

Ethical aspects of clinical chemistry

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Author's abstract

The work performed by the clinical chemist may deeply affect the decisions of the doctor and the well-being of the patient. Yet in contrast to the doctor and to the nurse the clinical chemist usually has no personal relationship with the patient. Being encumbered by much technology and anonymity is itself a reason for scrutinising his involvement in issues of health care ethics. This is an attempt at clarifying some major aspects: the relationship of his professional ethics to medical ethics as a whole, his ethical obligations to the patient and to society, and other aspects.

The assertion that clinical chemists may have to bear some co-responsibility for decisions in dilemmas of medical ethics, is more likely to cause raised eyebrows than heated debates amongst the public. Of the millions of people who undergo treatment in hospitals most return home without ever having set eyes on a clinical chemist or being in the least aware of his existence. I think, however, that the inconspicuous nature of the work of the laboratory scientist is one more reason why its ethical implications deserve special inquiry.

That clinical chemists can become involved in issues of medical ethics is illustrated by the following:

(I) The known chemistry of intermediary metabolism has attained such a degree of complexity that it may be difficult for clinicians to keep abreast of the progress in this field. The specialised clinical chemist may be more competent in assessing the risks of a decision, for example, pertaining to a patient with a novel inborn error of metabolism. If the clinician must rely heavily on the advice of the clinical chemist for the treatment of the patient, or for genetic counselling, can one still maintain that the responsibility of the chemist consists only of providing laboratory results and biochemical commentary? Clinical chemists who have become consultants in such delicate decisions usually feel only too clearly the ethical responsibility they must share

Key words

Clinical chemistry; allied health professions; consultant's responsibility; professional ethics; social responsibility; medical ethics; laboratories; laboratory diagnosis.

although the final ethical and, of course, the legal responsibility, clearly rest with the clinician in charge of the patient. Knowing that his advice will be accepted increases the share of responsibility of the clinical chemist. The burden of responsibility may be perceived to be quite heavy if a controversy arises and the clinical chemist feels that he must question the diagnosis or treatment chosen by the physician.

(II) α_1 -fetoprotein determination in amniotic fluid has become a routine procedure of prenatal diagnosis for saving mothers from the fate of giving birth to babies with severe neural tube defects. Yet its introduction has aroused considerable controversy. Some feel that the test should be applied only to mothers at risk who request it, and who also accept the consequent termination of the pregnancy if indicated. Others feel that it should be applied to all pregnant women. In the USA a proposal has been submitted to the Food and Drug Administration that test kits for α_1 -fetoprotein tests should be marketed, which would permit commercial laboratories to screen for the disorder. Some specialists would have reservations about performing the test in commercial laboratories devoid of expertise and facilities for supplementary investigations.

The question is, is it more appropriate for the clinical chemists to participate actively in such disputes, or should they simply carry out the tests and maintain an attitude of *ours is not to reason why*? Similar questions pertaining to the broad issue of population screening have been a subject of discussion in the Society for the Study of Inborn Errors of Metabolism. Clinical chemists who have been active in this field have clearly felt a deep co-responsibility for the implications of these decisions of public health policy (1).

(III) Research aspects are inherent in many cases of patient care and therefore within the range of activities of any clinical chemist. The ethical problems pertaining to experiments on human subjects are, however, most pronounced where clinical research is done. The clinical chemist who performs the laboratory tests may accept various degrees of participation:

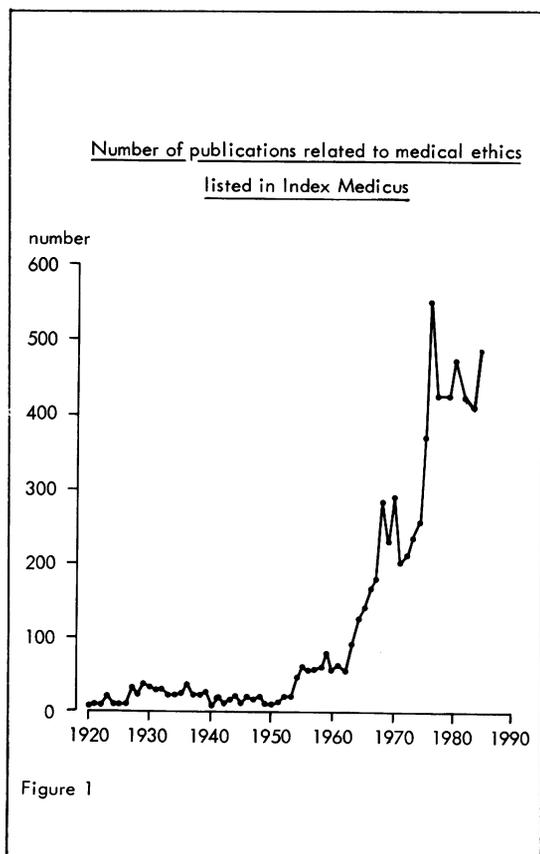
a) he may simply carry out the tests as scheduled in the project, *trusting* that the physicians have ascertained the legal and ethical admissibility.

