



Continued from the front cover.

Clearly the status quo, excellent though it was in many respects, was sub-optimum in the rapidly evolving world of the 21st century. Public health protection is now being increasingly driven by international events such as SARS, international terrorism and global travel (75 million people entered the UK from abroad in 2002). We work increasingly closely with bodies such as the WHO and the EU and there have been requests for help on public health issues from across the world including Greece, relating to training and expertise for the 2004 Olympics, China (especially Hong Kong), South Africa and Saudi Arabia. Nevertheless although the backcloth is global, our main focus for delivering improvements must be here in the UK. We must harness the commonality of approaches to dangers, whether these are chemical, biological, radiological or nuclear.

The HPA has concentrated initially on getting set up whilst ensuring continued high-quality public health protection. The next step is to work with others outside of the HPA to shape the way forward. That includes, in addition to the DH, other government departments and agencies, professional groups, the private sector, the public and especially the universities.

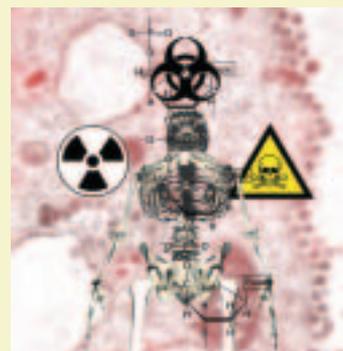
Opportunities for collaboration between the universities and the HPA could be particularly useful in R&D and in training. With respect to R&D we share a common feature. In the universities the focus, largely, is on teaching and training. In the HPA the priority, rightly, is on service provision. But there has to be a strong and vibrant underpinning research base across both our sectors. The universities have a plethora of talent, skills and expertise highly relevant to modern health protection. They also have the advantage that they can be supported by the medical charities. The HPA has a bountiful supply of skills, expertise and information in the regions as well as in its central laboratories. Its research, knowledge and information base on public health issues make it unique. It also has facilities such as high containment labs and an ability to deal with radiation incidents, for example, which cannot be readily replicated elsewhere.

Scope for hybrid vigor between the HPA and the universities is vast; I envisage the prospect of having more of our specialist resources and staff located in, or allied with, the universities - so long as it is of increased benefit to public health protection in the medium and long terms, as well as in the short-term. We must build for the future and create a health protection system which befits and is flexible enough to accommodate the needs of a decade hence. However, let us not be over prescriptive about how that could best be done at this stage. It is a huge and important issue which demands a well considered approach, and sound judgment and evaluation.



Sir William Stewart, FRS

With respect to training, much needs to be done right across the spectrum from general education of the public to specialist health care professionals. It was difficult enough in the area of infectious diseases alone, as emphasised in the excellent House of Lords report 'Fighting Infection', but now chemicals and radiation are superimposed on infectious diseases. The world is rapidly changing. Quite simply, we must seek to ensure that through training and research better public health protection pervades the system and becomes ingrained as a component of the general education of the people of this country, including professional groups. That is a daunting challenge. However, with modern technology, the ongoing commitment of the Royal Colleges and other professional bodies and hopefully increasingly by the higher education sector and the charities, the question of public health protection will be given the necessary impetus and support it deserves. Training is, and will remain, a key component of the portfolio of the HPA and we look forward with others to actioning how this can best be achieved and implemented. ■



Montage by **Aaron Stanley**  
See back cover for details.



**Paul Elliott, FMedSci**  
 Professor of Epidemiology and Public Health and Head of the Division of Primary Care and Population Health Sciences, Imperial College London.

## The Health Protection Agency - Professor Paul Elliott's response

In his article, Sir William sets out his vision for the Health Protection Agency (HPA) in the new century, for the protection of public health from both communicable and non-communicable diseases. These threats include bioterrorism, the emergence of new and virulent pathogens, as well as health effects related to the physical and chemical environment. The HPA brings together into one organisational structure previously autonomous groups working on various aspects of public health protection; Sir William makes a strong case that combining these under one roof will result in more integrated strategic thinking and an improved scientific response. For example, it may be unclear at the early stages of an outbreak investigation whether the causative agent is due to an infectious agent or some environmental contaminant (Spanish Toxic Oil syndrome would be an obvious example).

