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Item I

EDUCATION AND TRAINING OF LABORATORY STAFF: GUIDANCE OF SCIENTISTS IN CHARGE OF LABORATORIES IN THE CLINICAL AND EPIDEMIOLOGICAL APPLICATION OF TEST RESULTS

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1. Introduction

When considering policies for the training of the heads of clinical biology laboratories, several factors must be taken into account:

(a) From a purely individual angle, the biologist must always bear in mind the patient for whom the tests are performed; these tests should help in diagnosing and treating a disease in an individual or a condition that might have repercussions on the embryo or the species. From a more general viewpoint, the "public health" aspect of clinical biology must be borne in mind. Not only will the results of the tests be of service to the individual, but their global interpretation may help to provide a better understanding of the epidemiology of certain disorders and to apply the appropriate measures for prophylaxis and treatment;

(b) The purposes of the tests and the uses to which the results are put should be considered from both an individual and a general viewpoint. In a public health laboratory, the planning of tests and the utilization of the results will obviously be organized mainly from the viewpoint of epidemiology, prophylaxis or the evaluation of efficacy; nevertheless, those in charge of the laboratory must at the same time bear in mind the individual aspects of the results: in the course of a survey some abnormal individual results may occur, and the head of the laboratory must have enough clinical background to interpret them and inform the person concerned;

(c) conversely, in a hospital laboratory or private laboratory the clinical aspect predominates: the tests are performed for a clearly defined diagnostic or therapeutic purpose. However, the results can also be used for epidemiological purposes. This is true for example in the field of communicable diseases or in specific ecological situations such as pollution of industrial or other origin, e.g. exposure to lead or cadmium.

2. Basic training of biologists

In Belgium - and we believe this is a good thing - most laboratories are still run by physicians, who either have specific specialist training in clinical biology or carry out themselves the tests required for their patients' health. There is no doubt that the technical nature of the tests makes it desirable to have more doctors with a thorough knowledge of laboratory technology, but it is also important not to lose sight of the principle aim of the tests, i.e. to safeguard or restore the patient's health and to protect the health of those in contact with him.

So it can sometimes be disquieting to see, as in some countries, increasing numbers of analysts holding academic diplomas indicating undeniable scientific competence but who do not have sufficient biological or clinical knowledge and are too isolated from the art of medicine and from the patient.

In any case, if we want to try and find solutions to the problems currently presented by clinical biology we shall have to rethink the basic training of biologists according to the following principles:

- it is very important that the biologist in charge of a medical laboratory should have adequate clinical knowledge: this clinical training is just as important as technical training;

- the biologist should be able to interpret the results of tests in the light of the various possible pathological conditions and be able to discuss with the attending physician on an equal footing;

- the biologist should also be able to provide the essential contact between patient and laboratory and take effective action within the necessary time limitations;

- obviously technical training must not be forgotten; this should enable the head of the laboratory to ensure optimum quality of the tests without necessarily going in for pointless technological perfectionism or unwarranted mathematical models. Collaboration between clinicians trained in biology and competent professionals aware of the objectives can often be the best way, provided once again that the decision rests with the person responsible for the clinical or health application of the results.

In parallel with the basic training of biologists the training of the prescribing physicians must not be neglected. This is just as essential as the training of the biologists for the sound practice of clinical biology.

Since physicians during their career have to apply the concepts learnt during their studies, it is at the level of teaching and continuous information that action first needs to be taken. Coordinated teaching is needed to ensure what might be called the proper use of clinical biology. At present the young doctor leaving university is accustomed to seeing prescribed, for each patient examined, a fairly exhaustive range of biological tests. While that may be justified from the didactic viewpoint, it is essential that their education should teach future prescribers to set priorities in their requests in the light of the pathological condition with which they are confronted and the material and economic possibilities.

3. Different types of clinical biological tests

The technical progress of recent decades has lead to diversification of clinical biology tests into different disciplines such as haematology, haemostasis, immunohaematology, clinical chemistry and biochemistry, microbiology, serology, morbid anatomy, hormonology, use of radioisotopes, etc. Each of these disciplines, the list of which is always subject to modification, rearrangements or further subject divisions, has its specific aspects:

- with regard to the specialized qualifications of the person in charge of the organization of the laboratory, from the point of view both of the materials and methods used and of the training of the technical staff, these various disciplines have their own requirements;

- similarly the organization and the conditions for the performance of quality control, both external and internal, may vary extremely widely between these branches of clinical biology;

- the relationship between biologist and clinician and between biologist and patient is not necessarily the same in every discipline, if only with regard to the problems presented by pathological screening.

We reiterate that the classification we have put forward is provisional. Immunology may soon become a leading sector in the practice of clinical biology. Moreover, this classification which today is based essentially on therapeutic needs may be redesigned if more attention comes to be paid to individual or genetic prophylaxis.

4. Integration of clinical biology laboratories into health care

Clinical biology tests form part of medical science, and like all the other branches of medicine, they should help to preserve, maintain or restore human health as defined by WHO. To achieve this aim close collaboration between all the medical disciplines is essential: collaboration between biologists and clinicians, between epidemiologists and laboratories, between school doctors and laboratories, etc.

Medical research must also be supported by a certain number of clinical tests.

For example, school doctors and biologists should collaborate in going beyond the routine check-ups and detecting dyslipidaemias, latent diabetes, etc., in young children; epidemiologists and biologists should get together to detect social diseases such as alcoholism by the quantative determination of gammaglutamyltransferase and drug addictions by the quantative determination of narcotics. These examples explain why clinical biology services are being considered less and less as an accumulation of procedures but rather as facilities made available to the practitioner and hygienist for the prevention of diseases, their early diagnosis and, once the disease has struct, the restoration of the patients to health.

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