Commentary

Is medical research in danger of suffering the same fate as the NHS?

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In 1998, I had the great pleasure of being invited to join 29 other authors in a book which was to celebrate 50 years of the National Health Service (NHS). The title of my chapter was ‘The NHS and Medical Research: Uncertainty and Excitement’.

Having always been a great admirer of the NHS, which I still think was one of the greatest social experiments ever carried out in this or indeed in any other country, I naturally discussed its extraordinary potential for being involved in research directed at better patient care. However, having lived through its constant governmental reorganisation and, in particular, the way in which Kenneth Clarke bulldozed his unsuccessful purchaser/provider split in 1989, I had to point out that due to the government’s endless meddling with the NHS and its so-called reforms, both medical research and education had continually suffered as, even more importantly, had patient care. Although the theme of the deleterious effects on the NHS of endless governmental intervention appeared many times in this book these criticisms seem to have had little effect. Indeed, the constant interference and reorganisation of every aspect of the NHS by the present government has led to a situation of near chaos, and to genuine doubts about its future survival.

As readers of The Lancet will be aware the unstable state of the NHS is now being accompanied by a major attack on the current organisation and practice of medical research.

The background to this series of critical editorials and papers, which recommend a complete reorganisation of every aspect of medical research, was an article published in 2009 which claimed that about 85% of research investment is wasted. The first of these recent articles opens with a discussion of the relative investment in basic and applied medical research and comes to the conclusion that, although basic research is a principle beneficiary of research funding, there is little evidence for its value in the improvement of health care. The evidence that is presented for this conclusion consists of an inevitable attack on the article written by the American scientists Comroe and Dripps in 1976, who claimed that over 60% of all major advances in clinical care were the result of basic research, an observation that has been questioned many times over the years. The other evidence about the limited value of basic medical research quotes a review of 25 000 reports published in six leading science journals between 1979 and 1983; 101 of these articles suggested that new discoveries were likely to have clinical potential and yet, by 2001, only one had led to the development of a useful clinical intervention.

After offering a few examples of the clinical value of basic research, or what is now called ‘translational’ research, the remainder of this article and the four articles which follow it provide some thoughtful material for discussion of a wide range of issues involving the current medical research scene.

There are, however, some potential pitfalls in the numerous suggestions for improvements that accompany these articles. Funding, publication and regulation of medical research has already moved into a period of increasing and sometimes numbing bureaucracy. It would be very unfortunate...
if this tendency was magnified further by the too-

hasty application of some of these reforms. Current

medical research deals increasingly with complex

biological problems for which the translational out-

come is bound to be uncertain. Bodies that control

the funding and publication of this work should not

forget that to encourage genuine originality at least

some risks have to be taken. The increasing habit of

some journals to turn down papers based on in-

house decisions without peer review is particularly

worrying in this respect, as is the increasingly

frequent requirement for lengthy and premature pro-

gress reports by some funding bodies. In a recent

editorial in *Science* the Editor reports that, because

of the increasing statistical complexity of most of the

papers that they receive, as well as their current

in-house committee for assessing whether a paper

is worthy of peer review, they are now establishing

another in-house committee to vet the statistics of

each article. Clearly, the delicate balance between

in-house and expert peer review will require careful

and prolonged assessment.\(^\text{10}\)

There are also broader issues. For example, the

increasingly unstable relationship between medical

academia and the pressures of Big Pharma is leading

to major problems in the design and funding of clin-

ical trials and, in particular, the dissemination of

their results. And the ever increasing obsession by

the press to report the latest medical breakthrough, a

significant proportion of which end as a medical

breakdown, is generating both confusion and

doubts about the true value of research among the

public. These, and many of the issues raised by the

recent *Lancet* papers, require time and well in-

formed debate, if medical research is not to go the

way of the NHS.

The recent attacks on the role of basic medical

research are not surprising however. After the com-

pletion of the human genome project, there was

wide speculation that the fruits of this remarkable

achievement would completely change medical

practice within the next 20 years and that many of

our common killers would come under control. It is

already quite clear that many of these predictions

were premature and over-optimistic. The genome

project disclosed that we have far fewer genes

than was previously thought and that we share

them with most living organisms. Hence, we are

what we are due to the existence of a highly

complex series of regulatory systems which will

only be understood by the complicated approaches

of systems biology or, as suggested by Sydney

Brenner,\(^\text{11}\) a major focus on how the activities

of individual cells are regulated. Another problem

that has arisen in the post-genome era is that the

huge genome-wide association studies (GWAS) to

search for the genetic component of common
diseases have, so far, led to a limited number of

major discoveries of direct clinical relevance. One

of the problems with these expensive studies is that

because of the thousands of patients involved it has

not always been possible accurately to define the

particular phenotypes of their illnesses or even

whether they have the same illness. Particularly

with respect to disorders like cardiovascular disease,
diabetes, psychiatric disease and dementia, broadly

similar phenotypes may reflect a heterogeneous

series of different interactions between the environ-

ment and the genome. As a prelude to genomic

studies in the future a more detailed definition of

the clinical phenotypes of these disorders will be

vital. To this end, there will have to be much

closer cooperation between clinicians and basic

scientists in these endeavours, particularly with

respect to the identification of unusual phenotypes

which has been so valuable in the defining genes

for monogenic (Mendelian) diseases.\(^\text{12,13}\)

However, a review of the literature relating to cancer and

communicable disease, and particularly Mendelian

disorders,\(^\text{12,13}\) leaves little doubt that there has

been genuine progress in recent basic medical

research and it would be wrong to make a major

cut in funding of this work for greater support for

applied, or translational, research. Surely the

increased use of the word ‘translational’ intimates

that we must have some basic information about

what to translate.

