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# An audit of the (ab)use of thyroid function tests

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(group A), 40 non-specialist hospital doctors from the outpatient department and diabetic clinics (group B) and 60 general practitioners who attended a continuing medical education (CME) session program (group C).

The mean scores were 53% SD 12.3 for A, 51% SD 14.3 for B and 52.3% SD 10.7 for C. Deficiencies were shown in diagnosis (34% A, 30% B, 40% C), management of non-insulin dependent diabetes (35% A, 40% B and 45% C), management during an acute illness (50% A, 58% B and 54% C), insulin therapy (59% A, 65% B, 60% C) and use of oral hypoglycaemics (45% A, 60% B and 55% C). Medical students had one lecture on diabetes in their third year. Medical officers had no in-service CME, and GPs had attended lectures on diabetes sponsored by the pharmaceutical industry.

Diabetes is a common disease (2) with considerable morbidity (3) and consumes significant health care costs. There is evidence that a structured, integrated system of health care delivery can reduce this economic burden (4,5). Our results suggest that knowledge required to manage diabetes mellitus is inadequate among

medical students, non-specialist hospital doctors and general practitioners.

There is a need to allocate more resources for diabetes-related professional education in undergraduate education and CME. We recommend that locally applicable management guidelines be prepared and circulated among all members of the medical profession in Sri Lanka.

#### References

1. Fernando DJS. The case for a national integrated diabetes service. *Ceylon Medical Journal* 1995; **40**: 25-26.
2. Fernando DJS, Siribaddana SH, De Silva DR. The prevalence of diabetes mellitus and impaired glucose tolerance in a suburban Sri Lanka community. *Postgraduate Medical Journal* 1994; **70**: 342-349.
3. Fernando DJS, Siribaddana SH, Perera S, De Silva DR. The prevalence of macrovascular disease in a Sri Lankan diabetic clinic. *Postgraduate Medical Journal* 1993; **69**: 557-561.
4. Kamaladasa S, Subasinghe Z, Nanayakkara SFR, Fernando DJS. Screening for diabetic retinopathy: an audit. *Ceylon Medical Journal* 1995; **40**: 83. (letter)
5. Fernando DJS, Perera SD. Diabetic clinics: an audit of performance. *Ceylon Medical Journal* 1994; **39**: 138-139.

A A T P Chang, D J S Fernando, K de Abrew and M H R Sheriff, Departments of Medicine and Pharmacology, Faculty of Medicine, Colombo 8.

To the Editors:

#### An audit of the (ab)use of thyroid function tests

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Thyroid disease is common. It is routine practice in Sri Lanka to request T3 T4 and TSH when investigating thyroid disease. Hormonal assays are costly. With the development of specific assays for TSH many endocrinologists recommend that the TSH assay be used as a single first line test to assess thyroid function (1,2). In some countries, such as Australia, insurance companies impose practice guidelines and refuse to reimburse the cost of multiple thyroid function

tests in the absence of an abnormal TSH report (3). These organisations will authorise funding for T3 and T4 assays only if a previous TSH is abnormal. The older generation TSH assays (used in the National Hospital Sri Lanka, NHSL) lacked the sensitivity to distinguish between low-normal TSH and the suppressed TSH of hyperthyroidism. Although it was appropriate to request both T4 and TSH when using the older assays, it would be inappropriate to do this to diagnose or monitor

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Integrated diabetes  
: 25-26.

Silva DR. The  
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Sri Lanka community.  
342-349.

S, De Silva DR.  
in a Sri Lankan  
Journal 1993; 69:

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thyroid disease using the third generation TSH assays. Due to long delays in obtaining results from the NHSL laboratory many patients are investigated in the private sector which uses TSH assays. In some instances the Ministry of Health authorises performance of tests in private laboratories. Unfortunately, most doctors request T4, T3 and TSH in these patients. We applied the Australian Health Insurance Commission (AHIC) algorithm (4) to thyroid function tests in 178 patients with hyperthyroidism and 104 with hypothyroidism referred to our endocrine clinic over one year. 73 of the hypothyroid group and 77 of the hyperthyroid group had been investigated at private laboratories which routinely use the highly sensitive TSH assay and doctors had requested T4, T3 and TSH in all patients. We audited the use of diagnostic tests using the AHIC algorithm to determine whether TSH reliably predicted T4 levels.

In the hyperthyroid group 72 patients had elevated T4 and only 1 had isolated elevation of T3. All 73 patients had a suppressed TSH. In the hypothyroid group all patients had elevated TSH so that TSH(s) alone would have been sufficient to confirm the diagnosis. The T4 and T3 assays did not provide any information that affected the management.

The cost of each hormonal assay is Rs 250 at commercial rates. Thus to confirm a diagnosis of hyperthyroidism 72 unnecessary T4 assays

costing Rs 17750 were performed. In order to confirm a diagnosis of T3 toxicosis in one patient 71 T3 assays were performed at a cost of Rs 17500. In all Rs 35000 in the hyperthyroid and Rs 38500 in the hypothyroid group were spent unnecessarily on tests that did not affect management. The use of the AHIC algorithm in all patients with thyroid disease resulted in saving \$23,000 in one large Australian hospital. No data are available for using this algorithm in Sri Lanka. We conclude that in our clinic population a TSH based algorithm is reliable in diagnosing hypo- and hyperthyroidism. The universal implementation of this algorithm in Sri Lanka will result in much savings to patients, employers and insurance companies. We recommend that practice guidelines based on the AHIC be formulated and circulated among medical practitioners.

#### References

1. Nicoloff J, Spencer C. The use and misuse of the sensitive thyrotropin assays. *Journal of Clinical Endocrinology and Metabolism* 1990; **71**: 553-558.
2. Spencer C, LoPresti J, Middlesworth L *et al* Screening for thyroid dysfunction; which test is best? *Journal of the American Medical Association* 1993; **270**: 2297-2298.
3. Lazarus L. Thyroid function testing and clinical practice guidelines. *Medical Journal of Australia* 1996; **164**: 324-325.
4. Davey RX, Clarke MI, Webster AR. Thyroid function based on assay of thyroid stimulating hormone: assessing an algorithm reliability. *Medical Journal of Australia* 1996; **164**: 329-332.

A Dissanayake, U C L Hewage, S H Siribaddana and D J S Fernando, Department of Medicine, Faculty of Medicine, Colombo 8.