

# Thyroid stimulating hormone and free thyroxine reference intervals for children and the elderly with Siemens Atellica based on patient data

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## AIM

To establish Siemens Atellica reference intervals (RIs) for children and the elderly based on laboratory information system (LIS) patient data.

## HOW

- Thyroid hormone results reported 2020 from individuals <15 and >60 years were retrieved using a data application connected to the LIS program.
- Tests ordered by hospital wards and hospital outpatient clinics were excluded leaving results mainly from primary care and occupational health patients.
- All patients with a positive result for TPO antibodies (since 2015) were removed.
- Outliers handled according to Tukey.
- If a patient had several results in the dataset, only the latest result was used.
- RIs were established as the central 95 % range.

## RESULTS

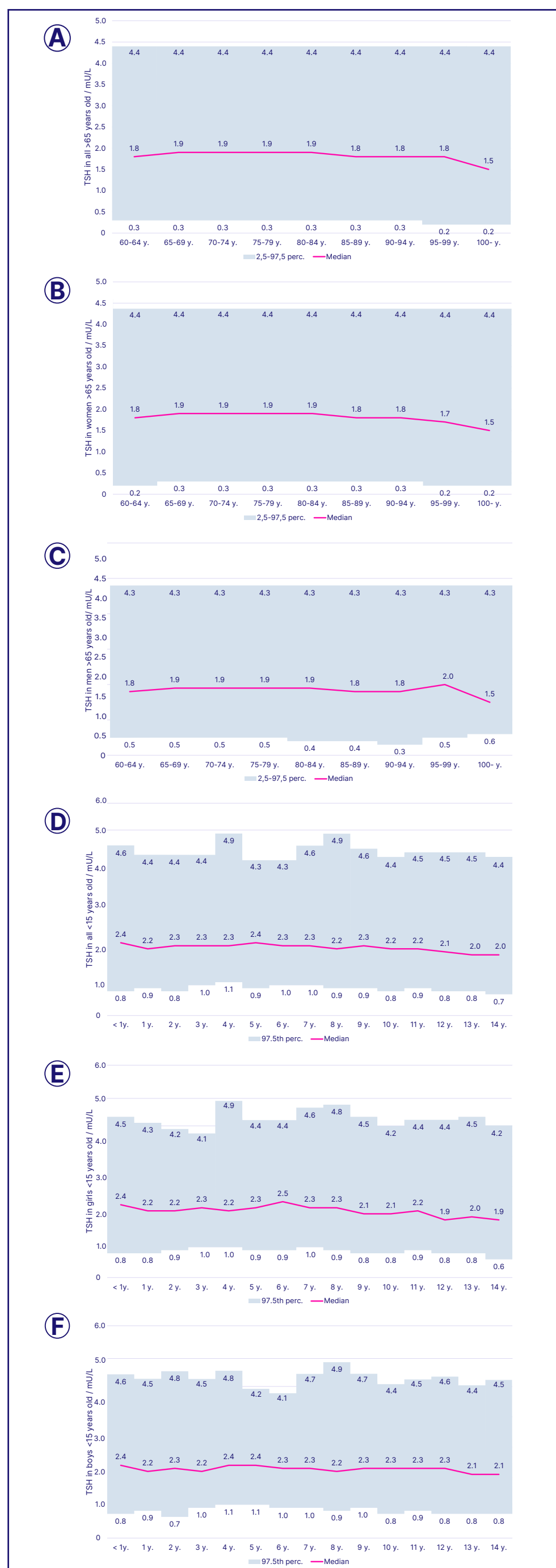
		1-11 months	1-5 years	6-14 years	<15 years	>60 years
n (TSH)	All	238	1292	6277	7807	112542
	Women	118	640	3357	4115	75312
n (FT4)	All	208	909	4558	5675	63323
	Women	102	444	2430	2976	46001
RI TSH (mU/L)	All	0.8-4.6	0.9-4.5	0.8-4.5	0.8-4.5	0.3-4.5
	Women	0.8-4.5	0.9-4.4	0.8-4.5	0.8-4.5	0.3-4.5
RI FT4 (pmol/L)	All	13-18	13-19	12-19	12-19	12-22
	Women	13-18	12-19	12-19	12-19	12-22
	Men	13-18	13-20	12-19	12-19	12-21

Concentrations of TSH and FT4 were different in women and men (P < 0.001) in other than FT4 for <15 year olds.

