

Clinicians have ethical codes, should scientists have them too?

Sir Joseph Rotblat, who first championed the call for a moral code of conduct directed at scientists, premised his ideas upon the foundations of the Hippocratic Oath¹. Pertaining to the ethical practice of medicine and taken by graduates of medical school, the oath was designed, in part, to recognise the duty that the doctor has to the patient; to safeguard the autonomy, freedom from discrimination and standard of healthcare that the patient receives. In an age of rapidly progressing scientific development, limited largely only by vision and time, it must be considered that, as the doctor has a duty to his patient perhaps so too does the scientist have an obligation to the scientific community and society as a whole. Moreover, as public mistrust of the scientific world continues to grow, stimulated by incidents such as Wakefield *et al* study into the MMR vaccine, it seems increasingly necessary to formalize a code of conduct aimed at encouraging integrity and good practice whilst at the same time fostering an understanding of ethical and moral awareness^{2,3}. To this end, a form of ethical code could provide a framework, inside of the law, from which scientists would operate within and would also provide guidance and consideration on matters upon which the scientist has an obligation to and an impact upon, direct or indirect. Hereby, issues such as justification and lawfulness of research, scientific objectivity, societal issues, methods of operation and good practice would be brought to the fore. It must however be recognised that the attempt to cognize the world lies fundamental to the core objective of the practicing scientist and to limit this, through the enforcement of rigid codes, would be to undermine the scientific pursuit of knowledge. As such, it is apparent that whilst the implementation of ethical codes would provide a scaffold for moral and good practice, they must be both malleable and flexible, with an element of precision, so as not to either become the limiting factor upon scientific development or become bland and generic.

Within all quarters of the world, the rapid speed and increase in scientific development has been fuelled by vast and constantly evolving research based projects, however currently no international guidelines exist relating to the ethical assessment of such work^{4,5}. Within Britain only a convoluted mixture of Research Ethics Committees (RECS) exist, of which there are two types; local (LRECs) and multicentre committees (MRECs)⁶. To this extent it seems appropriate to formalize a form of code, relating to both principle and behavioral practices, which seeks to offer light upon the justification and lawfulness of research. Whilst there is no doubt that this would aide and clarify the scientist in the evaluation of contentious arguments, of which there are many of late; including stem cell research, human cloning and development of biological and chemical weapons, there is also the case for suggesting that this would offer assistance at governmental level⁷. There are many disparities within various governmental policies, no greater evidenced that within the Bush Administration's severe reluctance to fund stem cell research and thus by creating a code, which would act as a mediating international reference point, there would at least

be some hope of influencing governmental decisions^{8,9}. Moreover the presence of a code relating to principle would be hoped to have the added effect of generating an atmosphere within the working environment wherein scientists would be more prepared, as all colleagues would be working to clear and set standard guideline, to use peer review to monitor their work. This collaborative network would therefore be more likely to identify potent issues, such as was not the case with the teratogenic drug thalidomide which was approved by the FDA, which could possibly result in severe consequences for either the environment or the general population¹⁰.

Given the rise in the number of global challenges threatening the planet it is also apparent that scientific objectivity must not solely be directed upon the expansion and formulation of new breakthroughs but to a certain extent be focused upon addressing issues which relate directly to the welfare of the human population and the state of the environment. To this extent a code also under the framework of ethical principle would attempt to invoke a degree of altruism, perhaps already present but not at the fore, within scientists. Indeed, Sir David King, the Chief Scientific Adviser to the UK Government, has called for a 're-think of priorities in science and technology', highlighting the four billion spent on the Large Hadron Collider as a gross mismanagement of both funding and concern¹¹. Issues such as poverty in Africa, the pandemic of HIV/Aids, the depletion of fossil fuels and global warming are all extremely important matters which must be addressed for the sake of the future of the planet and the human species. Therefore by establishing an atmosphere that encourages the discussion of issues that science raises for society, scientists of all nature, will be in a far better position to actively seek to find solutions to such problems¹².

Due to the fact that the actions of the scientist can have significant implications, it seems imperative that the nature of their work operates in a way which is not harmful, or at least heavily minimised, to the human population, animals or the environment and at the same time, that the scientist acknowledges some degree of responsibility for the consequences of their actions. Primarily this responsibility is twofold; firstly to ensure that subjects involved in research testing are minimised from harm and secondly that the scientist does not actively seek information, such as genetic weaponry, which may have dire consequences for mankind^{13,14}. As such it seems appropriate to implement a code relating to the behavioural practices of scientists that would seek to minimise and justify any adverse effects that research may have on people, animals and the environment. Moreover, given the potent effect that scientists can have on societal attitudes it also seems necessary to relate a behavioural code towards encouraging integrity. The Wakefield *et al* study into the MMR Vaccine, although greatly heightened and misreported by the media, resulted in a dangerous 12% decrease in the numbers of infants, a high-risk category, vaccinated¹⁵. Scientists must therefore acknowledge the possible implications of their work and

more significantly the way in which it may be both perceived and portrayed by the media. This matter is of critical importance, in part due to the largely susceptible nature of the general population and to this date, there have already been calls for scientists to undergo a form of training that would seek to inform on the matter of how to introduce new information to the population¹⁶. To this end, a code relating to the behavioural practices of scientists would attempt to create a working environment within which scientists would feel more comfortable in accurately relaying information to groups such as the media and the population. Moreover, and perhaps more significantly, this issue can be extended to pharmaceutical companies. According to the New Jersey Public Interest Research Group, a number of pharmaceutical companies have concealed negative clinical trial results whilst at the same time the report comments that 'about 62% of the false or misleading ads targeted physicians' ¹⁷. Indeed, pharmaceutical companies often overplay the efficacy of their medications whilst also understating risks and critically this issue has not been addressed by organisations such as the FDA and NICE within America and Britain, respectively. As such it would seem appropriate to formalize a code aimed at fostering integrity within pharmaceutical companies whilst at the same time limiting the scope that is currently available for misrepresentation and false reporting.

It is however important to recognise there are many issues which, at present, are not conducive to the introduction of ethical codes for scientists. In the main it is apparent that the formalisation of such a system of codes, encapsulating principle, ethical and behavioural practices, may act as a limit on the scope for scientific development and progress. It must be appreciated that breakthroughs, such as those involving the use of stem cells and other highly topical matters, may not have been afforded the opportunity if such a system of codes was in place. To this end, if codes are to be introduced they must be both malleable and flexible as to ensure that scientific development, which arguably runs parallel to the future of mankind, is sustained. Furthermore it is also evident that, if introduced, whilst many countries and organisations would be receptive, there would exist a small minority that would simply refuse to comply. In particular, North Korea's Human Rights violations can be identified as to why a small minority of countries would be unwilling to introduce any proposed system of codes into their scientific organisations, whilst similarly the actions of Harold Shipman, supposedly regulated by the GMC, point to the fact that, even if introduced, ethical codes for scientists will not mark a complete turning-point for the ending of all unethical practices. In addition there remains the matter of how to relate ethical codes to scientists working in industries such as tobacco production.

In conclusion, it is apparent that whilst the introduction of ethical codes would certainly not systematically result in the ceasing of all unethical practices, it would have a largely positive influence upon matters such as justification and lawfulness of research, scientific objectivity, societal issues, methods of operation and good practice. Moreover, the formalisation of a system

of codes would also be likely to have the added effect of creating an atmosphere within the working environment wherein qualities such as integrity and honesty would be brought to the fore. As such it seems appropriate to formalise a system of codes, which is perhaps all the more urgently needed given the current rapid progress of scientific development, based on principle, ethical and behavioural practices, for scientists.

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