



The **Academy of
Medical Sciences**

Non-Clinical Scientists on Short Term Contracts in Medical Research:

A report on career prospects
and recommendations for change



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February 2002

1. Executive Summary

The recommendations contained in this report are as follows:

Recommendation 1:

A standard code of employment practice should be adopted by all higher education institutions in relation to existing and newly-appointed contract research workers.

Proposals are included for the content of such a code, including details of contracts, career appraisals, training and supervision.

Recommendation 2:

A component of all HEFCE funding (Higher Education Funding Council for England and equivalent bodies in Wales, Scotland and N. Ireland) should be identified as being dependent on the recipient's compliance with a standard code of employment practice in relation to contract research workers.

Recommendation 3:

A proportion of senior contract research workers and of technicians/research assistants should be offered recurring contracts.

Recommendation 4:

Contract research workers should be allowed to apply for research grants in their own names.

Recommendation 5:

Employers and managers of contract research workers should acknowledge and recognise the contribution of contract research workers to the work of the research team, including the preparation of grant applications and establishing patents in connection with research projects.

Recommendation 6:

Principal Investigators should recognise the extent of their responsibilities for providing the contract research workers they employ with the education, training, guidance and experience that will lead to a successful and rewarding career.

Recommendation 7:

Contract research workers should respond to improved terms and conditions of employment, and a more career-oriented approach from their employers, by accepting more responsibility for their own career development.

The bases for these recommendations are set out under section 4 below.

2. Introduction

- 2.1 In October 2000, the Academy of Medical Sciences set up a working group to look at problems associated with the careers available to non-clinical scientists working in a medical research environment in the UK and to recommend solutions. The working group was set up under the joint chairmanship of Professor Patricia Jacobs and Professor Jim Smith. This report is based on their work.
- 2.2 The main focus of this report is on non-clinical research workers on short term contracts ('contract research workers'). This term covers technicians, research assistants and post-doctoral research workers employed on short-term contracts (that is contracts with a duration of five years or less) in a medical research function. It excludes principal, senior and career research fellows who are in receipt of their own research grants, i.e. they are their own principal investigator (PI). The report also addresses the special problems that affect non-clinical scientists working alongside clinical practitioners in hospitals.
- 2.3 The main issues identified can be summarised as:
- The problem of job insecurity
 - Lack of adequate career structures
 - Absence of adequate careers advice
 - Lack of sufficient recognition and status
 - Problems of remuneration
- 2.4 The importance of this subject is self-evident. The strength and effectiveness of the UK science base is a fundamental determinant for national prosperity and competitiveness. It is also important for the well-being of the UK population and for the ability to deliver the benefits of scientific and medical research to the public at large - one of the principal objectives for which the Academy of Medical Sciences was set up. The standing of UK science is not something that can be taken for granted; the structures that underpin it must be constantly refined and developed if its position is to be maintained and enhanced.
- 2.5 Contract research workers play a very important role in medical research. It is increasingly the case that effective research is produced by teams, bringing together a variety of specialist skills, rather than by exceptional individuals working largely on their own. Indeed many laboratory-based research projects are effectively carried out by contract research workers under the general direction of the PI who employs them. The knowledge, commitment and motivation of every member of the team is vital in delivering successful results. Contract research workers also play a crucial role in the infrastructure of scientific research by providing education and training for PhD students and post-doctoral employees.
- 2.6 The benefits to be derived from improvements in the careers available to contract research workers include the ability to attract more people into research careers, to attract and retain staff of the highest quality, to encourage personal development and acquisition of skills and to increase motivation. By delivering better career prospects for contract research workers - both while they are engaged in this work and in their later careers - these changes will also help to modernise the infrastructure on which future development of the UK science base depends.

- 2.7 The Academy of Medical Sciences has a distinctive voice in this debate, based on the range and depth of experience and expertise within its Fellowship, spanning every branch of medical science, and on its unique credentials as the only organisation representing within a single body the full range of scientists and clinicians engaged in medical research.
- 2.8 The terms of reference adopted by the working group were:
- to address the career prospects for non-clinical contract research workers in the medical sciences;
 - to consider the career prospects of scientists, without clinical training or responsibilities, who conduct research in a clinical environment;
 - to develop constructive suggestions for developing career pathways for contract research workers in the medical sciences.
- 2.9 The working group adopted the following method of working. The group itself met three times to determine which issues were of paramount importance, how these issues might be addressed, what data were needed to support its investigation, and how to present its conclusions. It was agreed that information about the management of contract research workers should be gathered from a sample of 28 universities and 5 research institutes and that visits should be made to 5 of these, to meet 'focus groups' including non-clinical contract research workers and to seek their opinions and learn from their experience. Additional, informal, focus groups were also held in two of our members' own institutions and at three medical schools. The chairmen and members of the working group have discussed the issues with a wide range of colleagues, both within their own institutions and elsewhere. *(See Appendices 3, 4 and 5).*
- 2.10 The information gathered from the 33 institutions and from the focus groups is summarised in Appendices 3 and 5 respectively. This information will supplement data which is being gathered by the Research Careers Initiative (RCI)¹ in support of their current study, which in many respects overlaps with the Academy's and independently reaches some of the same conclusions.
- 2.11 The information and the views expressed in this report are also of special relevance to the initiative led by Sheffield University, designed to draw up a code of practice for employment of contract research workers. Paragraphs 4.1.2. to 4.1.16 of this report are intended as a contribution to this initiative, while recommendations 1 and 2 are also particularly closely related to it.
- 2.12 The working group recognised that many of the problems facing contract research workers are magnified in the case of women, and that groups such as ethnic minorities and the disabled are seriously under-represented in this profession.

