

Goiter & Nodules:

what everyone should know
about thyroid disorders



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what everyone should know about these thyroid disorders

Did you know?

- The shortage of iodine in the diet is the number one cause of enlarged thyroid (commonly referred to as “goiter”) as well as for the development of most types of thyroid nodules.^{1 2}
- Nodules and goiters can form regardless of the given level of thyroid function. In most cases, both occur simultaneously.³
- An estimated one billion people worldwide are affected by an iodine deficiency, as the United Nations World Food Program has determined.⁴ The chronic shortage of iodine in the diet is the number one cause for the development of goiters and most types of nodules.⁵

How do goiter and nodules form?

When the body lacks iodine, the thyroid can no longer maintain the production of those major hormones, which play a major role in all metabolic processes. The thyroid attempts to compensate this deficiency by growing. In addition, the enlarged thyroid cells can induce the formation of nodules in the tissue.

Who is affected by goiter and nodules?

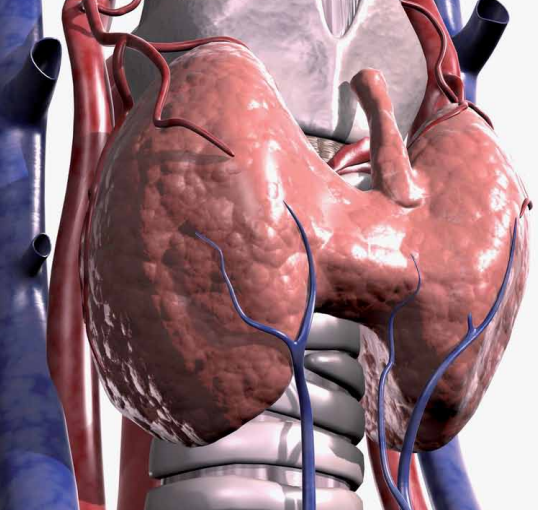
As indicated above, iodine deficiency is the

most common cause of a goiter or nodules. Therefore, those who do not consume sufficient amounts of iodine are most at risk. Smoking can also promote the incidence of both disorders.^{6 7} Exposure to high levels of nitrate⁸ (for instance, via drinking water) can likewise promote the formation of a goiter. Further risk factors include:

- Familial predisposition⁹
- Hormonal changes during pregnancy, puberty or menopause¹⁰
- Thyroid inflammation (thyroiditis)¹¹
- Hyperthyroidism (overactive thyroid)¹²
- Hypothyroidism (underactive thyroid)¹³
- Graves' disease, Hashimoto's thyroiditis (auto-immune disorders affecting the thyroid)^{14 15}
- Certain medications (e.g. thyreostatics, lithium)¹⁶

What are the potential consequences of goiter and nodules?

For goiter and nodules, the following rule of thumb applies: the larger their size, the greater the risk that surrounding organs will be affected. Both can lead to the displace-



ment or constriction of the windpipe, the cervical (neck) blood vessels and/or the oesophagus.

Thyroid nodules are differentiated as “cold” or “hot” nodules. In fact 85% of “cold” nodules and 95% of “hot” nodules are non-cancerous.¹⁷ However the latter which can produce thyroid hormones in unchecked amounts can lead to hyperthyroidism. “Cold” nodules cause no overproduction of thyroid hormones – but they can grow unchecked. Therefore, it is particularly important to identify the type of nodule in order to avoid any possible risks.

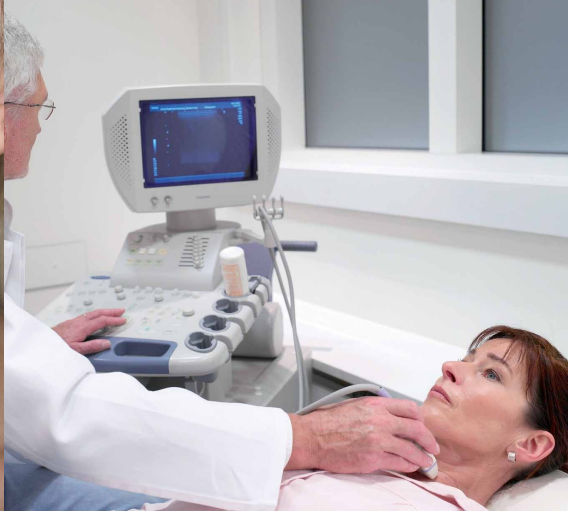
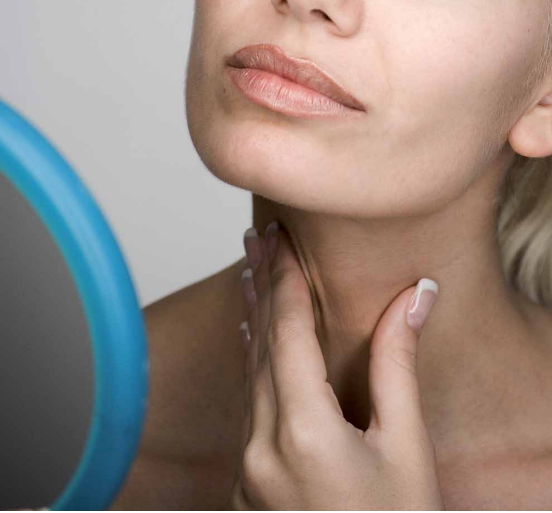
What should you look out for?

