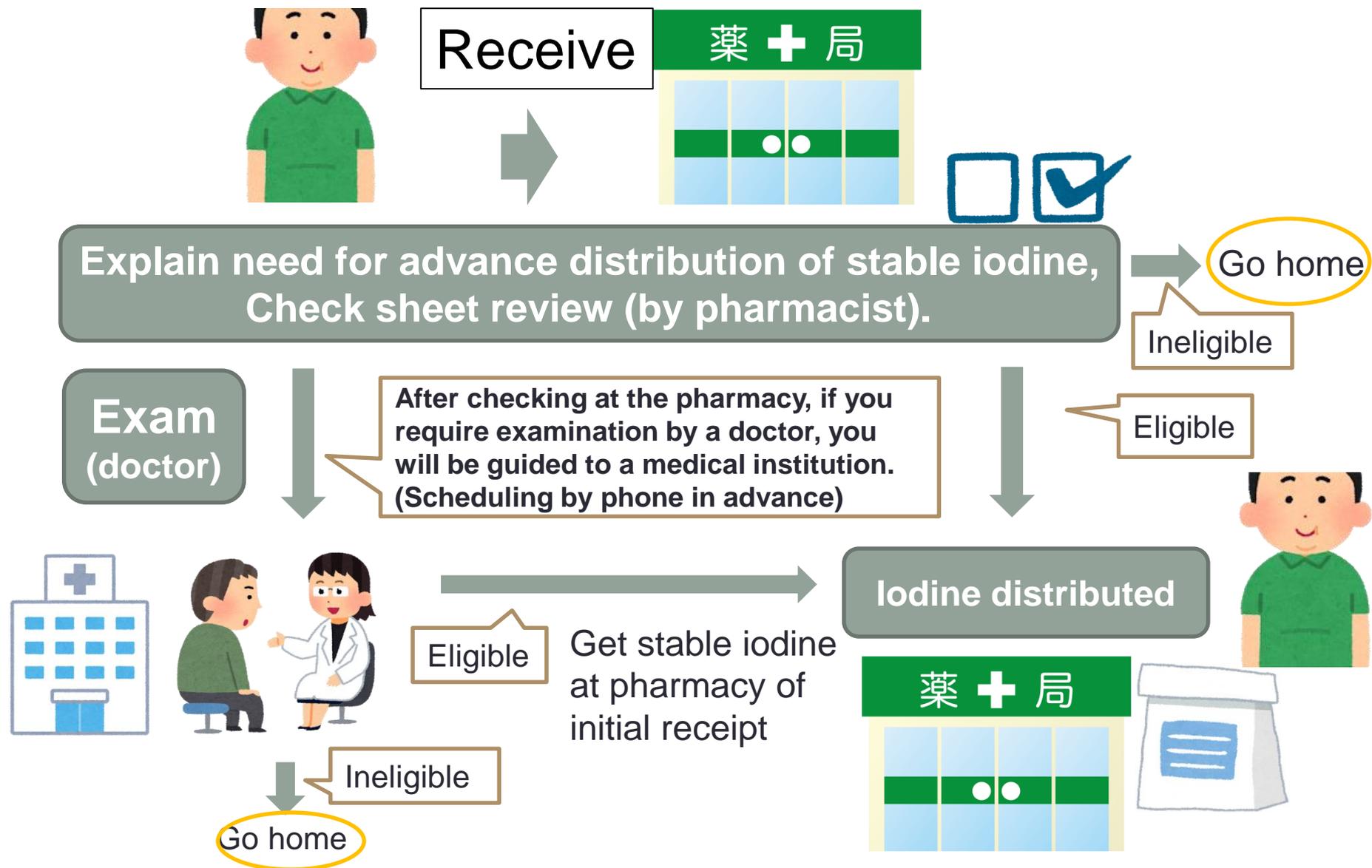


Precautions after receipt (3)

- 🥚 Stable iodine has an **expiration date**.
(The expiration date is on the bag containing the medicine)
The local government will notify you when the expiration date is near, so replace it with a new drug according to their instructions.
- 🥚 **Never give** your stable iodine to **other people**.
- 🥚 If you no longer need your stable iodine because you are moving away, return it to the pharmacy, city hall or village office along with the check sheet.
- 🥚 Make sure to inform your family members of precautions.

