**Introduction**: Amiodarone causes hypothyroidism in 12-25% of treated patients, depending on the classification of hypothyroidism. Amiodarone induced thyrotoxicosis is seen in 1.2%-12%. It is recommended to taper thyroid supplementation after discontinuing amiodarone.

**Purpose**: To investigate the prevalence of amiodarone induced thyroid dysfunction in Iceland and the effects of dosage and treatment duration.

**Design**: The study population comprised of all patients that were subscribed amiodarone in Iceland during the calendar year of 2014, a total of 1054 patients. Ten patients that never took amiodarone were excluded and there was missing data in 22. Hypothyroidism had been diagnosed in 91 patients before starting amiodarone and 59 took amiodarone for less than 90 days and were excluded from further analysis, leaving 871 patients. Follow up data was obtained from the national health care records both retrospectively and prospectively for first prescription of amiodarone and signs of thyroid related problems. Amiodarone induced hypothyroidism was defined as a raised TSH more than 90 days after starting treatment and further classified into subclinical (with normal T4) and overt (low T4). Amiodarone induced thyrotoxicosis was defined as low TSH with an elevated T4.

**Results**: Amiodarone induced hypothyroidism was seen in 22.2% of patients at a mean age of 74 years. 10.7% had overt AIH and 11.6% had subclinical hypothyroidism. Hypothyroidism occurred on average after 3.3 ± 0.4 years of treatment. The incidence increased with treatment duration and peaked at 41.8% after 15 years of treatment. The risk did not change with dosage. Only 4.6% on thyroid supplementation therapy had stopped treatment after a mean follow-up of 4.5 years after discontinuing amiodarone.

Amiodarone induced thyrotoxicosis was seen in 10.0% with a mean age of 65.6 years. The mean duration of treatment at diagnosis of thyrotoxicosis was 3.9 ± 0.6 years. The cumulative risk of thyrotoxicosis was highest (9.9%) during years 3 to 5 but persisted with ongoing treatment and peaked at 17.6% after 13 years of treatment. Higher dosage of amiodarone increased the risk in a dose dependent manner. It was 5% with <200 mg, 11.8% with 200 mg and 14.1% with >200mg (p<0.01). Hospital admission due to thyrotoxicosis was required in 35.3% of patients, 8.8% had thyroidectomies, 2.0% died and 26.5% had hypothyroidism following thyrotoxicosis. 48% were treated with carbimazole, of them 2.0% suffered agranulocytosis, 4.1% had hepatitis and 4.1% had pancreatitis.

**Conclusion**: In this nationwide study we found that long term users of amiodarone are at a higher risk of amiodarone induced hypothyroidism or thyrotoxicosis than previously described. Thyroid supplementation treatment is rarely stopped despite the pro-arrhythmic risk of overtreating hypothyroid patients. The high incidence of thyroid related adverse effects is a reminder of the serious side effects of amiodarone treatment.

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**Amiodarone induced thyroid dysfunction**

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Amiodarone induced Thyrotoxicosis

Yearly and accumulated risk of amiodarone induced thyrotoxicosis (%)