Recent experience with HIV-AIDS, BSE, Foot and Mouth and the SARS epidemic has highlighted the need for multi-disciplinary working, from advances in basic science through to mathematical modeling and population-based epidemiological research. A continuing need for vigilance against new and emerging infections is inevitable as a consequence of the continued growth in international travel, the increase in the world's population and its concentration in large urban cities and conurbations, as well as the threat of bioterrorism. As Sir William argues, the HPA will need to work in close partnership with the universities to bring together the necessary scientific expertise across disciplines, and to provide the necessary training. For example, measures to control the Foot and Mouth epidemic were informed by results of mathematical models developed at Imperial College London, and the Universities of Cambridge and Edinburgh. The Imperial College group led by Professor Roy Anderson also reported the first full analysis of the spread and control of SARS, while Professor Brian Spratt's group at Imperial, along with Dr Martin Maiden and colleagues in Oxford, are applying sequence-based methods for the unambiguous characterisation of pathogens to inform molecular epidemiological studies. In addition, it will be vital to continue to develop vaccines to protect human health against the major infectious diseases, building for example on the work on vaccine development and immune response to pathogens carried out by Professor Adrian Hill, Professor Andrew McMichael and colleagues in Oxford.

With regard to non-communicable disease, public concerns have increasingly centred on possible health effects of low-levels of chemicals or radiation (ionising and non-ionising) in the environment. Work on various aspects of this problem is underway in a number of institutions. For example, at Imperial College through the work of the UK Small Area Health Statistics Unit we have been developing methods for assessing the spatial distribution of disease with respect to sources of environmental pollution. Professor Simon Wessely at the Institute of Psychiatry (King's College, London) leads a large research programme investigating the possible long-term health effects among military personnel associated with service in the Persian Gulf War of 1991, and the recent conflict in Iraq; while Professor Ross Anderson, Professor David Strachan and colleagues at St George's Hospital Medical School in London are carrying out an extensive programme of research on the health effects of exposure to ambient air pollution.

The investigation of environmental or other exposures on the health of individuals over the long term is best undertaken through carefully designed longitudinal (or cohort) epidemiological studies. We are fortunate that in the UK we have a long tradition of carrying out such research, from the pioneering work of Sir Richard Doll and Sir Bradford Hill (and latterly Sir Richard Peto and colleagues in Oxford) on the health of British doctors in relation to smoking and alcohol drinking, to the UK arms of the EPIC study of diet and cancer, based in Oxford and Cambridge. Two such cohort studies deserve particular mention here. The ALSPAC study (Avon Longitudinal Study of Parents and Children) under the leadership of Professor Jean Golding in Bristol has assembled a unique set of environmental, lifestyle, genetic and health information on children (and their parents) since pregnancy; while the UK Biobank is a study of genes, environment and health among 500,000 men and women ages 45-69, coordinated through the University of Manchester and involving six regional consortia of universities across the country. We can anticipate that over the next 10-20+ years, these studies will provide unprecedented data on health risks associated with environmental and genetic exposures that will both inform risk assessment and hopefully lead to new treatments and preventive strategies. ■

## The Health Protection Agency: a response.

**Klim McPherson, FMedSci**

The current emphasis in public health is to partition itself into three domains: health protection, health improvement and health services. The remit of the Health Protection Agency is to protect people and communities from 'involuntary hazards' such as infectious disease, chemical contamination and radiation. Health improvement is concerned largely with lifestyle issues and their effects on health. Both, of course, are concerned with housing, employment and health inequalities of various kinds. Both unambiguously emphasise health, and thus the timely and efficient avoidance of ill health.

