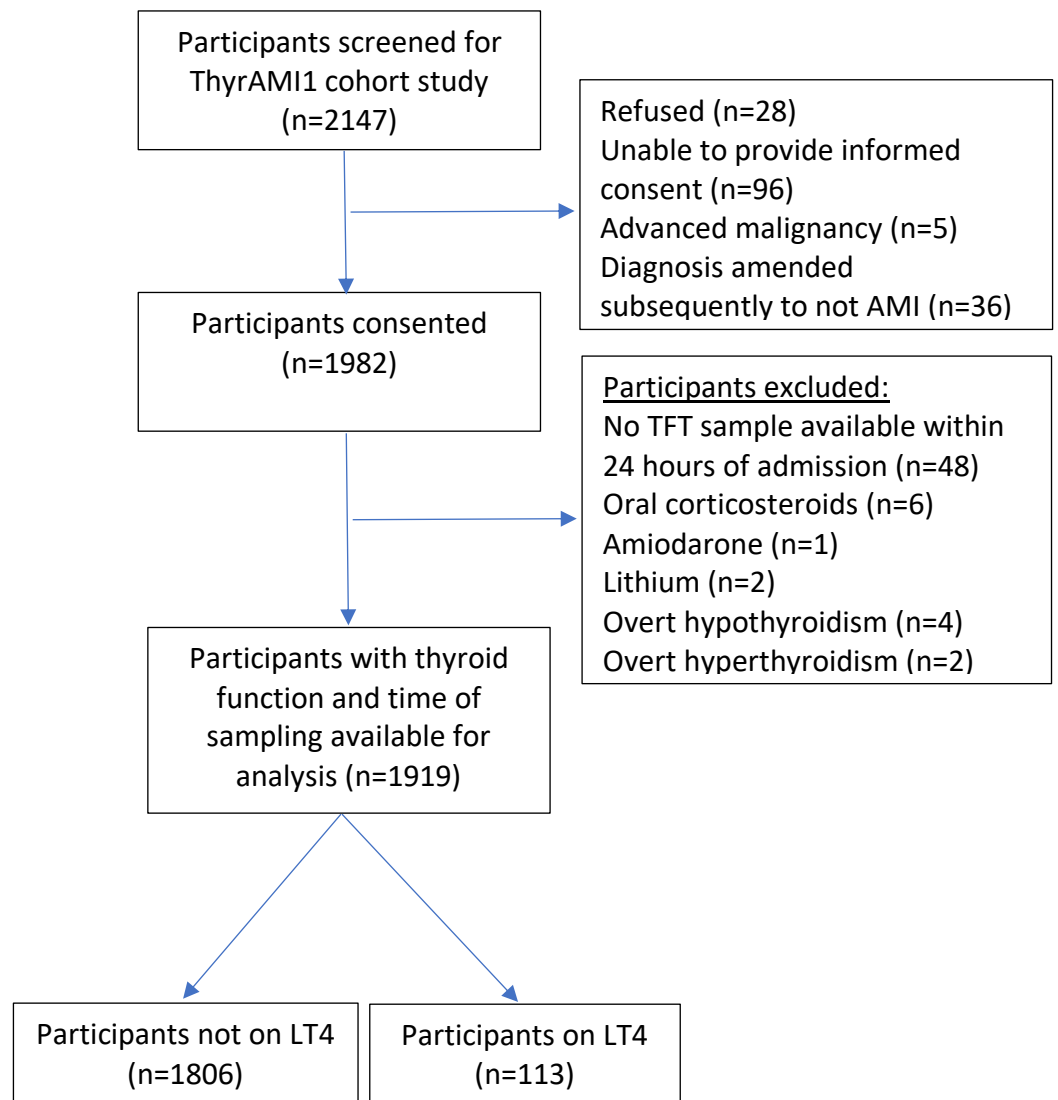


## Supplementary material

Supplementary figure 1. Flow diagram of participants screened, recruited and analysed in this study.



Supplementary Table 1. ThyrAMI derived reference ranges for TSH, FT4 and FT3, and prevalence of thyroid status calculated according to the time of sampling, in patients with acute myocardial infarction not on levothyroxine.

	<b>00:01 – 06:00</b>	<b>06:01 – 12:00</b>	<b>12:01 – 18:00</b>	<b>18:01 – 00:00</b>
<b>Median TSH</b> <b>(2.5<sup>th</sup> – 97.5<sup>th</sup> centile)</b>	2.62 (0.59 – 9.26)	1.94 (0.57 – 8.21)	1.80 (0.37 – 6.38)	2.09 (0.52 – 8.23)
<b>Mean FT4</b> <b>(2.5<sup>th</sup> – 97.5<sup>th</sup> centile)</b>	16.3 (11.6 – 24.7)	16.1 (11.1 – 22.6)	15.9 (11.4 – 23.2)	16.3 (11.3 – 25.5)
<b>Mean FT3</b> <b>(2.5<sup>th</sup> – 97.5<sup>th</sup> centile)</b>	4.9 (3.0 – 7.0)	4.8 (3.3 – 6.6)	4.7 (3.3 – 6.2)	4.8 (3.1 – 6.6)
<b>Euthyroid n (%)</b>	323 (96.7)	506 (95.1)	518 (95.6)	373 (94.9)
<b>SCH n (%)*</b>	9 (2.4)	14 (2.4)	15 (2.4)	11 (2.5)
<b>SHyper n (%)*</b>	3 (0.9)	13 (2.4)	11 (2.0)	10 (2.5)

\* No significant variation in prevalence of SCH nor SHyper was observed across each time period ( $p=0.79$  for SCH and  $p=0.14$  for SHyper) versus euthyroidism.

