



# Benefits and difficulties of universal thyroid-dysfunction screening in pregnancy in the Czech Republic

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## Introduction

Many changes in the function of the thyroid gland occur during pregnancy and some diseases of the thyroid gland can affect both the pregnant woman and the fetus. Women with presence of anti-TPO (thyroperoxidase) antibodies are in danger of developing postpartum thyroiditis and therefore it is necessary to closely follow-up these women after delivery.

A pilot project for universal screening of thyroid dysfunction in pregnancy was performed during 2009 in 13 regions of the Czech Republic.

## Study group

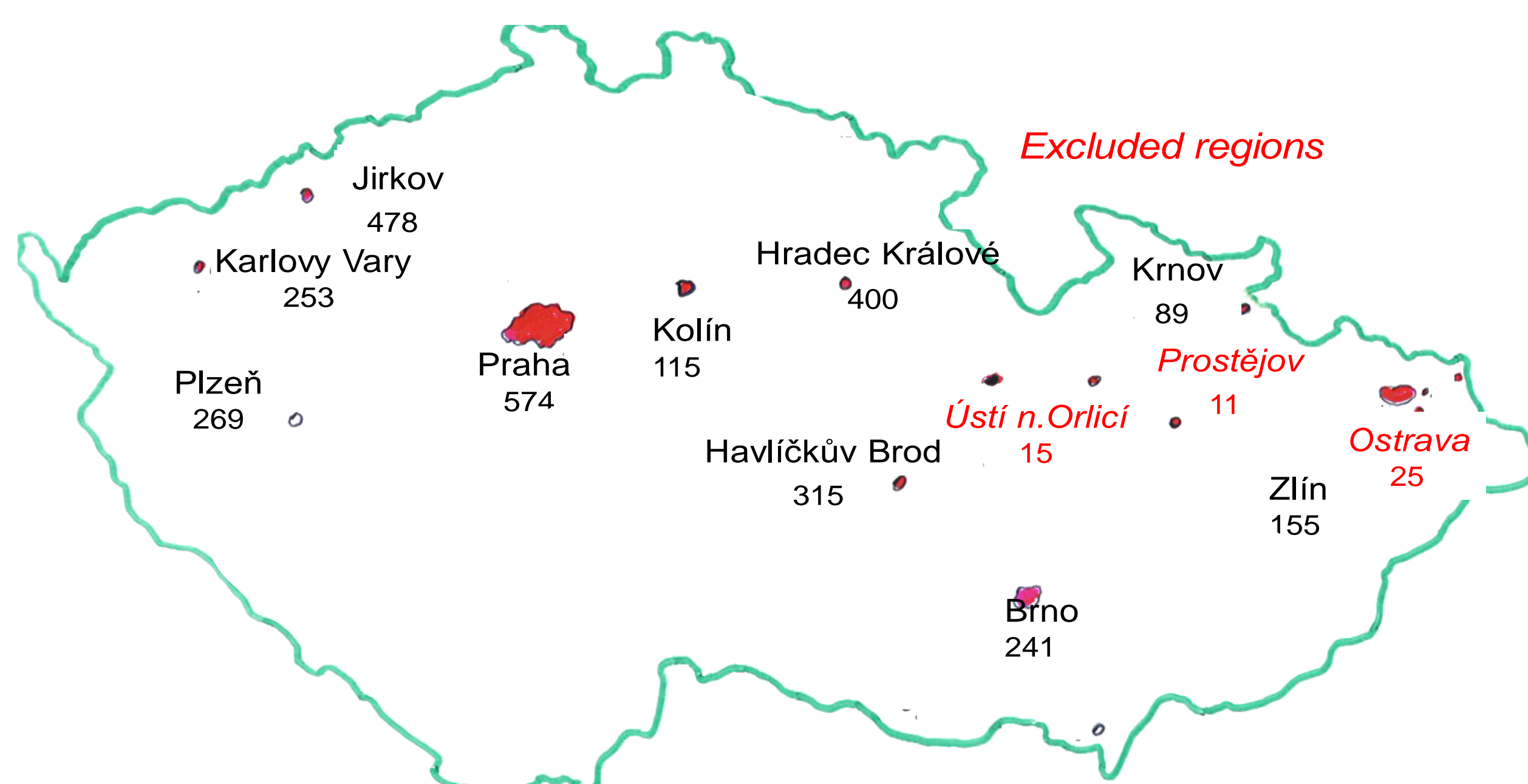
**Blood samples were taken from 2,937 asymptomatic pregnant women** (in their 9<sup>th</sup> – 11<sup>th</sup> week of pregnancy, 99% Caucasian) living in iodine sufficient areas who were simultaneously undergoing their first trimester prenatal screening.