The radical beginning to the changes outlined in Sir William Stewart's introduction to the new Health Protection Agency was the Chief Medical Officer's report 'Getting Ahead of the Curve', in which it was argued that new infrastructures for health protection would be required to deal with the possibility of new threats. The distinction between health service responsibility for health protection and core agencies such as the Public Health Laboratory Service, the National Radiological Protection Board, and Microbiological Research Authority was too blurred and the actual business of effective health protection thus endangered. Since the nature of the potential hazard was clearly changing, so the infrastructure needed to be better able to deal with a broader and shifting remit.

After much consultation the HPA was born as a united organisation with a single and focussed responsibility. As Sir William tells us it is but seven months old and too early to tell whether the massive changes required will achieve the unity of purpose among the 3000 staff. Even when integration is achieved, the 'live' tests will have to wait for the next new serious hazard. But the responsibility and the structures being forged for the purpose are now unambiguous and we are grateful to Sir William for a clear and interesting account.

Largely the structures will aim to provide information, expertise, advice and training on all aspects of health protection and to commission and carry out research. There are exciting prospects for establishing a renewed commitment to excellent science to deal with a burgeoning and increasingly complex threat to population health. The main 'customers' of the HPA will be the NHS, local and central government but also the public.

Adequately meeting these responsibilities will depend to a major extent on the information flows from the HPA. This is difficult to get right and hopefully ideas of 'protecting' the public (and academic scientists) from information that can be alarming will be carefully monitored by independent experts with an ear to public and scientific concerns.

If the developments predicted from the next Wanless review of public health in the UK (January 2004) are anything like correct we will have to think more seriously of a real scientific engagement with the 'Fully Engaged Scenario' for health, in which the clear aim is a dramatic improvement in the public's engagement, driven by a widespread access to information. In my view this is an essential requirement for the health of the public of our time.

The alternative is alienation from institutional health protection, and indeed health improvement, where everything is seen as coming from experts, for whom general expectations of legitimate trust have long since evaporated. That trust has to be earned and nowadays that requires all appropriate information about hazards and about sensible means of dealing with them. The methods of information dissemination need careful thought. The good intentions described by Sir William are necessarily, as with all new technical population health agencies, vulnerable to paternalistic attitudes within the HPA, which must be specifically and sensibly addressed. Excellent science can be seriously attenuated if seen as gratuitous and serving other interests other than the protection of the public - a very difficult balance to achieve in contemporary Britain. This is emphasised by real scientific uncertainties, where differing professional or political agendas can too easily dominate strategy and forge division between experts and customers. Early and clear practical demonstration of intent would be essential as well as the written word. The meaning, and the importance, of the precautionary principle in the particular health protection contexts will require explicit expression.

I fully share Sir William's excitement with opportunities to get at least one domain of public health right with respect to the crucial balance between responsibility, scientific endeavour and public engagement with health protection. I wonder though how much longer it might be before the much greater predictable disease burden amenable to diligent and sensible health improvement is provided with the same opportunities. They will be different and more complex - since they might require the more active participation of communities. ■



**Klim McPherson**  
Visiting Professor in Public  
Health Epidemiology  
Nuffield Dept of Obstetrics and  
Gynaecology  
Oxford University

## Strengthening Clinical Research

The UK was once a world-leader in clinical research, with an international reputation for excellence. However, decades of decline have undermined the infrastructure on which successful clinical research is based, bringing it to its present parlous state. Current NHS R&D spend on scientific projects is about £70 million - far short of the hundreds of millions recommended by the House of Lords Science and Technology Select Committee a decade ago.

Yet the importance of clinical research has never been clearer. And the benefits it can deliver have never been greater. Clinical research offers opportunities to translate the staggering progress made in cellular and molecular biology over the last twenty years into tangible benefits for patients. The speed of advances in our understanding of the fundamental mechanisms of disease have contributed to the current gap between discoveries in basic medical science and innovative treatments and diagnostics that directly advantage patients.

The NHS, UK science, the pharmaceutical and biotechnology industries and the UK economy and above all, patients would all stand to gain from a more vigorous clinical research base.

The task of revitalising clinical research is not an impossible one - far from it. The NHS is a resource without equal anywhere in the world. As the world's largest single healthcare provider and third largest employer, after Wal-Mart and the Chinese People's Liberation army, the NHS offers fertile ground for clinical research.