Supplementary Table 2. Relationship between time of sampling (per minute over 24 hours) and thyroid function parameters with regards to the different assays utilised.

	<b>Roche assay</b>			<b>Centaur assay</b>		
	Beta co-efficient (95% confidence intervals)	P	P for non-linearity	Beta co-efficient (95% confidence intervals)	P	P for non-linearity
<b>Serum TSH</b>	-0.001 (-0.001 to 0.000)	0.006	<0.001	0.000 (-0.001 to 0.000)	0.05	<0.001
<b>Free T4</b>	0.000 (-0.001 to 0.000)	0.22	0.43	0.001 (0.000 to 0.002)	0.20	0.57
<b>Free T3</b>	0.000 (0.000 to 0.000)	0.02	<0.001	0.000 (0.000 to 0.000)	0.06	<0.001

Adjusted for age, sex, centre, body mass index, smoking status, type of acute myocardial infarction, serum creatinine, history of ischaemic heart disease, diabetes mellitus, hypertension, cerebrovascular disease, hypothyroidism and atrial fibrillation.

Supplementary Table 3. Relationship between time of sampling (per minute over 24 hours) and thyroid function parameters with regards to levothyroxine use.

	LT4 non-users			LT4 users		
	Beta co-efficient (95% confidence intervals)	P	P for non-linearity	Beta co-efficient (95% confidence intervals)	P	P for non-linearity
<b>Serum TSH</b>	-0.001 (-0.001 to 0.000)	<0.001	<0.001	0.000 (-0.001 to 0.000)	0.99	0.76
<b>Free T4</b>	0.000 (0.000 to 0.001)	0.81	0.37	0.001 (0.000 to 0.002)	0.84	0.46
<b>Free T3</b>	0.000 (0.000 to 0.000)	0.003	<0.001	0.000 (0.000 to 0.000)	0.70	0.65

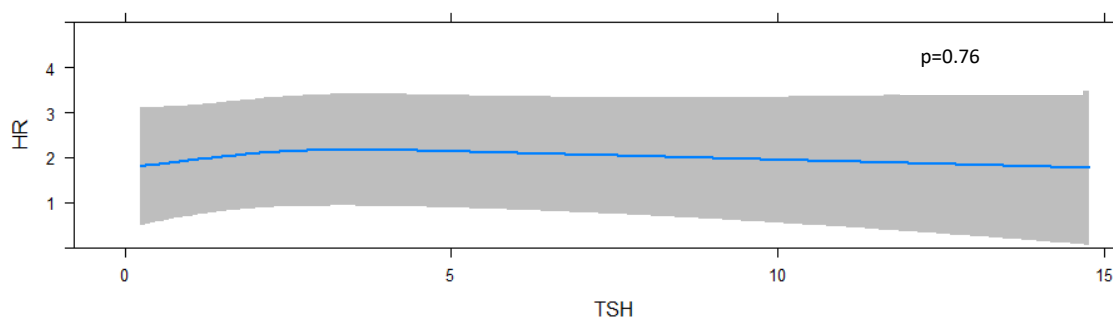
Adjusted for age, sex, centre, body mass index, smoking status, type of acute myocardial infarction, serum creatinine, history of ischaemic heart disease, diabetes mellitus, hypertension, cerebrovascular disease and atrial fibrillation.

Supplementary Table 4. Relationship between time of sampling (per minute over 24 hours) and thyroid function parameters with regards to type of acute myocardial infarction.

	Non-ST elevation MI			ST elevation MI		
	Beta co-efficient (95% confidence intervals)	P	P for non-linearity	Beta co-efficient (95% confidence intervals)	P	P for non-linearity
<b>Serum TSH</b>	-0.001 (-0.001 to 0.000)	0.04	<0.001	0.000 (-0.001 to 0.000)	0.03	0.001
<b>Free T4</b>	0.000 (-0.001 to 0.000)	0.30	0.55	0.000 (0.000 to 0.001)	0.21	0.31
<b>Free T3</b>	0.000 (0.000 to 0.000)	0.02	<0.001	0.000 (0.000 to 0.000)	0.08	0.01

Adjusted for age, sex, centre, body mass index, smoking status, serum creatinine, history of ischaemic heart disease, diabetes mellitus, hypertension, cerebrovascular disease, hypothyroidism and atrial fibrillation.

Supplementary figure 2. Serum TSH at baseline and risk of all-cause mortality in patients with acute myocardial infarction



Restricted cubic spline curves with three knots of log-relative hazards ratio (blue line) with 95% confidence intervals (grey areas) were plotted against serum TSH levels (in mU/L), adjusted for age, sex, centre, body mass index, smoking status, type of acute myocardial infarction, pain to sampling time, serum creatinine, history of ischaemic heart disease, diabetes mellitus, hypertension, cerebrovascular disease, hypothyroidism and atrial fibrillation.