Correspondence

The NHS and the new scientism

Sir,
Professor Klein’s commentary on the NHS R&D Programme ‘The NHS and new scientism: solution or delusion?’ is expressed in challenging language. The challenge is perhaps more apparent than real, as careful reading reveals. Professor Klein warns us about extravagant claims for science in resolving the problems which confront the NHS. Extravagant claims are, by definition, unjustified and it would be difficult to avoid his criticisms of medical scientists who are ‘… occasionally carried away by their sense of mission.’ Curiously, this statement however is followed by the comment that ‘… like all good scientists, they are also careful to stress that scientific knowledge can only be one input in decision-making in the NHS.’ Few would wish to argue with this latter statement. Lack of any quotable evidence in favour of the former suggests more than a little perhaps that some of the objects being tilted at are windmills. The clinical examples subsequently cited however and the conclusions derived from them are unlikely to help in defining the boundaries of scientific knowledge in the evolution of the National Health Service (NHS). As Sir Michael Peckham’s newly appointed successor, I would like to clarify my perspective on what is not a particularly difficult problem in the relationship between uncertainties in science, uncertainties in decision making and the role of ‘clinical judgment’ to which Professor Klein repeatedly refers.

The danger of introducing an unfamiliar word in the description an important phenomenon is that it will enter common parlance before its implications have been thought through. This is particularly the case when the word ends in an ‘ism’ with all the consequent undertones of weltanschaung and religion. Such language is never an attractive proposition for doctors and scientists who tend to be professional pragmatists.

‘Scientism’ denotes a belief that valid knowledge of human beings is only obtained by the classic inductive methods of science; it is opposed to the belief that intuitive processes also contribute to understanding. Whilst few clinicians would denigrate the role of a sympathetic understanding of the individual patient and his predicament, decision-making in the NHS would seem to demand rather more than introspection or intuition.

Professor Klein risks further confusion by his failure adequately to distinguish two qualitatively different forms of residual uncertainty which confront both clinicians and managers despite the rapidly growing body of scientific knowledge. Failure to understand the nature of these uncertainties inevitably leads to misunderstanding of the role of scientific research in the NHS. The two examples cited by Professor Klein illustrate this as well as can be wished.

A recent review, which recommended that children with acute otitis media could be treated with antibiotics also indicated that only one out of seven such children would benefit. The present state of clinical science cannot predict which patient will respond in a clinical condition which is clearly heterogeneous. Because of this, Professor Klein concludes that ‘… scientific evidence has to be interpreted by clinicians.’ What most observers would have regarded as a cliché is treated as a discovery of relevance to the development of protocols for patient management. The major conclusion would rather appear to be that there is a need for critical appraisal skills by clinicians in a contentious field—something which the NHS programme takes extremely seriously. Suggestions that a claim has been made that scientific analysis will somehow replace the need for clinical assessment of the individual patient would seem to constitute a particularly fragile windmill on the landscape.

This example serves to illustrate very well the first form of uncertainty which confronts any health service. Rarely in the common multifactorial diseases can precise outcome of a specific intervention be predicted with an absolute certainty. The disease phenotype reflects a complex interaction of genetic predisposition and environmental influence. Many patients with acute otitis media or for that matter mild hypertension or type II diabetes may be treated and will gain nothing. A group of patients has to be treated to provide benefits for the minority within that group. Most conditions with which doctors deal are, as Professor Klein says ‘heterogeneous’. Neither
that rather intangible quality ‘clinical judgment’ nor rigorous laboratory analyses will enable us at present to identify the specific individuals within a larger treated group who will benefit from a particular treatment. This is not to say that ignorance will always remain at this level. Molecular genetics carries the promise of defining the heterogeneity of disease much more closely.\(^4\) This has already occurred in rarer forms of diabetes and hypertension and inevitably the process will continue as a natural development of previous decades of scientific and clinical research which have identified hypertensive and diabetic individuals as high risk groups in the general population. Laboratory science is from this perspective a further natural development in disease characterization.

This example helps us to recognize one form of uncertainty which remains despite major scientific advances; that is, the uncertainty attributable to persisting shortcomings in our understanding of disease. This is unlikely to be wholly resolved but the evolution of knowledge will help us to define risk and therefore treatment and potential benefit much more precisely, so that perhaps only three children with otitis media rather seven, or five rather than ten hypertensive patients require treatment. It will be observed when Professor Klein’s example is taken further in this way that judgment by the clinician confronting the individual case assumes even greater importance in the assimilation of a complex system of clinical and laboratory evidence.

The other example cited by Professor Klein underlines a second form of uncertainty confronting society and its surrogates in decision-making. There is, we are told, a division of opinion between health authorities on whether to fund in vitro fertilization. There is excellent scientific evidence in favour of the effectiveness of this procedure; the source of debate is whether IVF is a justified call upon NHS funds. Research data could still of course illuminate this decision—for instance, by identifying more closely the factors which lead to success and therefore limit wastage of resources upon ‘failures’. Nevertheless, this clearly could not resolve a debate which entails a judgment about what is appropriate for the NHS to provide. The same argument could be applied to all forms of NHS activity. The final decision about whether to carry out a procedure or not is a judgment of value. This should be informed by scientific evidence but cannot be made by the inductive method alone. I have elsewhere\(^5,6\) used the example of hypertension treatment to illustrate the sophisticated nature of this judgment in the face of a demonstrable spectrum of benefit, which extends at one extreme from net financial returns to society as a result of treating high-risk individuals to an opposite extreme where mass treatment of the mildest forms of hypertension produces individual benefit at exorbitant cost to society. Within this range, a judgment has to be made which ultimately reflects society’s values. Scientific research can illuminate but cannot make such a decision. An ‘ought’ cannot be derived from an ‘is’.

It is no coincidence, perhaps, that the issue of the QJM which concluded with Professor Klein’s article began with a plea for more relevant clinical trial evidence on the indications for beta interferon treatment of multiple sclerosis in the face of massive cost to the NHS.\(^7\) But even when such major scientific uncertainties are resolved, society is still confronted with fundamental questions of value in deciding what is a worthwhile investment. Science clarifies but does not resolve the debate. Professor Klein clearly accepts this but then obscures fundamental issues with an irrelevant attack upon the myth of ‘scientism’.

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References


Sir,

I am delighted to have drawn fire from Professor Swales, since this allows me to clarify my argument. I obviously failed to make myself clear in one crucial respect. In exploring the limits of the new scientism (a term about which I remain unapologetic) it is important to distinguish between: (i) the contribution of scientific knowledge to the way in which the medical profession collectively and individual clinicians define ‘good practice’; (ii) the use of scientific knowledge in policy-making and purchasing, in the NHS.

My reservations about the new scientism focus entirely on (ii). The purpose of my paper was to draw attention to the limited scope for using scientific evidence to shape purchasing and to control medical