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Introduction

The Nordic Reference Interval Project 2000 is described in this special issue of *SJCLI*. Health-associated reference intervals for adult Nordic ambulatory patients are reported for 25 biochemical quantities frequently measured in serum.

In all the Nordic countries the need for traceable reference intervals in clinical chemistry increased in the last decade of the past century. The origins of many of the reference intervals used have been obscure. When using commutable normal serum in external quality assurance programmes, it was noticed and documented, especially in Norway, that the reference intervals used within the country for the same quantity in the same age and gender groups varied more than the corresponding analytical deviations could account for. It was believed that the populations in the Nordic countries were too homogeneous to allow for a biological explanation. Therefore, with the Norwegians as the driving force and supported by the Nordic Society of Clinical Chemistry (NFKK), a Nordic project was launched on 27 March 1998 in Oslo based on a decentralized design from Denmark. A subproject for routine haematology that originated in Finland was added later. The project was performed mainly during 2000 and 2001 in the five Nordic countries, in accordance with a common protocol.

Each of the 102 participating Nordic laboratories had to select at least 25 healthy individuals, aged 18 years or older, who were to be evenly distributed in specific gender and age groups and had to fulfil specific health criteria and answer questions relevant for possible further partitioning of the reference values. The common protocol for preparation of the individuals and the blood collection corresponded to the protocol for handling outpatients.

The aim of the project was to produce biological reference intervals of high analytical trueness. However, because the local routine methods of the participating laboratories were used, aliquots of a liquid frozen pool of unmodified normal donor serum with high-quality target values (CAL or X) were measured in 10 replicates in every analytical series of the project and (for non-enzymes) used to correct the measured values proportionally. Other project controls were also used to assess the analytical quality.

The results showed that partitioning of the reference values by country was not necessary. Common Nordic reference intervals are therefore recommended. These recommendations are documented in this issue of *SJCLI*. However, before routine use of these reference values, the laboratories have to demonstrate acceptable trueness when measuring on healthy persons. They can do this by demonstrating acceptable closeness of their results to the target values when measuring on the NFKK reference serum X described in article 5.

Article 1, the main article of the project, covers all areas and presents the final recommendations. The reference intervals for serum creatininium may be an exception because the reference values measured by the Jaffé method probably should be recalculated, as described in the letter to the editor published in this issue.

Article 2 describes the thoughts preceding the project. As already mentioned, the chosen design of the main project needed reference material commutable with normal serum samples and with target values of high quality for all measured components at relevant levels. How this was provided is described in articles 3, 4 and 5.

More details on the reference individuals and the samples are presented in article 6. This article may be of special interest for users of the bio-bank (see below). The corresponding detailing of analytical issues is described in article 7. In article 10 it is shown that deletion of inferior analytical series as judged by other control results relative to those of CAL was of minor importance for the reference intervals.

Establishment of reference intervals for the International Federation of Clinical Chemistry (IFCC)–compatible routine methods run at 37°C was of special interest, since new

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recommendations from the IFCC have been or are about to be released. The data treatment differed from that of other quantities in that only results from measurement systems with documented traceability to the IFCC reference methods were accepted and used as reference values, without corrections. This part of the project is therefore described separately in article 8.

In article 11 the new partitioning test used in NORIP is compared with the Harris-Boyd method using practical examples from NORIP supporting the chosen non-partitioning of the reference intervals by country.

The project is not yet over. We urge our colleagues to use the data and the samples from the project. These are stored in the bio-bank described in article 12.

We thank all who have facilitated this project, including those not mentioned in the lists below. Finally, we warmly thank our chairman, Pål Rustad, for keeping us and the whole project on track, for excellent human leadership and for carrying out an enormous amount of work himself.

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