There is no doubt therefore that the current prob-

lems of the NHS and the recent attacks on the

different aspects of medical research are related in

some ways. In particular, the constant *ad hoc*

meddling by successive governments on the way the

NHS is run has precluded the use of well-designed

pilot studies of applied clinical research on many

different aspects of clinical care, both in the hospital

and community.

The endless reorganisations of the NHS, and

particularly those of the present government, are

also having a deleterious effect on both undergradu-

ate and postgraduate medical education. Some of

the rigid requirements that are being made of

young doctors are not only reducing their effective-

ness for clinical care but are also inhibiting the

periods of training required for those who wish to

work in one or other area of medical research. The

increasing pressure on General Practitioners to deal

with the financial aspects of the NHS is directing

much of their time away from clinical care and
applied research directed at better care in the community and in the management of the elderly. For the last 10 years, I have been the sole external representative on the annual review board for Harvard Medical School. One of the great pleasures of this activity has been to take breakfast each morning with the medical students and to learn from the bottom exactly how medical education at this great institution is approached. At my last meeting, the students told me that a high proportion of them are now doing degrees in business management at Harvard Business School at the same time as their medical course. When asked why the reply was unanimous; ‘because you cannot practice medicine in the USA without a degree in business management’. Is this really the way we want to go in the UK with our training of doctors of the future! The present government’s increasing pressure on general practitioners to deal with the finances of the NHS and its ever increasing moves to privatisation suggests that we are already moving in this direction.

There is no doubt that the constant meddling with the NHS has resulted in the loss of an opportunity to combine better patient care with applied medical research. Nobody would disagree with the fact that medical practice is an ever-changing activity which does require reorganisation from time to time. But if these decisions had been made by a body separate from government and with the appropriate expertise, it would have been possible to carry out smaller pilot studies on different centres in the UK to assess in advance the value of these changes. As is clear from the present situation these changes have been made more or less off the cuff by politicians with a very limited background in any form of healthcare or scientific training and the result is the current chaos which characterizes the NHS.

The central question therefore is whether the activities of recent governments, and particularly the present one, have rendered the future of the NHS, at least as it was perceived by its founders, no longer tenable. In 1998, the medical historian Charles Webster wrote a book titled The National Health Service: A Political History. In the last two chapters, entitled Continuous Revolution and Conclusions, he summarized the way in which the NHS has managed to survive the combination of relative under funding and endless attempts to improve its function by tampering with its structure. Because he concluded that it could not continue in this fashion he made an alternative suggestion for its future management. In short, he wrote that it might be a positive step forward if New Labour were to establish an independent Commission based on the principles underlying bodies like the Audit Commission and the Law Commission which might conduct a continuous review of the issues faced by the health service. The Commission would be run by its own expert staff and draw freely on outside advice in whatever field it was reviewing. Webster also suggested that the Commission should be in a position to instigate experimental testing of new care protocols and policies thus ensuring that they were of genuine value to the further development of the NHS.

I have mixed memories of the reception to a lecture that I gave at the King’s Fund at about the same time as Webster’s suggestions during which I also underlined the virtue of a health service run by a body outside the government with genuine scientific expertise as well as a strong representation from users of the NHS. I also suggested that, given its previous successes, the general public might find a form of taxation related specifically to the work at the NHS quite acceptable. Needless to say I was laughed off the platform by the politicians in the audience and was not invited back to the King’s Fund! But, as judged by the activities of the present government, it is doubtful that the NHS can continue to provide the services to its patients that were envisaged by its remarkable founders; equally deleterious effects are almost certainly to follow for the fields of medical education and in many aspects of clinical research.

In summary, the NHS seems to have reached a stage of low morale and future uncertainties resulting from constant interference by ill-informed governments. Almost since it was created it has, for this reason, continuously missed the opportunity to carry out carefully designed pilot studies among its different hospitals and practices towards the provision of better healthcare. It would be a tragedy if the NHS were to collapse completely but this is looking almost inevitable unless its administration is taken away from the day to day whims of ambitious politicians.

The recent attack on the state of medical research has raised a number of organisational issues which, if given time, should be soluble by the research community. Considering the extreme complexity of the biology of human beings, particularly those that are sick, it is not surprising that it is taking a long time for some of the major advances in the basic medical sciences to become applicable to disease control. Provided that a sensible balance between basic and applied medical research is maintained there is every likelihood that many of these problems will be solved. The term ‘translational
research’, suggesting as it does that in the past much of medical research was carried out for curiosity without thought to its potential medical value, seems rather inappropriate; many of the great advances in medicine reflect a continuum between basic and applied research. Those who doubt this should read an account of how penicillin was developed in Oxford at the beginning of World War 2. The basis for many of the recent criticisms of medical research appear to be founded on the observation that a high proportion of money spent on medical research is wasted. But surely a certain amount of wasted effort is inevitable, even in well-designed research, when studying the extreme biological complexities of ill people.

One of the major reasons for the clinical difficulties that are being encountered by the NHS in this country, and in most countries, is the rapid rise in the cost of healthcare due to the remarkable increase in the numbers of old people in their populations. How did this extraordinary increase in the aged occur? In part, it may reflect improvements in social conditions but if it was not also the result of medical research carried out over the years how did it happen? Perhaps it was some form of divine intervention. I leave my readers to ponder on this fundamental question!

Acknowledgements

I thank E. Rose for her help in preparing this essay.

Funding

The author’s research is supported by The Wellcome Trust, Medical Research Council and the Anthony Cerami and Ann Dunne Foundation for World Health.

Conflict of Interest: None declared.

References