in intrinsic spatial resolution does, in fact, interfere with lesion detection.

PAUL B. HOFFER
Yale Univ. School of Med.
New Haven, Connecticut

Analytical Performance of the ARIA II automatic system for TSH Assay

The widespread use of radioimmunological techniques in clinical practice has prompted numerous attempts to automate radioimmunoassay (RIA) partially or completely. The evaluation of the performances of these automatic systems has to be done not only in terms of practicability and throughput, but also and chiefly in terms of analytical reliability.

The fully automatic system ARIA II* has attained some popularity in laboratories, mainly for assaying T_3, T_4, and TSH. The performances of this system for T_3 and T_4 measurements have already been evaluated, either from results produced in a single laboratory (*1–3*) or from data gained in interlaboratory survey (*4*).

We report here estimates of the accuracy and precision of the TSH determinations carried out using ARIA II. This evaluation is based on data collected from a national external quality-control survey (EQCS) (*5,6*), which involved about 150 laboratories, nine of them being ARIA II users. The analysis was performed on the results of 51 EQCS samples sent in 11 monthly dispatches from December, 1981, to May, 1983; the majority of these samples (36) were unidentified replicates for the estimation of the between-laboratory, between-batch precision.

The precision was computed subdividing the results into two concentration ranges; the precision (CV) achieved by ARIA II users was 28.6% CV% (for samples with concentrations in the range 3–5 μIU/ml) and 17.2 CV% (range 5–20 μIU/ml). For comparison, the precisions of the other five most popular kits used in the survey, turned out as follows (respectively for the low and the high samples): Corning Immophase (7 labs) CV = 13.4 and 10.9 CV%, Cis-Sorin (9 labs) 18.1 and 12.6 CV%, Byk-Mallinckrodt (36 labs) 18.0 and 17.5 CV%, Biodata-Serono (27 labs) 28.7 and 20.6 CV%, Diagnostic Product Corp. (15 labs) CV = 34.7 and 18.7 CV%.

The accuracy of ARIA II was estimated with respect to the median (after rejection of outliers) of all results reported by participants in the survey. The results, shown in Fig. 1, indicate that ARIA II system consistently underestimates TSH concentrations. This negative bias was confirmed by the results of three recovery experiments (see Table 1) carried out by sending to the participants

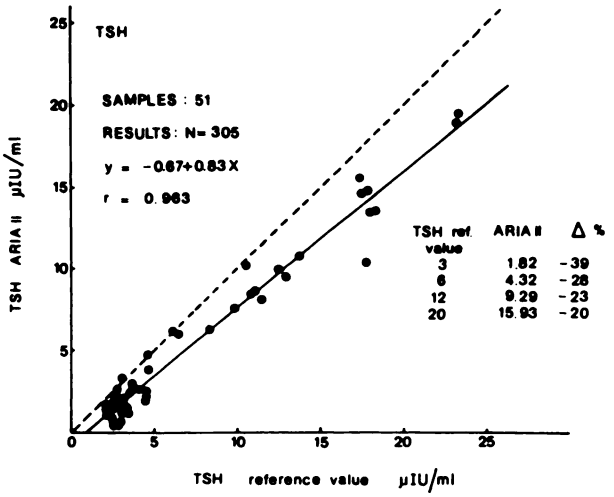

FIG. 1. Regression analysis of 305 results from laboratories using ARIA II system, against respective consensus medians taken as reference values. Closed circles represent mean values of ARIA II results found in each EQCS sample; regression and identity are shown as full and dashed lines respectively. Inset table reports mean readings by ARIA II users (computed from regression line) corresponding to four TSH levels, together with % deviations.

low-concentration samples spiked with known amounts of TSH standard (First IRP WHO 68/38 supplied by NIBSC, Holly Hill, Hampstead, London, UK).

We conclude that the TSH assays of the ARIA II system are not as good as those found for T_3 and T_4—in fact, ARIA II measurements of TSH are clearly inaccurate and, in addition, do not display better precision than that achieved by the nonautomated methods or kits.