¹ *Research Careers Initiative - In 1996 representatives of institutions and the principal funders of research in the UK agreed a concordat concerning the management of staff appointed on fixed term contracts to carry out research in UK universities and colleges. The Research Careers Initiative (RCI) was subsequently set up under the chairmanship of Sir Gareth Roberts FRS, to monitor progress towards meeting the commitments of the concordat.*

3. Career prospects: the problems to be addressed

- 3.1 Scientific research has a critical significance for the country's economic future. The availability of a highly-skilled and well-motivated scientific workforce is fundamental to success. This requires recruitment of high-quality personnel; it also requires the retention of the best contract research workers so that their skills and experience are not lost to the scientific research community. This in turn depends on the existence of suitable structures to underpin research work in the UK. However, it is widely acknowledged that the employment arrangements for an important tier of scientific research workers are anachronistic when compared with modern employment practices in other areas of work, are characterised by an ad hoc and short-term approach, and fail to deliver the best outcomes for the research workers concerned or for UK science as a whole.
- 3.2 The situation is particularly serious in the case of contract research workers. The total number of such staff, working in medical science, is not readily available. However there were estimated to be 30,000 post-doctoral workers in the fields of science and engineering in the UK in 1999/2000 and the majority of those are likely to be working in the medical sciences; they will also significantly outnumber the tenured scientists working in the same field. Moreover, according to data compiled by the Higher Education Statistics Agency, the proportion of total scientific research workers represented by those who are on short-term contracts continues to rise, adding to the significance of what happens to people within this category.
- 3.3 The principal problems are listed in paragraphs 3.4 to 3.13 below.
- 3.4 Mobility of labour and flexible responses to market forces characterize current approaches to employment practice and are seen to deliver positive advantages to the national economy. However the degree of job insecurity experienced by research workers on short-term contracts (both real and perceived) is a major problem affecting both recruitment and retention. Many contracts have a duration of only two years; a five-year contract is exceptional. When one contract ends there is no guarantee of future employment. Retirement of a PI can precipitate unemployment for an entire research team. To the extent that age and experience attract higher rates of pay, prospects for continuing employment can decline, as the individual contract research worker becomes more expensive to hire by comparison with younger colleagues. The availability of tenured positions for research workers not running their own independent research projects is extremely limited. Job insecurity and the short term nature of their employment makes it difficult for contract research workers to take on the kind of long term financial commitments - for example house-purchase - which are routinely available to those with apparently more secure employment prospects.
- 3.5 Lack of adequate career structure for contract research workers is closely related to the problem of job insecurity described in 3.4. For the most part, once one contract ends, the contract research worker effectively has to begin again. They may have little control over their prospects for re-employment in the same institution or the same locality, little information on what these prospects are and limited scope for seeking employment elsewhere in time to ensure continuity of employment. Others, in universities, the health service or industry, enjoy a career structure which provides opportunities for promotion, attainment of tenured positions, higher status and better remuneration; meanwhile the comfort, security and incentives which such structures provide are largely denied to contract research workers.
- 3.6 Those who manage contract research workers are usually in a position to provide advice on important issues such as prospects for continuing employment within their particular research unit, what additional skills could help to enhance these prospects, the outlook for future funding for the unit and

at what level such funding might be. However, managers are much less likely to be able to identify opportunities for alternative employment elsewhere in the institution, let alone in other institutions, in industry or in the civil service. It is a duty falling to managers of contract research workers, and to the institutions within which they work, to provide so far as possible the information and advice which can enable them to develop more satisfactory career pathways and to make the most of their abilities and experience; but it is a duty which is too often neglected at present.

