



FACTORS PROMPTING THYROID FUNCTION TESTING IN HOSPITALISED PATIENTS WITH THYROID DYSFUNCTION: ANALYSIS OF A LARGE HOSPITAL DATABASE

Barbara Torlinska¹, Jamie Coleman¹, Mariam Afzal², Jayne Franklyn¹, Kristien Boelaert¹

P0359

¹ School of Clinical and Experimental Medicine, University of Birmingham;
² Queen Elizabeth Hospital, Birmingham, United Kingdom



BACKGROUND:

Thyroid dysfunction is common and the clinical presentation of subjects with abnormal thyroid hormone concentrations varies widely. Whilst acute illness may affect the interpretation of thyroid function tests, delaying diagnosis and treatment of thyroid dysfunction may have significant consequences.

AIMS:

To determine the likelihood of thyroid function testing and the factors influencing the probability of serum TSH measurement in hospitalised patients with a history of thyroid dysfunction.

MATERIAL AND METHODS:

- Data from a hospital-wide electronic prescribing and administration system at University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK.
- Data extracted from 280,000 admissions between January 2007 and December 2011
- Inclusion criteria: admissions with an ICD-10 coded diagnosis of hypothyroidism (E03* or E02*) or hyperthyroidism (E05*) at discharge or hospital stays during which patients were treated with levothyroxine or antithyroid drugs (ATD) but were not coded for any thyroid dysfunction.
- Patients with diagnosis of thyroid cancer were excluded (N=278)
- Demographic data of the patients and characteristics of the hospital stay (admission type, length of stay, reason for admission according to the ICD10 classification and data on TSH testing) were retrieved from the system.
- Admissions were categorised as diagnosis of hypothyroidism or hyperthyroidism.
- Age at hospital admission was categorised as 16-35; 36-55; 56-75; ≥76 years.
- Binary logistic regression analysis was performed to determine the factors prompting thyroid function testing in hospitalised inpatients.

RESULTS:

We identified 14,906 admissions with hypothyroidism of which 9077 (60.9%) were based on ICD-10 coded admissions and 5829 (39.1%) were based on levothyroxine administration in subjects without any coding for thyroid dysfunction. 1067 admissions with hyperthyroidism were identified; 829 (77.7%) were based on ICD-10 coding and the remainder identified through antithyroid drug administration. Consequently, 15,973 hospital admissions were included into the study.

Table 1: Characteristics of 15,973 hospital stays of patients with history of thyroid dysfunction. The mean age of patients at the time of admission was 66.6 ± 0.1 years and the mean length of hospital stay was 5.2 ± 0.1 days.

	Number of admissions	Percentage
Gender:		
Male	3,906	24.4%
Female	12,067	75.6%
Age (years):		
16-35	850	5.3%
36-55	2961	18.5%
56-75	6689	41.9%
76+	5473	34.3%
Admission type:		
Non-elective	10,920	68.4%
Elective	5,053	31.6%
Main reason for admission:		
Circulatory disease or symptoms	3,514	22.0%
Digestive disease or symptoms	2,266	14.2%
Respiratory disease or symptoms	2,248	14.1%
Neoplasms	2,062	12.9%
Endocrine diseases	643	4.0%
Other	5,240	32.8%
Thyroid dysfunction:		
Hyperthyroidism	1,067	6.7%
Hypothyroidism	14,906	93.3%
Length of hospital stay:		
1 day	4,411	27.6%
2-4 days	4,423	27.7%
5-10 days	3,365	21.1%
More than 10 days	3,774	23.6%
TSH testing:		
Tested	3,124	19.6%
Not-tested	12,849	80.4%

Figure 1: The main reason for hospital admission in patients with history of thyroid dysfunction.

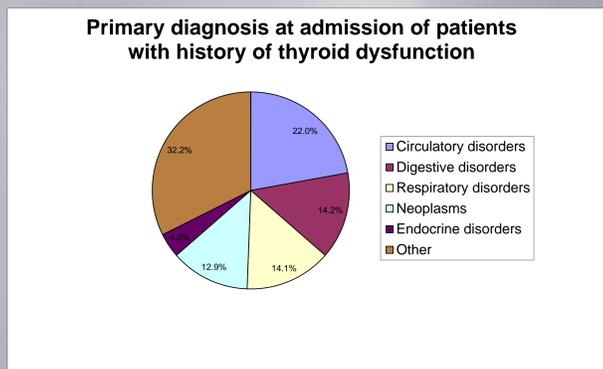


Figure 2: Frequency of TSH testing depending on age at hospital admission.

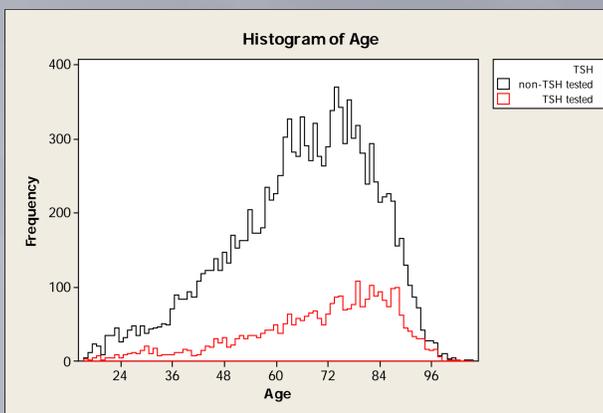


Table 2: Results of binary logistic regression identifying likelihood of thyroid function testing and factors prompting serum TSH testing in patients with history of thyroid dysfunction.

	AOR (95% CI)	P value
Gender:		
Male	1.0	
Female	1.01 (0.91-1.12)	NS
Age (years):		
16-35	1.0	
36-55	0.74 (0.60-0.92)	P=0.006
56-75	0.72 (0.59-0.88)	P=0.001
76+	0.88 (0.72-1.08)	NS
Admission type:		
Non-elective	1.0	
Elective	0.39 (0.35-0.44)	P<0.001
Main reason for admission:		
Circulatory disease or symptoms	1.0	
Digestive disease or symptoms	0.61 (0.52-0.71)	P<0.001
Respiratory disease or symptoms	0.95 (0.83-1.09)	NS
Neoplasms	0.58 (0.49-0.69)	P<0.001
Endocrine diseases	1.32 (1.06-1.63)	P<0.001
Other	0.76 (0.67-0.85)	P=0.01
Thyroid dysfunction:		
Hyperthyroidism	1.0	
Hypothyroidism	0.46 (0.39-0.53)	P<0.001
Length of hospital stay:		
1 day	1.0	
2-4 days	1.97 (1.70-2.29)	P<0.001
5-10 days	3.31 (2.86-3.83)	P<0.001
More than 10 days	10.05 (8.76-11.53)	P<0.001

SUMMARY OF MAIN FINDINGS:

- Thyroid function tests were measured in 1 out of 5 hospital stays of patients with history of thyroid dysfunction
- A history of hyperthyroidism, admission for endocrine causes and longer hospital stay were independent factors predicting increased likelihood of having serum TSH measurement
- Middle-aged patients and those admitted for elective procedures were less likely to have TSH testing during their hospital stay
- Co-existing thyroid dysfunction is not always properly coded
- Further analysis may identify patient groups who may benefit from thyroid function testing during hospitalisation