- b) he may, as a member of the research-team, participate in first examining the *scientific soundness* of the project, which in itself is an ethical requirement.
- c) he may participate in examining the project in terms of risks and benefit from the point of view of *social responsibility*.
- d) he may be at odds with the prevailing utilitarian standards of 'social responsibility' and examine the project by what he honours as *higher ethical standards*.

Various questions arise. Should it be left to the personal inclination and initiative of the clinical chemist at which level he will take responsibility, or should he derive his degree of co-responsibility from universally agreed guidelines for human experimentation and medical ethics? What should a clinical chemist do who feels co-responsibility on a higher level than the physicians in the research team consider appropriate?

Clinical chemistry as a source of dilemmas of medical ethics

We cannot consider here the many facets of the involvement of clinical chemistry in the increasing complexity and perplexities of medical ethics. But we can at least obtain a rough notion of its impact by looking at it from a chronological point of view. Figure 1



illustrates the surge of discussion on problems of medical ethics since the mid-fifties.

It was in the decade following World War II that the modern laboratory of clinical chemistry became an integral part of the hospital. It is difficult to believe that the massive entry of clinical chemistry into health care coincided with the surge of ethical problems only by chance. While other factors are of undoubted relevance the question of whether to resuscitate a severely handicapped dysmature neonate and to prolong his or her pitiable life, and whether to undertake pre-natal detection of hereditary metabolic diseases and pre-planned abortion, would not have become causes of controversy without the scientific achievements and the modern armament of biochemistry and clinical chemistry.

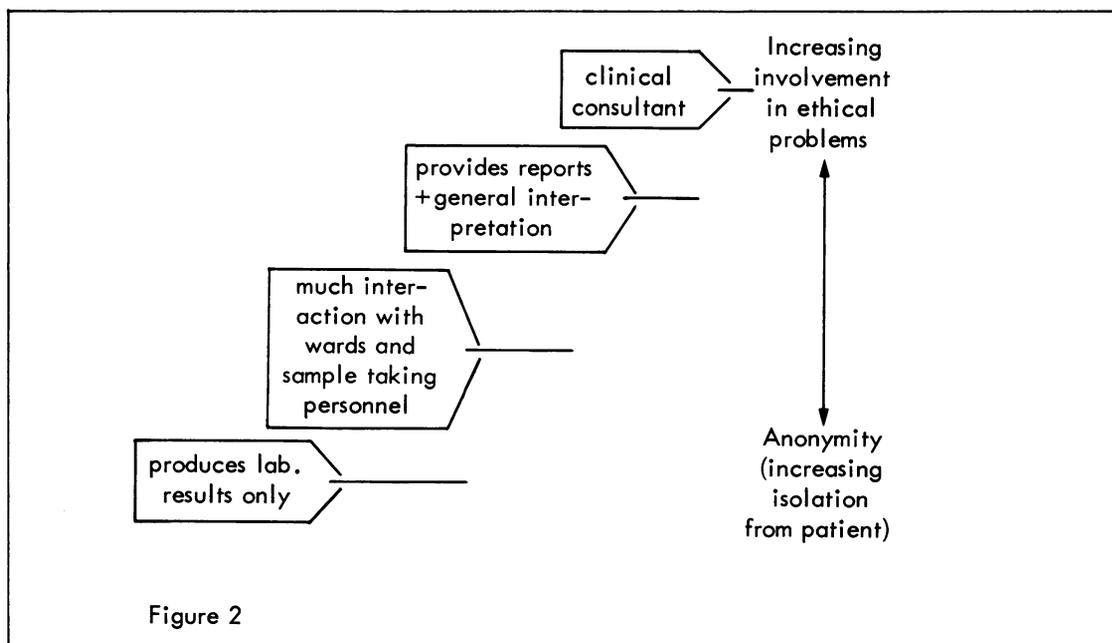
Turning from the role of clinical chemistry to the variety of the individual clinical chemists, we cannot help recognising important differences of responsible involvement. On the one end of the scale is the consultant clinical chemist working side by side with the physician in a clinical setting, on the other end the clinical chemist who runs an independent laboratory and deals only with blood specimens and biochemical measurements. Between these extremes there are various grades of responsible involvement as symbolically shown in figure 2, overleaf.

Power veiled in anonymity

In figure 2 there is also symbolised a grading of *anonymity* of the work. What does anonymity mean? It means first of all that there is no personal relationship between the laboratory specialist and the patient. In this sense also the work of the consultant clinical chemist is with rare exceptions anonymous. But there is a significant difference: the consultant clinical chemist, albeit unknown to the patient, can get more involved in delicate decisions concerning that individual patient than the laboratory specialist who deals only with blood samples and results. Does it then follow that the non-consultant laboratory specialist bears no ethical responsibility except for promptly supplying reliable laboratory results? Perhaps this would be true if the ethical problems of health care issued only from the condition of the patient. In reality modern health care is beset with crucial ethical problems that are inherent in its very structure. The fact that the medical establishment has become a target of exaggerated, partly unfair criticism, which puts on it the whole blame for the 'medicalisation of life', should not blind us to the very real trend towards dehumanisation in organised health care.