The average age was 29.4 (+/- 5.0) years.

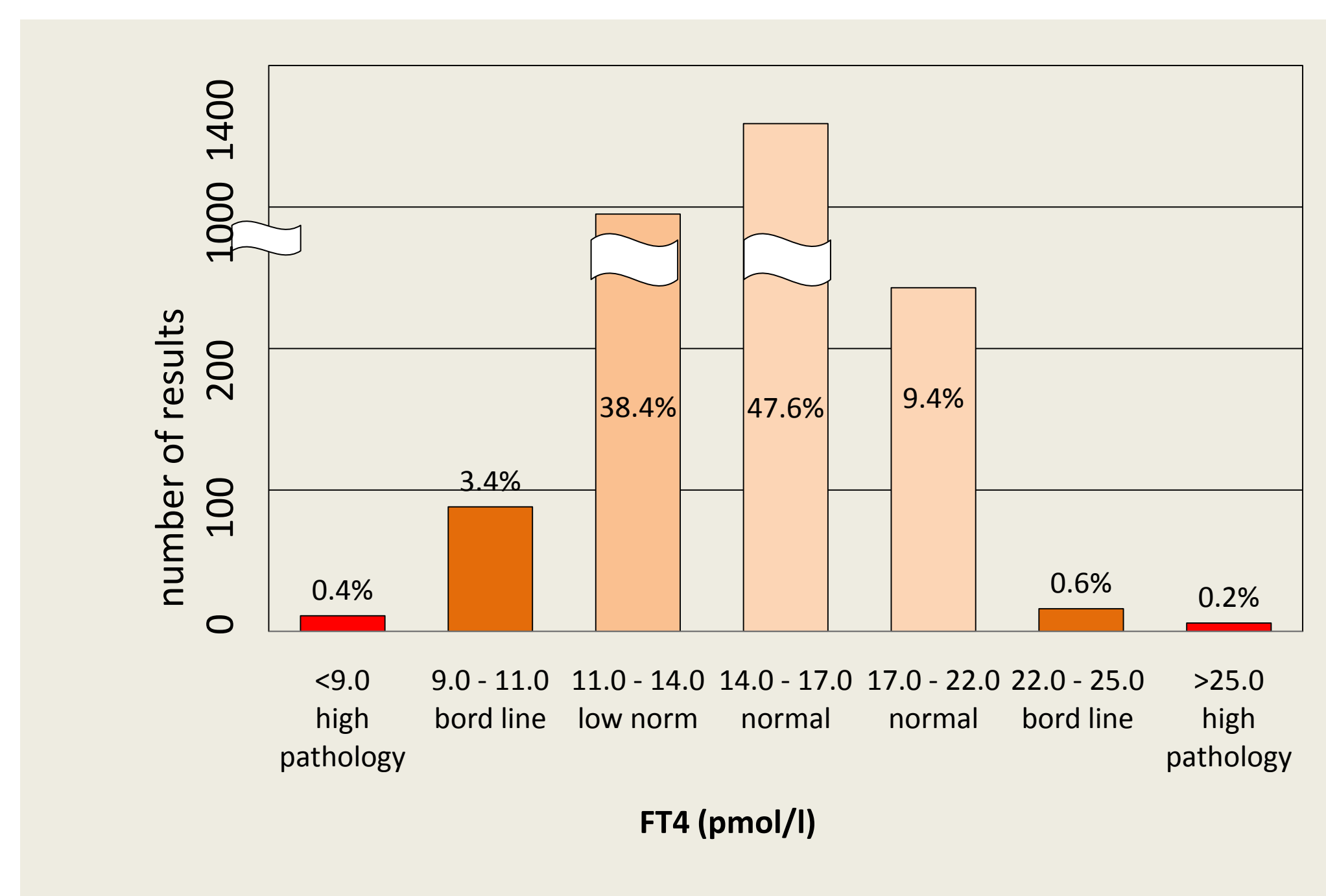
The estimation of TSH, FT4 and anti-TPO from serum was performed.

All participating pregnant women gave written informed consent.