When the thyroid is functioning normally, neither the iodine-deficiency goiter nor thyroid nodules will initially cause symptoms. A goiter or nodule, which increases in size, can induce the following clinical signs:²⁰

- A sensation of pressure (a “lump”) in the throat
- Difficulty swallowing/pain upon swallowing
- Hoarseness
- Chronic cough
- Laboured breathing with the head in a certain position

The thyroid – know the facts^{18 19}

- The thyroid is a small, butterfly-shaped organ situated in the lower region of the neck in front of the windpipe.
- From iodine and other components, the thyroid produces (in the respectively necessary amounts) the hormones thyroxine (T4) and triiodothyronine (T3); these regulate all metabolic processes in the body.
- Hormone production in the thyroid is promoted by the thyroid-stimulant hormone (TSH) of the pituitary gland.
- If the thyroid lacks iodine, it partially or completely fails to produce the hormones T4 and T3 – this disrupts the sensitive metabolic cycles and in turn can lead to goiter or nodule formation in the thyroid tissue.



- Laboured breathing in stress situations
- Unpleasant sensation of constriction when wearing neckties, turtleneck sweaters etc.

If thyroid dysfunction has occurred in addition to the onset of the goiter, the resulting symptoms indicate possible hypo- or hyperthyroidism (under- or overactive thyroid).

There is help available

If you notice a knob by feel or sight or a change in your thyroid, then you should consult your physician who can make a more precise diagnosis.

A physical examination (feeling the area) is the simplest way to verify the size and consistency of the mutated thyroid tissue.

The treatment of goiter and nodules is mostly effective and non-complicated.

Diagnosis of goiter and nodules²¹

Following the simple physical examination by a physician, a blood sample is taken to determine whether there is a sufficient amount of thyroid-stimulant hormone (TSH) in the bloodstream. This hormone is an indicator of whether the thyroid is functioning normally. To determine the actual size of the nodules and/

or the thyroid, ultrasonography (an ultrasound exam) is performed. This exam is completely painless. Further options for the detection of nodules are:

• Thyroid scintigraphy

An exam required for all nodules, which appear to have a minimum diameter of 1 cm. The patient will receive a capsule or a liquid containing a weak radioactive iodine, which accumulates in the thyroid. On the gamma-camera monitor, the radiologist can see whether the nodule has absorbed any more or less iodine than the rest of the thyroid tissue. If certain regions of the thyroid illuminate in “warm” colours such as red or yellow, that points to a “hot” nodule. If the colours are rather “cold” (blue or violet), then a cold nodule is present.

• Fine-needle biopsy

In order to rule out or prove the malignancy of nodules, tissue is extracted with the aid of a fine needle.





Treatment of goiter and nodules²²

Not every nodule requires treatment. Depending on their type and size (in some cases), their further development should merely be regularly observed.²³ In general, there are three various treatment options. The particular form of therapy, which is the best option for the affected person, is decided in each individual case, after all exam results are available. The aim of all three treatment methods is the reduction of the size of the thyroid and the nodules.

• Treatment with medication(s)

For nodules which occur due to an iodine deficiency, treatment with iodine tablets alone or in combination with levothyroxine can be effective.

• Radioiodine therapy

Radioiodine is administered on a one-off basis, in the form of a capsule or as a liquid.

It then enters the thyroid, via the bloodstream, where it is stored – and prompts the shrinkage of the thyroid tissue due to the short-range radiation.

• Thyroid surgery

When the occurrence of a malignant growth in the thyroid is detected, the whole thyroid gland should be removed via surgery and if a goiter or nodules cause immense discomfort the thyroid gland can be partially/completely removed. Following such a procedure, treatment with substitution therapy (levothyroxine) is required to replace the lacking thyroid hormone production.

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For further information

If you would like to find out more detailed information on thyroid disorders, you can visit these websites:

www.thyroidweek.com www.thyroid-fed.org

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