- 3.7** Lack of sufficient recognition and status is generally acknowledged as a problem for contract research workers. It is a problem aggravated by the issues listed elsewhere - job insecurity, lack of career structures and remuneration problems. Contract research workers tend to be the unsung heroes of scientific research, doing much of the detailed research work within a team but often receiving scant acknowledgement and little reward for the essential part they play in the team's success. Their contribution is persistently under-rated and, with notable exceptions, they are denied the opportunity to apply for their own research grants. They may be debarred from finding secure long-term employment within the academic research environment and therefore from obtaining the kind of promotion that would deliver marked increases in remuneration. They are frequently denied the job titles that bring increased status within academic institutions, while they see others rise rapidly through the institution's hierarchy.
- 3.8** Problems of remuneration are often hard to assess. University salary scales are generally low in comparison with those available to similarly qualified individuals engaged in other professions. Most people in all walks of life suspect that their talents and dedication should be better rewarded in financial terms and can readily identify individuals who seem to receive higher pay without having any outstanding qualities which merit it. Contract research workers are no exception to this general rule. Where there is legitimate concern, however, is in the limited ability of many contract research workers to achieve the kinds of promotion which are available to people working outside the university environment (and which bring with them step changes in salary levels) together with greater job security and progressive salary increases. Additionally there is the problem that increasing age and higher pay levels can effectively lead to more senior contract research workers being priced out of the market as more recently qualified colleagues, available at lower salary levels, become more attractive to employers.
- 3.9** Statistics quoted in the Key Issues Consultation Paper published in June 2001 by the Sir Gareth Roberts' Review show that in 2000, while the gross weekly wage of university and polytechnic teaching professionals was £635, and for managers and administrators £608.1, the comparable figures for chemists (£552.3), natural scientists (£528.6) and biological scientists and biochemists (£511.1) were significantly lower. The paper also points out that while salaries for managers and administrators, medical practitioners, engineers and technologists, and those in professional occupations have continued to rise since 1995, those for natural scientists and chemists declined after 1998 and have since reached a plateau, and those for biological scientists and biochemists peaked in 1998 and have since been in decline. The reasons for disparities in salary levels between different groups are invariably complex - but that does not absolve employers from the obligation to work towards a fairer allocation of resources designed to provide adequate rewards reflecting the qualifications, experience and contribution made by each member of their team.
- 3.10** Research scientists employed in medical schools alongside clinically-qualified staff face additional problems. Reports from focus groups show that they suffer real or perceived discrimination by comparison with clinically-qualified colleagues in terms of status, remuneration, career prospects and tenure. It should however be noted that these problems are markedly more apparent to more junior staff than to their more senior colleagues, probably because - by definition - those who have risen to senior positions have overcome, or somehow avoided, the problems and obstacles to advancement

identified by others intent on following similar career paths. Even the more senior non-clinical scientists, however, may find their career prospects affected by the widespread assumption that the most senior posts (for example Head of Division or Principal of a Medical School) can only be filled by clinicians.

- 3.11 Focus groups conducted with non-clinical research workers in a clinical environment confirmed that they frequently consider themselves to be treated as second-class citizens. They believe that they are often allocated the more mundane tasks, on the basis that they are perceived as having 'more time' than their clinical colleagues. They may find themselves excluded from social and academic networks, often with detrimental effects to their work. They feel that they are consulted less on decision-making and are often the last to know when a decision has been made, although it may impact directly on their work. Non-clinical scientists are expected to train clinical PhD students who join laboratories with little professional scientific training; once trained, these students seem to advance above those who have trained them, in terms of salary, status, job security and future prospects. It is widely considered that in order to gain a secure long-term position within a university's medical department, a clinical qualification is of great importance. This may well be because these people have clinical duties in addition to their research mission, but to their non-clinical colleagues the perception of simple discrimination can be destructive within a close working environment.
- 3.12 Pay differentials between non-clinical research workers and clinical practitioners are considerable. For example a newly promoted clinical senior lecturer often receives higher pay than a non-clinical professor with maximum seniority.
- 3.13 The problems referred to in 3.11 and 3.12 are not necessarily unique to those non-clinical research workers who are employed alongside clinically-qualified colleagues, but they are accentuated by proximity between the two groups, which makes the disparities which exist particularly obvious and hard to ignore.
- 3.14 At the same time, there is a range of significant advantages for non-clinical research workers in operating in a clinical environment. Were this not so the supply of non-clinical scientists wishing to work in a clinical research environment might be expected to dry up altogether. For many, the most important incentive is the unique human dimension of clinical work, the involvement in work which can deliver real and tangible benefits to fellow human beings and the opportunity to tie in scientific research with real and immediate clinical questions. This gives a special perspective to research, which may be difficult to reproduce in other areas. Other advantages include working closely with people with different but complementary skills, and forming productive networks with top-level clinicians. There are also very practical advantages: for example, for those non-clinical scientists whose research requires it, working in a clinical environment can help provide valuable access to tissue specimens and pathological samples important to their work.
- 3.15 There are also advantages for clinical research workers in working alongside non-clinical scientists who are able to bring basic biological research techniques to bear on clinical scientific problems, and who can provide special expertise, alternative points of view and specialist knowledge which the clinically-qualified may not have.

