NORIP
Suggested reference limits for Fe in serum

Reference limits suggested by NORIP

All: 8,6 – 33,7 umol/L (N=2311)
Female: 7,9 – 33,5 umol/L
Male: 10,3 – 34,1 umolL

Distribution of results in the main group and in subgroups

	Percentiles				
	2.5	**25**	**50**	**75**	**97.5**
All	9,4	15,0	19,0	23,4	33,8
Female	8,7	14,2	18,2	22,4	33,6
Male	10,4	15,8	19,8	24,4	34,2

Comments to the distributions (N=2293, all results)

Skewness: 0,794 (SE Skewness: 0,051) → Positively skewed with extended right tail
Kurtosis: 1,373 (SE Kurtosis: 0,102) → Positively, too peaked

Logarithmic transformation:
Skewness: -0,247 (SE Skewness: 0,051) → Negative skewness with extended left tail
Kurtosis: 0,105 (SE Kurtosis: 0,102) → Gaussian kurtosis

The 5 lowest values: 6,10-6,30-6,50-6,60-6,73
The 5 highest values: 52,34-51,60-50,16-49,20-49,10

Other comments

18 reference values (16 female) Fe < 6,0 umol/L are excluded in addition to the NORIP exclusions. Female: 930 without oestrogen, 287 with oestrogen, and 48 vitamin users are included. Ferritin is not used to exclude reference individuals with undiagnosed deficiency of iron.

Suggested reference limits

All results(both gender): 9,4 – 33,8 umol/L (N=2293)
90% confidence interval: (8,9-9,6), (33,2-34,5)

Comments to the suggested reference limits

Number of reference individuals: 2293 (1074 male, 1217 female).
Age 18-29years: 568, 30-39years: 276, 40-49years: 419, 50-59years: 482,
60-69years: 162, 70-79years: 331, >80years: 53.
Norway (733/32%), Finland (614/27%), Sweden (470/20%), Denmark (392/17%),
Iceland (84/4%).
Bayer Technicon (85), Beckman (164), Dade behring (28), Konelab (52), Olympus (56),
Ortho (386), Roche Cobas (554), Roche Hitachi (927), See comm! (41).
71% from fasting individuals (≥10 hours since last meal).
87% of the specimen are collected between 6.am-10.am.
Male values lie at a higher level than female. In both gender the level is independent of age.
Subpopulations: Male: Low 1,4% (M), High 2,9% (N). Female: Low 3,8% (M), High 2,1% (N).