The Academy of Medical Sciences convened a working group, led by Professor John Bell, to address the issues and in October 2003 the working group's report was published - 'Strengthening Clinical Research'.

It addresses two areas: experimental medicine and clinical trials, which were identified as being crucial to revitalising clinical research in the UK. Experimental medicine describes clinical investigation directed at establishing 'proof-of-concept' - that is to say, testing the validity and importance of new discoveries or new forms of treatment using patients or healthy volunteers. Clinical trials refer to the large-scale or 'mega' trials of new forms of healthcare intervention, essential in order establish their real costs and benefits.

But what solution did the Academy report offer? A National Network for Clinical Research that



would emulate the successes of NTRAC and NCRN by setting up research networks to cover the seven major causes of morbidity and mortality in the UK. This, in conjunction with new government money, ring-fenced for programmatic clinical research, for the MRC, would guarantee the future of UK clinical research.

This proposal does not carry a prohibitive cost. Even without factoring in the potentially enormous savings that improved clinical research could be expected to deliver through healthcare, the costs associated with the changes needed to secure a step-change in the quality of UK clinical research are relatively modest.

However, research networks and money alone are not sufficient to re-establish the tradition of clinical research in the UK. A new paradigm for clinical research, distinct from previous eras, must be formulated. Clinical research must evolve. A host of novel technologies, from genomics to imaging, now offer fresh tools that can be brought to bear in the clinical research setting.

And who better to grasp these opportunities than a new generation of clinical academics? By focusing on their training and career structure the 'Strengthening Clinical Research' report seeks to ensure clinical research is embedded in the NHS for years to come.

For such an ambition to succeed the concerted efforts of all major stakeholders will be required. The DH, the DTI, the NHS, the MRC, the pharmaceutical and biotechnology industries and the major medical research charities all have their parts to play. Of course the informed support of both patients and the general public is also key to the success of this project.

As momentum grows in the corridors of government, university cloisters, on NHS wards and industry boardrooms the opportunity to translate advances in basic medical science into benefits for patients through clinical research has never been more prominent. ■

# Editorial

by Sir Alexander Macara, FMedSci

As we prepare to put this issue to bed, dire intimations of terrorist plots conspire to disturb sound slumber. It is some small comfort to know that governments throughout the world are taking 'serious health threats' seriously, whatever their cause.

Historically, the stimulus to the prevention of disease at every level of civilised society has been the epidemics of communicable diseases against which strict quarantine - a word originally denoting forty days, and a procedure applied in ignorance of their infectious nature - commanded some success in limiting the spread of diseases such as plague and smallpox.

By the late 1970s, less than a century after Koch and Pasteur, international collaboration armed with vaccination and immunisation and reinforced by antibiotics, seemed to have marginalized communicable diseases in the more developed countries and to be well on the road to wholesale global eradication. But suddenly and shockingly, a succession of new and more virulent pathogens emerged, ranging from HIV/AIDS to BSE/CJD to SARS just as the failure of control measures and increasing resistance to antibiotics reasserted the menace of traditional killers such as malaria and tuberculosis. Contemporaneously, Chernobyl signaled the catastrophic effects of the accidental explosive release of clouds of ionising radiation, and a series of disasters caused by the emission of toxic chemicals from industrial and agricultural processes or by accidents during transit have underlined the imperative of preventative measures.

Terrorism, whether through violence or biological, physical or chemical agents, has added a wholly new and alarming dimension to this litany of concern. Accidental or incidental hazards are finite: the deliberate and targeted exploitation of lethal agents of disease are infinite.

We are conscious of the 'global backcloth' to which Sir William refers, and in particular to the Commission of the European Communities urgent proposal to establish a European Centre for Disease Prevention and Control to which Sir William and his colleagues and many other Fellows will have contributions to make.

Professor McPherson rightly emphasises the importance of information, which is the function of this newsletter. We would welcome the views of Fellows on the issues raised by health protection - issues of organisation, education and training, research needs, information and delivery - or any other contemporary concern. ■

Please e-mail responses to [apollo@acmedsci.ac.uk](mailto:apollo@acmedsci.ac.uk).