4. Recommendations

This report identifies seven recommendations for action. These are designed to improve the lot of the contract research workers who form a crucial element in institutions undertaking medical research. Implementation of the recommendations will strengthen the research infrastructure of medical science in the UK as a whole. Each of the recommendations is set out below, together with the reasons why each has been selected and what would be achieved by its adoption.

4.1 **Recommendation 1: A standard code of employment practice should be adopted by all higher education institutions in relation to existing and newly-appointed contract research workers**

4.1.1 The shortcomings of existing practice in relation to contract research workers (as detailed under 'Problems to be Addressed' above) are so widespread that they cannot successfully be remedied by a piecemeal approach. Only widespread or universal adoption of a code of best management practice offers the possibility of addressing all or most of these problems successfully within a short time frame. Creation of such a code, and its general adoption, would have the effect of focusing attention on the need for more effective structures in research units; it would bring about positive change in management practice and would tackle the problem of complacency about the career prospects of contract research workers. The working group devoted particular attention to considering which points should be included in such a code of practice and these points are listed below. It is understood that such a code of practice has also been commissioned by HEFCE.

The Academy of Medical Sciences: Proposals for inclusion in a code of practice for the employment of non-clinical contract research workers in medical research

Points recommended for inclusion in a code of best management practice are listed below.

4.1.2 Institutions should publish a statement of their commitment to:

- the principles of the Concordat² on the career management of contract research workers;
- best personnel management and training practice for all staff, including those on fixed term contracts;

4.1.3 On appointment, all contract research workers should receive a letter of appointment, a contract setting out the full terms and conditions of their employment and a detailed job description.

4.1.4 As far as possible, all contract research workers should receive the same terms and conditions of employment as permanent staff. The contract should specify:

- Duration of appointment, for maximum period of available funding
- Any waivers, e.g. on Intellectual Property Rights and commercial agreements. (It should be noted that the inclusion of a redundancy waiver is not now considered acceptable)
- Salary, on nationally negotiated scales, and with information about mechanisms for increase
- Title of post
- Superannuation and National Insurance details
- Leave (annual, sickness and maternity)
- Trade union recognition
- Policy on relocation and removal expenses

² Concordat - The concordat on Contract Research Staff Career Management was agreed between the Committee of Vice Chancellors and Principals and Research Councils in 1995, supported by the Government Office of Science and Technology. The Concordat sets standards for the career management and conditions of employment of researchers employed by Universities and Colleges on fixed term or similar contracts and funded through research grants or analogous schemes

- 4.1.5 On appointment all contract research workers should receive detailed information setting out the range of services available to staff including a list of administrative contacts within the institution.
- 4.1.6 As soon as practicable after appointment, they should participate in an appropriate induction programme, covering both the relevant department and the university or institution in which they will be working. It should be the responsibility of a nominated person within the department to ensure that this induction takes place.
- 4.1.7 Contract research workers should have a clearly **designated line manager**, responsible for ensuring that regular project reviews take place. Contract research workers should always be directly involved in these reviews of their projects and should receive regular feedback on their performance. They should be informed about the time their supervisor will devote to 'their' project and the extent of independence expected of them. They should, where possible, be involved in the development and submission of new research proposals and in drafting articles and reports resulting from the research for publication.
- 4.1.8 All staff must have a full and formal Staff Development Review (**career appraisal**) at maximum intervals of two years (but preferably annually). This will normally be carried out by their line manager, who will almost always be the principal investigator of the grant or another senior member of the research team. The job description (see 4.1.3 above) should be used to monitor progress towards an agreed goal. The appraisal process should also include discussions and advice on wider career development. It should recognise that not all contract research workers will be able (or wish) to pursue a long-term career in academic research or higher education. Of course less formal discussions about performance, targets and career development should take place between contract research workers and their managers on a more frequent basis and as part of the normal contacts between them.
- 4.1.9 Each contract research worker should also have a **designated mentor**, appointed from outside the research team and who can act as an independent source of advice. The appointment of mentors should reflect local circumstances. In a large department, mentors could be drawn from elsewhere within the department; in a small one it would be necessary to seek mentors from elsewhere in the institution. Mentors should be individuals with some status in the institution and sufficiently senior for their views to carry weight. It may be useful for institutions to establish a pool or committee of mentors, who can be allocated to individual contract research workers or chosen by them. In some cases it might be useful for an individual to be able to contact more than one mentor, perhaps selected because of different areas of expertise. In order to maintain a constructive and non-judgmental relationship between the mentor and the mentored, the mentor should not be involved in any way in the appraisal process.
- 4.1.10 In the last 18 months of employment on a contract, all contract research workers should be considered for eligibility for an established position. They should be interviewed and, if tenure is not to be offered to them, the individual concerned should be clearly informed that this is the case and that their future as a contract research worker in the institution concerned cannot be guaranteed. Unless funding can be secured for a further period, they should be given professional advice, provided by the institution, to help them plan an appropriate exit strategy, and should be offered information about the possibilities of research careers in other settings, including non-academic careers such as industry, the civil service, teaching and other careers.
- 4.1.11 Institutions should provide appropriate training programmes, not only in research techniques but also in other skills designed to assist in career development, such as IT, teaching, project management and personal effectiveness.