G. C. ZUCCHELLI
A. PILO
M. R. CHIESA
M. A. PIRO
Istituto di Fisiologia Clinica C.N.R.
via Savi 8, 56100 Pisa, Italy

FOOTNOTE

* Becton-Dickinson Immunodiagnostics, 180 West 2950 South, Salt Lake City, UT 84115, USA.

TABLE 1. TSH RECOVERY OF ARIA II

Sample No.	Median of ARIA II results (μIU/ml)	TSH diff.	TSH 68/38 added	Recovery %
C092	18.90			
C090	1.70	17.20	22.5	76.4
C107	6.25			
C105	1.30	4.95	6.0	82.5
C112	13.45			
C109	2.70	10.75	15.0	71.7

REFERENCES

1. REESE MG, JOHNSON LR: Automated measurement of serum T4 with the "ARIA II", as compared with competitive protein binding and radioimmunoassay. *Clin Chem* 24:342-344, 1978
2. CHEN IW, MAXON HR, HEMINGER LA, et al: Evaluation and comparison of two fully automated radioassay systems with distinctly different modes of analysis. *J Nucl Med* 21:1162-1168, 1980
3. PAY GD, REESE MR: A fully automated T3 uptake assay utilizing a recycling T3 anitbody separating agent on ARIA II. *J Solid-Phase Biochem* 4:15-20, 1979
4. PILO A, ZUCCHELLI GC, PIRO MA, CHIESA MR: Analytical performances achieved by the ARIA II automatic system in an interlaboratory survey for T3 and T4 assays. *J Automatic Chem* 5:157-158, 1983
5. PILO A, ZUCCHELLI GC, PIRO MA, et al: Interlaboratory survey for T3, T4 and TSH assays in Italy. In *Radioimmunoassay and Related Procedures in Medicine.* IAEA, Vienna, 1982, pp 621-628.
6. ZUCCHELLI GC, PILO A, CHIESA MR, et al: Progress report on a national quality control survey of triiodothyronine and thyroxin assay. *Clin Chem* 30:395-398, 1984

Announcement from the Editor's Office

On January 1, 1985, Thomas P. Haynie, M.D. will assume the Editorship of *The Journal of Nuclear Medicine.* To ensure a smooth transition of duties, it is necessary that Dr. Haynie initiate manuscript processing in September, 1984. Beginning September 15, 1984, all manuscripts, original submissions, and revisions, should be forwarded to:

Thomas P. Haynie, M.D.
UT M.D. Anderson Hospital
6723 Bertner Avenue, Box 83
Houston, TX 77030

Frank H. DeLand, M.D.
Editor

The Society of Nuclear Medicine
32nd Annual Meeting

Sunday, June 2-Wednesday, June 5, 1985 **Houston, Texas**

Albert Thomas Convention Center

Call for Abstracts for Scientific Program

The 1985 Scientific Program Committee solicits the submission of abstracts from members and nonmembers of the Society of Nuclear Medicine for the 32nd Annual Meeting in Houston, Texas. Abstracts accepted for the program will be published in the May issue of the Journal of Nuclear Medicine. Original contributions on a variety of topics related to nuclear medicine will be considered, including:

INSTRUMENTATION
COMPUTERS AND DATA ANALYSIS
IN VITRO RADIOASSAY
RADIOPHARMACEUTICAL CHEMISTRY
DOSIMETRY/RADIOBIOLOGY
NUCLEAR MAGNETIC RESONANCE

CLINICAL SCIENCE APPLICATIONS
Bone/Joint
Cardiovascular
Gastroenterology
Hematology
Infectious Disease and Immunology
Neurology
Oncology
Pediatrics
Pulmonary
Renal/Electrolyte/Hypertension/Endocrine

Authors seeking publication for the full text of their papers are strongly encouraged to submit their work to the JNM for immediate review.

The official abstract form may be obtained from the November issue of the JNM or by calling or writing:

Society of Nuclear Medicine
Att: Abstracts
475 Park Avenue South
New York, NY 10016
Tel: (212)889-0717

Deadline for receipt of abstracts is Thursday, January 10, 1985