#### Image

From left: Dr Ralph Kohn (Honorary Fellow) and Sir Keith Peters (President)



#### Image

Sir John Skehel (Vice-President Non-clinical)

## Annual meeting and dinner

The Academy held its AGM, Annual Meeting and dinner at St. Bartholomew's hospital on 20 November. The highlight of the event was the admission of Honorary Fellows Sir Roger Gibbs, Dr Ralph Kohn and Sir John Sulston. Sir John Skehel delivered the keynote lecture on 'Influenza Surveillance'. This year's debate topic: 'SARS: are we prepared?' was led by Professor Tony Minson, Professor Stuart Siddell and Dr Maria Zambon. Dinner in the Great Hall completed an enjoyable day for Fellows and Guests. ■

### Images (from top right)

1. From left: Dr Ralph Kohn and Sir Roger Gibbs
2. Dr Maria Zambon
3. Sir John Skehel
4. Professor Stuart Siddell
5. Professor Tony Minson
6. Academy dinner at St. Bart's Great Hall



# Academy News

## COUNCIL CONSULTATION

On 1-2 October Council held an 'off-site' meeting to consider the Academy's future strategic plan. A copy of the meeting report may be obtained from the Academy office.

One of the key recommendations was that the Academy must take active steps to involve the Fellows in the affairs of the organisation. To this end, we propose to hold a Fellows' meeting in 2004 to consider the question '*Does Academy business reflect your concerns and needs; if not, what suggestions do you have to ensure that it does?*' By way of preparation for this meeting we would be grateful to receive comments and topics for discussion. Please e-mail them to [apollo@acmedsci.ac.uk](mailto:apollo@acmedsci.ac.uk) Details about the meeting will be circulated in the New Year.

**Mary Manning**

## COUNCIL

Vice-President (Clinical): Lord Turnberg has kindly agreed to remain in office for a further year.

The Academy would like to thank the following Council members who are retiring this year: Professor Al Aynsley-Green, Professor Michael Besser, Professor Richard Frackowiak, Sir David Goldberg, Professor Christopher Higgins and Professor John Pickard.

The Academy would like to congratulate the following Fellows on election to Council: Professor Andrew Bradley, Dr Doreen Cantrell, Professor George Griffin, Professor Eve Johnstone, Professor Mark Pepys and Professor John Tooke

Co-opted members of the Council for the next year include: Professor John Bell, Professor Roger Jones, Professor Lance Lanyon and Professor Peter Rigby.

## AWARDS AND PRIZES

Academy Fellow **Sir Peter Mansfield** received the 2003 **Nobel Prize** in Physiology or Medicine, jointly with Professor Paul Lauterbur, for their discoveries concerning magnetic resonance imaging.

**Sir Ravinder Maini** and **Professor Marc Feldmann**, both Academy Fellows, jointly received the **Albert Lasker Award for Clinical Medical Research** for the discovery of anti-TNF therapy as an effective treatment for rheumatoid arthritis and other autoimmune diseases.

**Professor Martin McKee**, Academy Fellow and Professor of European Health at the London School of Hygiene and Tropical Medicine, has been awarded the **11th Stamper Medal** in recognition of his achievements in promoting health education across Europe.

The independent Academy of Medical Sciences promotes advances in medical science and campaigns to ensure these are translated as quickly as possible into benefits for patients. The Academy's seven hundred and fifty Fellows are the United Kingdom's leading medical scientists from hospitals, academia, industry and public service. The Academy's Officers are: Sir Keith Peters, FRS, PMedSci *President*; Lord Turnberg, FMedSci *Vice-President* (Clinical); Sir John Skehel, FRS, FMedSci *Vice-President* (Non-clinical); Sir Colin Dollery, FMedSci *Treasurer* and Professor Patrick Vallance, FMedSci *Registrar*.

### Cover illustration:

Abstract composition depicting the SARS virus, part of a DNA chain and hazard symbols.

by Aaron Stanley

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