- 4.1.12 Institutions, or their constituent schools, faculties or departments, should make provision for 'bridging funds' to be available to contract research workers who the institution wishes to continue to employ.
- 4.1.13 Institutions should provide a central information resource giving up-to-date information for contract research workers and their managers. This resource might take the form of a dedicated web site with appropriate links.
- 4.1.14 Institutions should maintain detailed staff statistics and information (including the age, sex, ethnicity, any disabilities, academic qualifications, specialties, current contract and number of previous contracts) about all their contract research workers. They should also be able to identify and communicate with them quickly and reliably. So far as possible (and bearing in mind the provisions of the Data Protection Act) they should also gather information about the destinations of those that leave the organisation for any reason.
- 4.1.15 Institutions of higher education should have in place formal mechanisms to acknowledge the important contribution which contract research workers make to the standing and success of the institution within which they work. They should take appropriate measures to demonstrate this in tangible form, e.g. by developing better career structures, including providing special titles for successful contract research workers, by enabling them to apply for grants under their own names and, where appropriate, to supervise PhD students or equivalent.
- 4.1.16 Institutions should regularly review the effectiveness of their policies vis à vis contract research workers, including the implementation of the Concordat. Such reviews should be carried out by a 'Contract research workers working party' or similar body, comprising representatives of contract research workers as well as senior staff of the institution.

4.2 Recommendation 2: A component of all HEFCE funding should be identified as being dependent on the recipient's compliance with a standard code of employment practice in relation to contract research workers.

- 4.2.1 The award of funds as the result of a Research Assessment Exercise (RAE) should be clearly connected to the way research is managed in the institution concerned, as well as to the quality of the scientific research itself. By acknowledging the interdependence between infrastructure and product, the RAE could make a highly significant contribution to improvement in the structures behind UK science and could provide institutions with critical incentives to improve their employment practices (for example by adhering to a national code of best practice). It is also suggested that funding bodies should require those institutions that receive funds from them, to confirm in writing that they conform to such a code in relation to the employment of contract research workers.
- 4.2.2 The kind of incentive referred to above is probably the only effective way of overcoming the notorious difficulties involved in getting different institutions - and even different departments within the same institution - to adopt the same operating principles.
- 4.2.3 It is regrettable that the RAE has given universities no incentive to establish career scientist posts. The adoption of this recommendation could help to counter the impression that the RAE effectively minimises the contribution made by contract research workers when assessing research groups.

4.3 Recommendation 3: A proportion of senior contract research workers and of technicians/research assistants should be offered recurring contracts

- 4.3.1 An important element in improving career prospects for technicians operating as contract research workers, would be to establish across all higher education institutions a career structure at technician/research assistant level involving recurring contracts offering a reasonable degree of job security. This would reward individual contract research workers who have specific technical skills and expertise of special value to the institution. The salary of such an individual would normally be met primarily from grant funds, but the institution concerned would accept responsibility for underwriting their salaries should such funds prove insufficient or unavailable.
- 4.3.2 The creation of a tenured career structure of a similar kind for a proportion of particularly able and talented post-doctoral research workers would deliver important benefits and provide much-needed infrastructure for the departments concerned. It is anticipated that those rewarded with tenure in this way would typically be those individuals who run laboratories and train the staff employed by principal investigators. While they may have no desire to become independent scientists themselves, their contribution is crucial to the research work of the institution concerned and the provision of a tenured career structure would represent an appropriate recognition of this.
- 4.3.3 An imaginative approach is required to questions of funding long-term posts for contract research workers previously employed on short-term contracts. They are directly or indirectly responsible for attracting at least two kinds of funding to institutions, namely the Quality-related research (QR) component through Research Assessment Exercises (RAE) and the HEFCE transfer monies attached to Research Council grants (Chief Scientist grants in Scotland). There would be logic in utilising at least a proportion of such funding for long-term salary support for contract research workers attaining tenured status.

4.4 Recommendation 4: Contract research workers should be allowed to apply for research grants in their own names

- 4.4.1 Contract research workers are better able to gain recognition and advance their careers when they are able to apply for their own research grants (which may contain an element for their own salaries), in their own names.
- 4.4.2 The Medical Research Council has led the way and already allows contract research workers to apply for grants. All funding bodies should now follow this example, by allowing contract research workers to apply for grants, providing they have the appropriate higher education institution affiliations and approvals. It will also be necessary to take steps to ensure that contract research workers in general are aware of this change in policy and are encouraged to make use of it; this should be a joint responsibility of PIs who employ contract research workers and of higher education institutions.