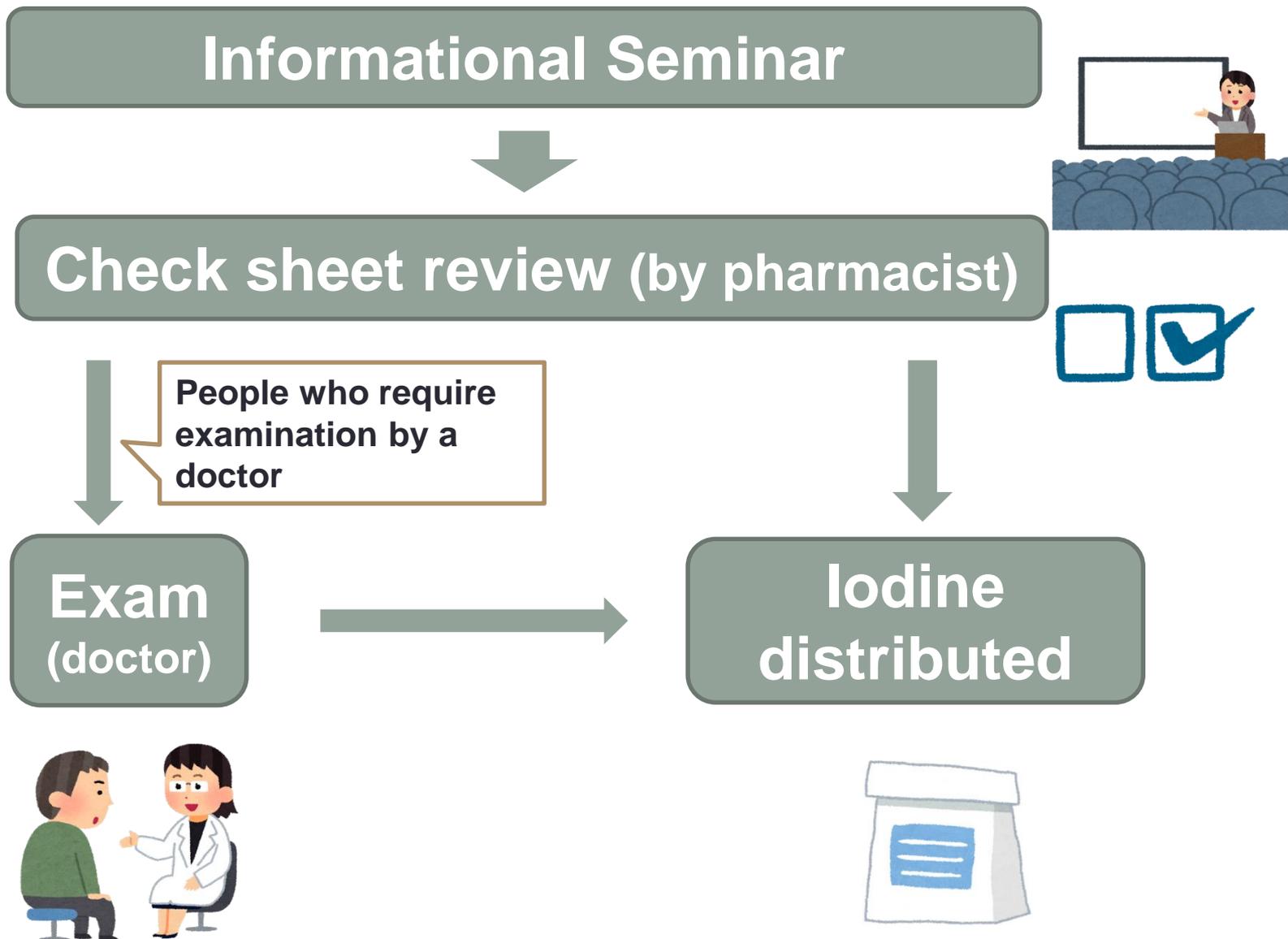


Advance Distribution (1) Pharmacy Distribution System



Advance Distribution (2) (Collective) Distribution Meeting System

*Distribution meetings will be announced each time before they are held.



Check Sheet (for residents in PAZ)

Example

This check sheet is intended to check whether you can use stable iodine.

Complete it yourself (or with a guardian).

Complete fields inside the thick outlines.

Date: MM/DD/2020

Name: Taro Suzuki

Date of Birth: MM/DD/YYYY (XX years old)

Please write a ✓
mark in each □.

Disqualifiers: If you answer "Yes" to any of these questions, you cannot take stable iodine.

1. Have you ever been told that you are hypersensitive to the ingredients of stable iodine or iodine itself? (Have you ever experienced allergic reactions such as hives, shortness of breath, or low blood pressure after taking povidone iodine, isodine, aqueous iodine solution, or potassium iodide pills?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
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Yes

No

Careful Administration Items: If you answer "Yes" to any of the following questions, stable iodine will be distributed to you after consultation with a doctor or pharmacist.

1. Have you ever been told that you have iodine contrast media hypersensitivity?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
2. Have you ever been told you have a thyroid disease (hyper or hypothyroidism)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
3. Have you ever been told you have a kidney disease or renal dysfunction?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
4. Have you ever been told you have myotonia congenita?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
5. Have you ever been told you have hyperkalemia?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6. Have you ever been told you have hypocomplementemic urticarial vasculitis?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7. Have you ever been told you have pulmonary tuberculosis (caries, pleurisy, etc.)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
8. Have you ever been told you have dermatitis herpetiformis?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

• Bring this check sheet and numbered ticket to the pharmacy or distribution meeting.

*If you answer "Yes" to any of the "Careful Administration Items", after checking with a doctor or pharmacist, stable iodine will be distributed to people who can take it.

• The head of a household can receive the doses for all the members of their household together.

In that case, please bring the check sheets and numbered tickets for all family members.