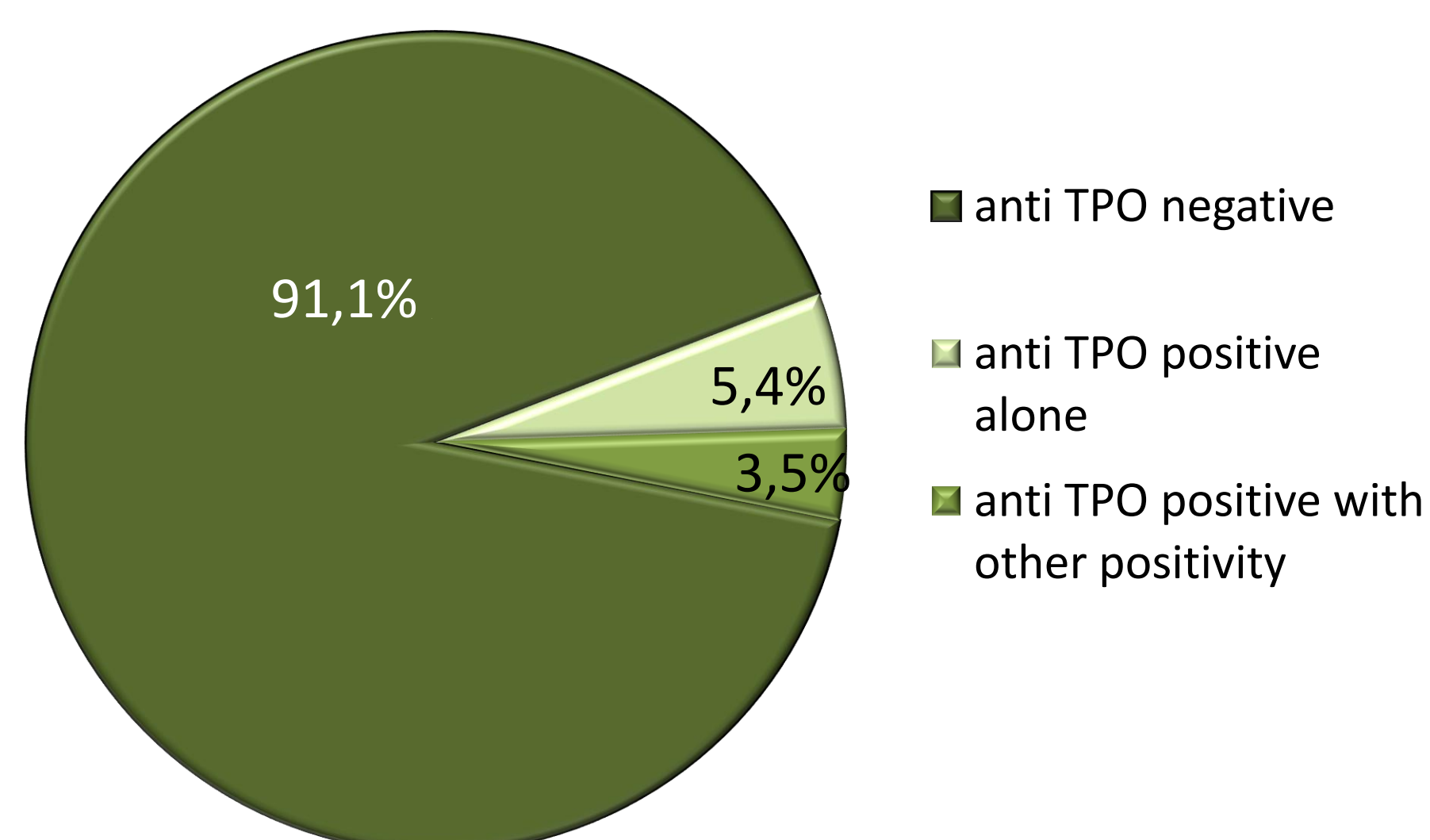
### Map of Czech Republic with cooperating regions and number of investigations in 2009



### FT4 in whole study group



### Anti-TPO in whole study group



## Conclusions

-The occurrence of pathological results in laboratory tests was surprisingly high, altogether **in 556 of 2937** women examined.

-Cooperation with gynaecologists differed, the main stumbling block was the gynaecologists' unwillingness to inform pregnant women about the project.

- Cooperation in 10 regions was good or suitable; 3 regions cooperated poorly and their data were not used.

- The worldwide difficulty of using different laboratory methods is well known.

-Determination of the specific reference intervals for TSH, FT4, and anti-TPO during pregnancy is one of the basic requirements when implementing a general examination of the thyroid gland in early pregnancy.