4.5 Recommendation 5: Employers and managers of contract research workers should acknowledge and recognise the contribution of contract research workers to the work of the research team, including preparation of grant applications and establishing patents in connection with research projects

- 4.5.1 The need to give proper recognition to the contribution of each member of a team is generally accepted as an important ingredient in management and team leadership in all working environments. Yet there is evidence that many contract research workers consider themselves to be under-valued by their managers and their contribution is often overlooked or taken for granted. This can have serious consequences for morale and motivation and can compromise the effectiveness of a research unit or team.

4.5.2 All managers and employers of contract research workers should be aware of the importance of giving formal and appropriate recognition for their contribution to the work of the unit. The form of such recognition will vary according to the particular areas in which individual research workers have made their contribution. Sometimes it might simply require acknowledgement that a particular piece of work or written report was the work of one or more specified individuals. At other times appropriate recognition might include naming a particular individual in connection with a patent. It is for management to reach a judgment on such matters. All managers of contract research workers should be aware of the need to keep this issue in mind and not to let the question of recognition go by default, in the belief that it is a matter of small importance.

4.6 Recommendation 6 : Principal investigators should recognise the extent of their responsibilities for providing the contract research workers they employ with the education, training, guidance and experience that will lead to a successful and rewarding career

4.6.1 The role of principal investigators is pivotal to the career prospects and job satisfaction of the contract research workers whom they employ. The practice of individual principal investigators appears to be very varied in quality. Too many principal investigators seem to take responsibility for the research carried out by their team while neglecting their responsibilities to the people carrying out this research. It is important that this attitude should change.

4.6.2 Specific responsibilities of principal investigators are referred to in 4.1.7 and 4.1.8 above. Recommendation 5 is also particularly relevant.

4.7 Recommendation 7: Contract research workers should respond to improved terms and conditions of employment, and a more career-oriented approach from their employers, by accepting more responsibility for their own career development

4.7.1 Real advances in the career prospects of contract research workers cannot be delivered by their employers or managers alone. A form of partnership is needed in which management facilitates and encourages better career planning, while individual contract research workers also play their part by assuming a degree of responsibility for their own career planning, by taking advantage of the facilities and advice offered to them (for example the opportunity to apply for their own research grants - see recommendation 4) and by actively seeking ways of advancing their careers in the way best suited to their personal situation and ambitions. Research shows that there are many sources of useful information available for those who actively seek it; some of these are listed under 'Useful Web Sites' (*Appendix 6*).

Appendices

Appendix 1

Membership of the Academy of Medical Sciences Working Group

Professor Patricia Jacobs, FRS FMedSci Co-Chairman	Professor of Human Genetics, Southampton University Medical School
Professor Jim Smith, FRS FMedSci Co-Chairman	Chairman, Wellcome/CRC Institute, Cambridge
Professor David Delpy, FRS FMedSci	Vice-Provost, University College London
Dr Diana Dunstan	Director of Research Management, Medical Research Council
Professor Keith Gull, FMedSci	School of Biological Sciences, University of Manchester
Professor Klim McPherson, FMedSci	MRC Health Sciences Research Collaboration, University of Bristol
Dr Jordan Raff	Wellcome Trust Senior Research Fellow, Wellcome/CRC Institute Cambridge
Sir Gareth Roberts, FRS	President, Wolfson College Oxford
Dr Howard Scarffe	Head of Career Schemes, Wellcome Trust
Professor Mark Walport, FMedSci	Chairman & Head, Division of Medicine, Imperial College School of Medicine
Professor Kathryn Wood	Nuffield Department of Surgery, John Radcliffe Hospital, Oxford
Dr Eric Sidebottom	Secretary
Mr Keith Manning	Copy editor

Appendix 2

Rules of Funding Agencies

The Academy made enquiries about the rules of various funding bodies in respect of making grants to CRS without tenured university contracts. The results given in the table below are interesting and perhaps go some way to explain the misunderstandings that are currently widespread.

