

CHAPTER 4

4.1 DATA ANALYSIS AND DISCUSSION

The data was analysed in accordance with the evidence-based guidelines published by Discovery Health. The most important test to be considered here is the requesting frequency of TSH as a first line investigation when evaluating thyroid function. Another important combination to consider would be the combination of TSH and FT4 that is not advocated as a first line investigation but is important in terms of the correct combination being requested in cases where the returned TSH value is normal and does not correspond to the clinical presentation of the patient. This is in contrast to completely inappropriate combinations of thyroid function tests being requested as first line investigations in evaluating thyroid function e.g. the combination of FT3 and FT4. These tests may be requested in other circumstances.

4.2 REQUESTED FREQUENCY OF TESTS

The requested frequency of tests (Table 3.2.1 and Table 3.2.2) were created to compare the frequency with which each test, as well as specific combinations of each test, were being ordered. The tables reflect data prior to the release of the evidence-based guidelines and after they were issued. Specific antibody titer was not reviewed, as the test is representative of many different antibodies that cannot be accounted for individually.

1. The requested frequency for only TSH increased from 48.9% to 51.0% (Table 3.3.1). This increase is statistically significant. TSH alone was ordered as a first line investigation more frequently than it had been prior to the publication of the evidence-based guidelines in March 2003. This increase is in keeping with the requirements of the guidelines, which advocate the use of TSH as a first line investigation when requesting tests for thyroid function.
2. The requested frequency for Free T4 alone increased from 1.2% to 1.6%. This increase is statistically significant (Table 3.3.3). The evidence-based guidelines outline the use of only Free T4 when the returned TSH value is abnormal (Guidelines, 2003).

3. The requested frequency for Free T3 alone decreased from 4.7% to 1.4%. This decrease is statistically significant (Table 3.3.2). Free T3 measures are reserved for those cases where other tests are not diagnostic of hyperthyroidism. Free T3 measurement is not indicated as an initial test for thyroid function (Guidelines, 2003).
4. The requested frequency for the combination of TSH and Free T4 increased from 20.6% to 22.9%. This increase is statistically significant as it is in keeping with the guidelines released (Table 3.3.6). The requested combination of TSH and Free T4 is important when the TSH value does not correspond with the clinical presentation of the patient.
5. The requested frequency for the combination of FreeT4 and Free T3 decreased from 0.3% to 0.1%. This decrease is statistically significant (Table 3.3.4). This particular requested combination of Free T4 and Free T3 is not indicated as an initial investigation when testing for thyroid function.
6. The requested frequency for the combination of FT4 and TSH and FT3 also decreased from 4.6% to 1.6%. The decrease is statistically significant (Table 3.3.7). This combination is not indicated as an initial investigation when testing for thyroid function.

The tests requested before the publication of the evidence-based guidelines were often requested without careful thought and consideration on the part of the clinician. Some of the combination tests ordered (Free T3 and Free T4) are not advocated as an initial investigation when testing for thyroid function and waste funds in this instance. The requesting of tests not indicated initially when testing thyroid function often leads to the depletion of funds available to a patient within the financial year.

After the publication of the evidence-based guidelines by Discovery Health there was a significant change in the requesting pattern of tests for thyroid function.

The publication of evidence-based guidelines as a guide to requesting the appropriate tests for thyroid function has succeeded in increasing awareness amongst clinicians with regard to the tests required in order to investigate suspected thyroid disease.

4.3 FISHER EXACT TEST

The Fisher Exact Test (2-Tail) was chosen as an alternative to the Chi-Square Test. It is based on the exact probabilities from a specific distribution. The Fisher Exact Test was found to be compatible with handling the large volume of data and the procedure could be used for results generated in a two by two contingency table. Comparisons of frequency/percentages were based on the Fisher exact test (2-Tail) and p values less than or equal to 0.05 were considered significant.

All tests as well as combination tests requested had a p-value of less than 0.001 (Table 3.4). The results of the p-value are thus significant. A contributing factor to the significance could be the large sample size, which increases the statistical power of the study.

4.3 RESULTS OF COST COMPARISON

The costs of the tests either individually or in combination were calculated (Table 3.4). Discovery Health provided the prices for the respective tests (Table 1.1). In order to account for the change in membership at Discovery Health during the time that the study was conducted these values have been normalised by taking into account the total membership of the company (Table 3.6.1). This can be summarized as follows:

1. The total cost for TSH alone ordered as an individual test increased by 46.88% (Table 3.6.2). This increase is in keeping with the guidelines, which advocate the use of only TSH as a first line investigation when testing thyroid function.
2. The total cost for Free T4 alone ordered as an individual test increased by 87.82% (Table 3.6.3). The evidence-based guidelines outline the use of only FT4 when the returned TSH value is abnormal (Guidelines, 2003).
3. The total cost of Free T3 alone being ordered as an individual test decreased 58.27% (Table 3.6.4). According to the evidence-based guidelines Free T3 measurement is not indicated as an initial investigation when testing thyroid function (Guidelines, 2003).
4. The total cost for the combination of Free T4 and TSH increased by 56.28% (Table 3.6.5). The combination of Free T4 and TSH in the investigation of

suspected thyroid disease is not a first line investigation. In terms of combination tests being requested however the combination of Free T4 and TSH has more value than that of Free T3 and Free T4 in the investigation of suspected thyroid disease.

5. The total cost for the combination of Free T3 and Free T4 decreased by 55.04% (Table 3.6.6). The combination of Free T3 and Free T4 is not of value in the initial investigation of thyroid function.

The company seems to be spending more on TSH and Free T4 both individually as well as in combination. In the case of Free T3 being ordered as an individual test the company seems to be spending less. The company also seems to be spending less on the combination of Free T3 and Free T4.