Jan Howard described five interdependent processes that contribute to dehumanisation in health care: 1) aggregation of services, 2) bureaucratisation, 3) secularisation of values, 4) professionalisation of skills, and 5) proliferation of technologies. 'Professionalism is a humanising force when it improves the quality of care, but it also has dehumanising consequences' (2).

Who could deny that the clinical chemist has a share



in these processes? The contribution of the laboratory specialist to processes of dehumanisation can easily be discounted as negligible: he only does what all other health professionals and members of the entire technological society do, or at least acquiesce in. That is a second aspect of the anonymity.

Responsibility hidden in anonymity

Some critical investigators of our technological age would take a different view. It is precisely because such contributions to dehumanisation appear anonymous and negligible that these investigators are disturbed. The ethical issues engendered by the impact of technology on society have been dealt with by a number of noted philosophers, including Karl Marx, Henri Bergson, Karl Jaspers and Herbert Marcuse. The aspect of anonymity and of the loss of responsibility has been investigated in particular depth by Hans Jonas and Günther Anders. Hans Jonas, known in the medical world for his classic essays on *Medical Experiments on Human subjects* (3), has in his recent book attempted to work out the ethical imperatives of modern technology in general (4). Günther Anders completed his major work *Die Antiquiertheit des Menschen* three years ago (5). The impetus for Anders's investigations came from two historically crucial events, *Auschwitz* and *Hiroshima and Nagasaki*. Although Anders was well aware of the essential differences between these events they both raised within him the question of how it was possible that the vast numbers of engineers, officials, administrators, soldiers and workers who were involved in preparing and expediting each of these catastrophes, could return to their wives and children undisturbed by an awareness of their complicity and guilt? Anders did not limit his inquiry to the two major

calamities that had been deliberately perpetrated. He became no less alarmed by modern technological man who unwittingly and lightheartedly plays his part in eroding his own freedom and in inconspicuously destroying the humane element in the fabric of society.

It appears that Anders and Jonas, independently, reached the conclusion that three factors were crucial:

- 1) Technology enables man to produce effects that transcend the capacity of his imagination, by just pressing a button.
- 2) There is now a temptation, fostered by adventurous and commercial interests, to realise immediately and exploit every new possibility that has been opened up by science and technology.
- 3) A strict division of work according to professional specialties and functional assignments means everybody is supposed to carry out isolated orders without ascertaining or questioning their ultimate goal.

Proposals for the ethics of clinical chemistry

The lesson we learn from our philosophers is that the attack on humanity can be launched without any devilish design, by the blind dynamics of scientific research, technology and commerce which are ethically uncontrolled. Our first duty is to develop an attitude of informed sensitivity to the humane implications of our decisions. We should always seek an understanding of the totality of the goal for which our co-operation is requested, and not carry out orders in blind trust and blind compliance.

The observations of our philosophers on *man in the maze of technology* certainly deserve our earnest consideration and so do their conclusions. One may, how-

ever, doubt whether their rather general advice can be translated into practical ethical guidelines for clinical chemistry (and other professions). Has philosophical analysis ever stopped processes of dehumanisation? Have Hippocratic oaths and ethical codes any influence on human behaviour unless they are backed by legal enforcement? Clinical chemistry is but one, numerically not very impressive section, of the many specialties of health care. Will a revision of our ethical standards have any effect without a simultaneous revision of the total structure of health care? Can the structure of health care be improved without changing the field of social forces in which it functions? Whoever seeks to cure the ills of any one, single, branch of our highly complex society is likely to encounter such frustrating, seemingly rhetorical questions. One might feel a desperate desire to 'redeem' society by violent revolution, or just to do nothing. I think we should yield to neither of these temptations, but should rather commit ourselves to piecemeal improvement. It is with such unassuming intentions that I have submitted to the International Federation of Clinical Chemistry (IFCC) a number of proposals, of which I mention here the following:

A: Ethical rules for clinical chemistry on two levels

(i) *Practical ethical guidelines* should be worked out at national levels to allow for the great variety of specialists and their status and function in different countries.

(ii) The *fundamental principles*, however, on which the guidelines are to be based, should be agreed on in an *ethical convention of the IFCC* similar to the ethical conventions of other health care professions. This convention should comprise both *disciplinary* and *aspirational* elements (6).

B: Ethical problems should be discussed not only in special books on ethics but also in the context of practical issues of laboratory medicine.

C: Sensitivity in issues of medical ethics should be one of the requirements for the appointment of clinical chemists and their co-workers. Recruitment and promotion policy for clinical chemistry can have a decisive influence on the professional morale in our laboratories. However, a major problem is the criteria we use to select candidates. We have much to learn from the successes and failures of medical schools that have been grappling with similar problems, as witnessed by unending discussions in journals of medical education.

Acknowledgment

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