	CRS as principal applicant		CRS as co-applicant	
	No salary	All/part salary	No salary	All/part salary
Action Research	No	No	Yes	Yes
Arthritis Research Campaign	Yes	Yes	Yes	Yes
British Diabetic Association	Yes	No	Yes	No
British Heart Foundation	Yes	Yes	Yes	No
Cancer Research Campaign	Yes	Yes (on 3yr project grants)	Yes	Yes (may be restrictions)
Leukaemia Research Fund	No	No	Yes	Yes
Medical Research Council	Yes	Yes	Yes	Yes
*Wellcome Trust	No	No	No	No
BBSRC	No	No	No	No

** In exceptional circumstances, CRS can be principal or co-applicant on grants.*

Appendix 3

Summary of Responses from Institutions

Twenty-eight universities and 5 research institutes undertaking significant medical research were selected to give a wide geographical representation. The Universities were Bath, Birmingham, Bristol, Cambridge, Dundee, Durham, East Anglia, Edinburgh, Glasgow, Heriot-Watt, Kent, Leicester, London School of Hygiene & Tropical Medicine, Imperial College, London, King's College, London, University College, London, Manchester, Nottingham, Oxford, Oxford Brookes, Plymouth, Reading, Sheffield, Southampton, Surrey, Sussex, Wales, College of Medicine, and Warwick.

The five research institutes included the Medical Research Council, National Institute for Medical Research at Mill Hill, the Medical Research Council Human Genetics Unit at Edinburgh, the Imperial Cancer Research Fund in London, the Biotechnology and Biological Sciences Research Council Roslin Institute in Midlothian, Scotland and the Wellcome Centre for Human Genetics at Oxford.

Question	Universities	Research Institutes
Do you have a named RCI (Research Careers Initiative) Co-ordinator?	Every institution has someone to answer to the RCI. In most it is a specified member of the personnel department (25) ; in a small number it is either the Head of Personnel or a senior member of the Administration.	Individually only 1 of the 5, but others work through their 'parent' organisation (University or Research Council).
Do you have a specific CRS policy document or code of practice?	Most YES (22) but variable in coverage	Mostly No, but work through parent organisation
Do you have a CRS web site?	About half (13); 14 answered NO, though in 6 sites were planned or in development.	No
How many CRS do you have?	Typically 2000 Oxbridge; 1000-2000 London University Colleges; fewer in the 'newer' universities 100-500.	Replies varied between 128 and 300.
What is the approximate proportion of 'post-docs' to technical support staff within your CRS?	Answers varied widely from 4:1, 2:1.	Examples: 5:4. 5:3.
How long (median) do you hold post-docs?	Typically one third of CRS have held short term contracts for less than 5 years	3 years only; 3 + 3 years

Question continued	Universities continued	Research Institutes continued
Do you have a formal induction course for CRS?	Almost all (21) answered Yes; some organised by Departments others by the University. Induction courses are likely to be university-wide for all staff rather than CRS specific, though a small number of institutions were developing CRS-specific courses.	Much variation: 1 Yes, 1 No, 1 use University.
Do you have a formal appraisal and/or career review procedure for CRS? If so, when?	Almost all (22) have an appraisal system in principle; many are currently under review. Initial appraisal varies from 6 months to 3 years and is most commonly annual but bi-annual and biennial patterns are reported.	Patchy; some dependence on parent organisation for career review.
Are CRS allowed or encouraged to apply for their own grants? As co-applicants?	Mainly Yes (15), if funding body allows.	Mainly Yes (3)
Are CRS allowed to supervise PHD students? If so, is this formally recognized?	Mainly Yes (11) but most had conditions such as 'joint with member of staff' or 'if recognised teacher'. Little formal recognition though some respondents said it happened unofficially.	Mainly Yes (3)
Do you have a formal recognition mechanism? E.g. honorary title such as Research Lecturer.	Few only (7)	Yes (1).
Do you have bridging funds for CRS at the end of their contracts?	Most Universities Yes (18) but often heavily qualified; usually depends on Departmental, rather than central, funds.	Effectively Yes.

Appendix 4

Focus groups were visited in seven institutions, namely Bristol University, Dundee University, King's College, London (Guy's campus), Manchester University, the National Institute for Medical Research at Mill Hill, (MRC), Oxford University and Southampton University.

Questions used at Focus Groups for Contract Research Workers

There was no adherence to a rigid format (different members of the working group were involved in different focus groups) but the following topics were generally covered.

Each participant was invited to outline briefly their career to date, covering:

- number and length of contracts
- time to end of current contract
- alternatives considered for next post
- resources available/used within/outside university to help with future career choice, and relative value of these resources
- constraints in accessing information or advice
- relationships with principal investigator and/or 'mentor'
- personal experience of induction, appraisal and career guidance
- opportunities available for attending courses, both research-based and relating to wider skills/management
- opportunities available for teaching and supervision
- perceptions of status problems
- additional information/support that would help with career management and development
- other problems encountered but not covered by any of the above

Appendix 5

Summary of Focus Group Findings

A. Issues raised by all (or the majority) of the groups:

1. Career structure

Comments ranged from 'non-existent' to extremely insecure. Particularly difficult for those wishing to make a career as a bench scientist working as a team member but not a leader.