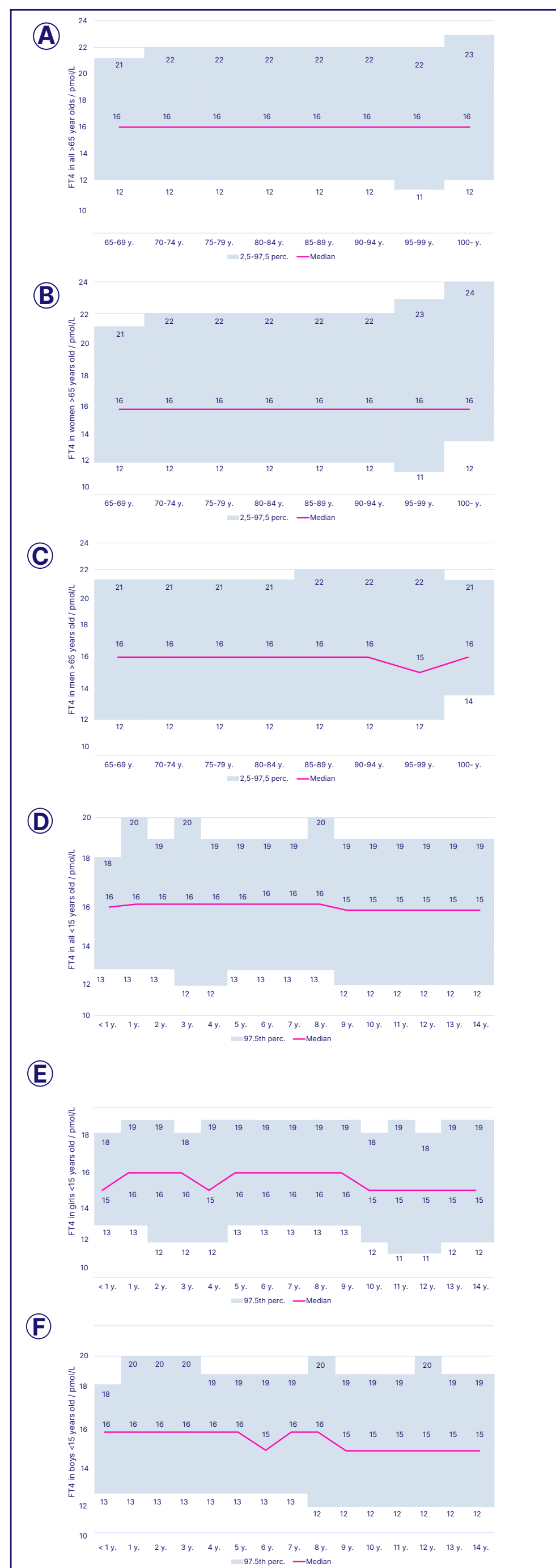
## CONCLUSION

Results from LIS make it easy to establish reference intervals after data is carefully filtered biochemically and statistically. However, usefulness of mathematical RIs should be evaluated in different clinical settings to produce meaningful RIs.

### TSH



### FT4



Distribution of TSH (mU/L) and FT4 (pmol/L) results in 5-year age groups with Atellica in all >65 (a), women >65 (b), men >65 (c), all <15 years (d), girls <15 years (e), boys <15 years (f). The blue bars cover the 2.5th to the 97.5th percentile for each age group, the numbers denote the 2.5th, 50th (—) and the 97.5th percentiles.