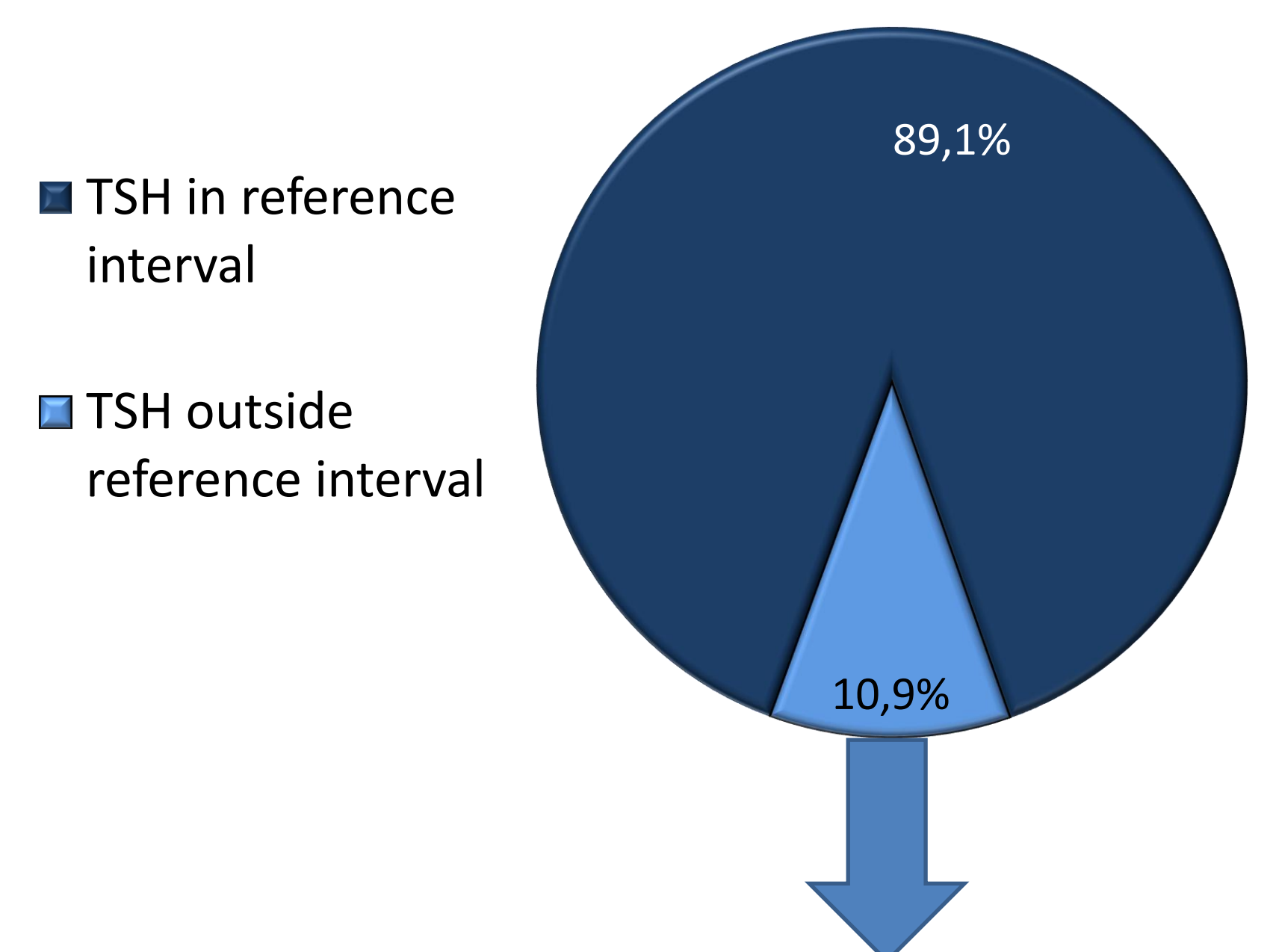
- The investigation of all three tests (TSH, FT4 and anti TPO) has proved to be beneficial and necessary.

- The introduction of general screening of thyroid failure in pregnancy needs to be emphasized in public education; moreover, interdisciplinary cooperation of gynaecologist, endocrinologist and general practitioner, not to mention midwives should be improved.