2. Recognition and status

Despite the efforts of many universities and departments to integrate their CRS and treat them as nearly like tenured staff as possible, there is still a widespread and persistent perception that CRS are second class citizens in university departments. Some more experienced CRS feel that their contributions to grant applications, publications, teaching and supervising, and even to IPR, have not been adequately recognised.

3. Insecurity

A major concern for many, especially those with families and mortgages. It should be noted that a minority of CRS accepted the insecurity as the price they paid for doing the work they loved.

4. Appraisal

Much scepticism: there is often a credibility gap between official university policy and actual practice, although the value of appraisal is largely accepted when it is done well.

5. Career advice

Very variable experiences and aspirations. If own PIs are to be involved they may need training. Different views on value of independent advisers. Clearly an area for improvement.

6. Industry

Many had little knowledge of industry. Some perceive it as more secure than university even though there are plentiful examples of CRS who have been made redundant by industry. More links and better understanding of opportunities and limitations are needed.

7. Application for Grants

Much confusion about the rules. An area for attention.

B. Issues raised by a minority of groups

1. Specific problems for women

Concerns about effects of maternity leave on contracts. Many (but not all) women with families do not want to be team leaders. High cost of employing women after a career break can be an obstacle to employment.

2. Specific problems for CRS from overseas (a growing proportion)

Especially the added problems of work permits.

3. The timing of applications for research grants

The long time taken to process applications causes problems for those approaching the end of a contract, especially if there is a reasonable hope of renewal.

4. Environments, research institutes, large universities and small universities

Generally perceived that CRS in research institutes are looked after better than those in most universities. A suggestion that the best 'RAE universities' may not look after their CRS best.

5. The impact of the RAE

CRS not really counted and hence may be disadvantaged by consequences.

6. IPR issues

Perception that CRS who have been involved in work leading to patents do not always benefit.

7. Impact of changing fashions in research

Concern that funding is 'fashion-sensitive' and those remaining in unfashionable areas are disadvantaged.

8. Comparisons with clinician researchers

Some resentment that clinicians with less research experience, often dependent on CRS for advice and training, get higher salaries and appear to have more security.

C. Possible solutions suggested by Focus Groups

[In addition to solutions to the problems identified above]

1. A larger funding base in departments

This would allow for shared infrastructural posts (e.g. career technologists).

2. A longer-term career plan

Up to 15 years with hoops to pass through, should be available.

3. Redeployment of Staff

It should be possible to retrain and redeploy some of the skilled CRS whose contracts end.

Appendix 6

Useful Web Sites

- 1 The Research Careers Initiative page of the old CVCP site. This contains the original 1996 Concordat, the two main RCI reports (1998 and 2000) and all the appendices and sub reports. www.universitiesuk.ac.uk/activities/rci.asp

From Dec 1st 2000 the CVCP changed its name to Universities UK the new web address is: www.universitiesuk.ac.uk/

- 2 The Universities and Colleges Staff Development Agency (UCoSDA) (Recently renamed Higher Education Staff Development Agency - HESDA) is also active in promoting the interests of CRS. Its web site is at: www.hesda.org.uk/ and their CRS-specific pages are at: www.hesda.org.uk/nation/crs.html

HESDA has issued a number of relevant reports:

Careers materials for CRS (February 2000),

Career development provision for CRS (August 2000),

Developing the managers of CRS (July 2000)

Employers attitudes and recruitment practices (May 2000)

Career provision in four midlands universities undertaken by Warwick University

www.shef.ac.uk/hesda/nation/warcrs.html

- 3 The Association of University Teachers. www.aut.org.uk/
- 4 The Association of Researchers in Medicine and Science (ARMS) www.hop.man.ac.uk/arms
ARMS was founded in 1978. Its aims are:
To establish a satisfactory career structure for researchers in medicine and science.
To improve the quality and effectiveness of research.
To support the interests of all those engaged in research.
To promote public awareness of research and the role of the researcher in society.
- 5 Bristol University. www.bris.ac.uk/Depts/Personnel/CRS/about.html
- 6 Career development schools for Post-docs. www.crac.org.uk/pdra/
- 7 Mailbase discussion group for CRS. www.mailbase.ac.uk/lists/contract-research-staff/
- 8 A CV bank for CRS. www.cvs.ac.uk/
- 9 A recruitment website for academic and research staff. www.jobs.ac.uk/
- 10 Career Resources for Scientists, (supported by the DTI, the American Association for the Advancement of Science and Merck Sharp & Dohme). www.nextwave.sciencemag.org/
- 11 A 2001 Directory to Job and Career management sites on the Web. www.careerxroads.com/
- 12 Colin Bryson's Resource page for CRS. www.nbs.ntu.ac.uk/staff/brysocm/resource.htm

Appendix 7

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Photographs: Professor Jim Smith's laboratory staff at the Wellcome/CRC Institute, Cambridge and members of Professor Pat Jacob's research staff in the Wessex Regional Genetics Laboratory.

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