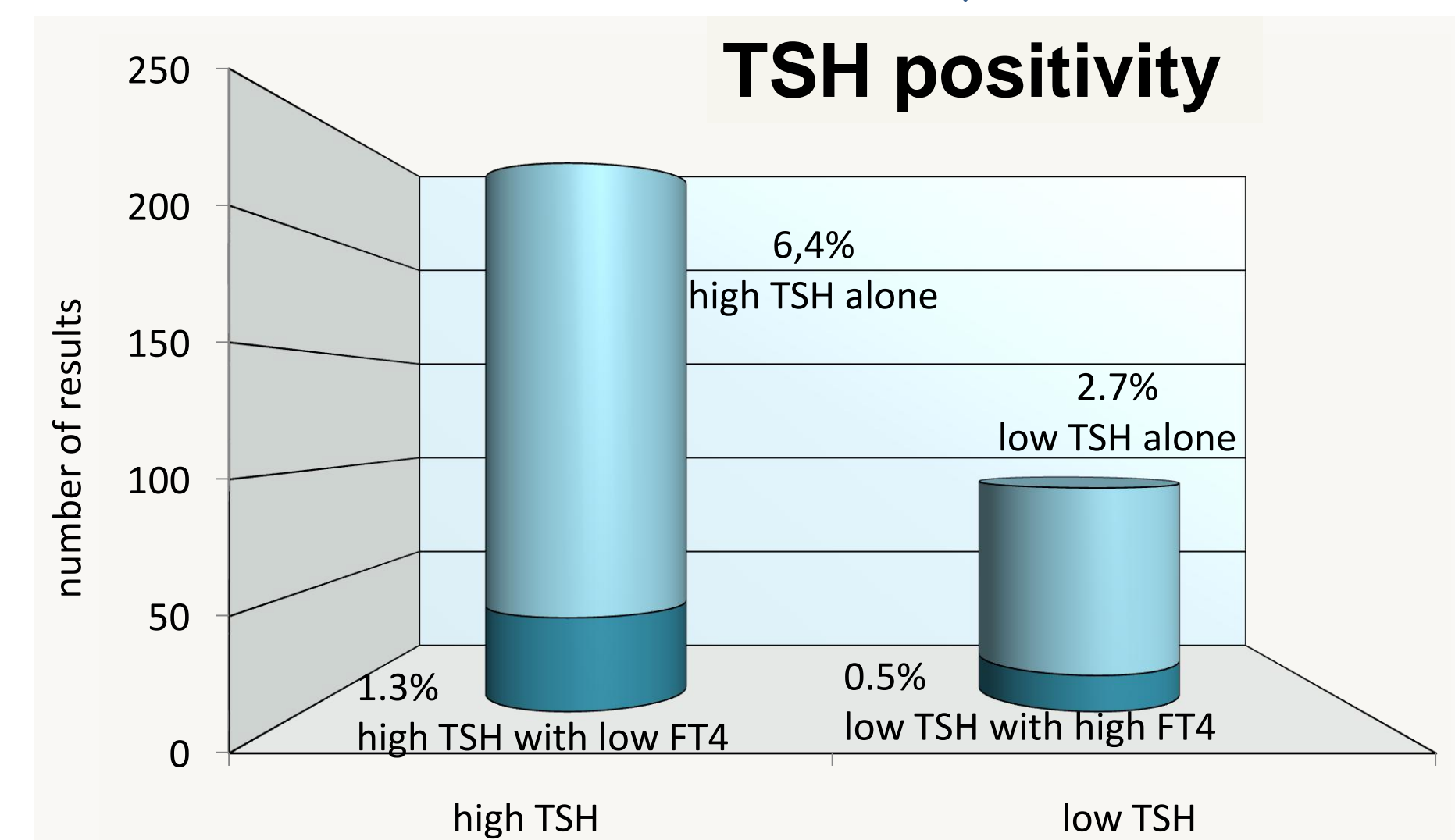
As in the Czech Republic, case finding screening discloses less than-50% of asymptomatic mild or deep hypothyroidism of women in pregnancy, thus we strongly support the need of general screening of pregnancy thyroid failure.

**The project proved the usefulness of universal screening of thyroid disease in pregnancy.**

### TSH in whole study group



### TSH positivity



## Methods

### Type of used methods from different producers:

Radioimmunoanalysis 5x

Chemiluminoimmunoanalysis 6x

Electrochemiluminoimmunoanalysis 2x

Specific reference intervals for TSH, FT4, and anti-TPO during pregnancy was applied in 3 laboratories, in the remaining 7 laboratories their individual data for the normal range were used.

## Results

### TSH

A total of 228 (7.7%) screened women had TSH higher than reference interval, from which 14 women had TSH above 10 mU/l. TSH suppression was found in 93 cases. Only fifteen of these women had simultaneously borderline elevation of FT4 and thus a thyroid hyperfunction was suspected.

### FT4

FT4 levels under 11.5 pmol/l were found in 96 women (3.3%).

### anti-TPO

TPO-Ab were increased in 258 women examined (8.9%), in whom 100 had also pathological TSH level.

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