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An Evaluation of the CLINICAL RESEARCH TRAINING FELLOWSHIP SCHEME

September 2006



An Evaluation of The Clinical Research Training Fellowship Scheme

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Improving health through research and information

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1 EXECUTIVE SUMMARY

1. Executive Summary

The Clinical Research Training (CRT) fellowship scheme began in 1998 and since then the HRB has awarded €6.5 million to 56 individuals. The scheme has an application success rate of approximately 20 per cent, although this varied over the eight years from a high of 33.3 per cent in 1998 to just 7.9 per cent in 2003. An evaluation of the scheme was undertaken to assess the extent to which it is meeting the primary objective of developing clinical and dental research careers in Ireland. The aim of the evaluation was to provide both clarification of the scheme objectives and recommendations for the future of the scheme in the context of the evaluation findings and other key contextual developments.

With regard to medical graduates, the CRT scheme was originally targeted at candidates who had completed, or were near the completion of, higher specialist training. However, an analysis of successful applicants revealed that just 18 per cent had completed all clinical training, while 34 per cent had not commenced higher specialist training at the time of application. Some 71 per cent of successful applicants stated that their career intention was to become an academic clinician or physician scientist, and perceived the CRT fellowship scheme as the first step towards realising this ambition. The analysis also showed that a significant proportion (39 per cent) of fellows were employed in a research environment at the time of application; 80 per cent intended to register for an MD qualification; and 16 per cent intended to register for a PhD. An analysis of the type of research proposed by successful applicants showed that 61 per cent met the criteria set by the US National Institute of Health's broadly-adopted definition of 'patient-oriented' clinical research.

An online survey of past fellowship holders revealed that 79 per cent of respondents are currently employed in a clinical service environment, while 29 per cent are employed overseas. Encouragingly, 68 per cent of respondents are involved in research in their current position, although this is tempered by the very low proportion currently in receipt of a research grant. The vast majority of respondents completed the full term of their fellowship and the rating of training and supervision received during the fellowship was generally positive, although a few areas for concern were highlighted. Indeed, 82 per cent of all respondents believed they now possessed the skills necessary to be an independent academic investigator.

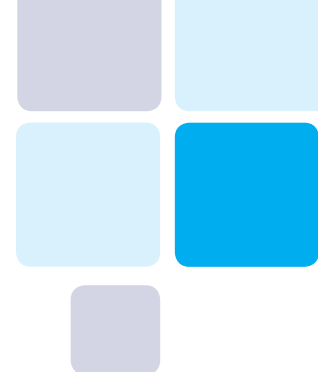
A total of 57 per cent of respondents had completed higher degrees at the time of the survey (56 per cent had got an MD or an MSc, while 44 per cent had got a PhD). Furthermore, 78 per cent of MD/MSc registrants and 100 per cent of PhD registrants stated that it was necessary to acquire additional funding from an alternative source to complete their target degree. Conversely, of those who had not successfully completed their target degrees (and who were not in the process of writing a thesis), 71 per cent stated that this was due to a lack of sufficient time or funds to do so. An additional finding of interest was that a quarter of all respondents used one day per week to undertake clinical sessions during the fellowship term. The main suggestion for the scheme put forward by survey respondents was to provide the option of a third year of funding to enable completion of a PhD.

An analysis of successful applicants revealed that no awards had as yet been made to dental graduates, while only one application from this cohort was received since 2003. Whether or not this is due to a lack of awareness about the scheme among dental graduates or to a paucity of such graduates involved in research is not known and should be explored further. However, the latter reason is unlikely given the fact that dental graduates have successfully applied to the HRB's Health Services Research (HSR) Fellowship scheme in the past.

The opinions of a sample of key individuals identified as having a career involvement in clinical research training were solicited for a further qualitative input to the evaluation. When asked how the scheme might better fulfil its primary objective, these individuals agreed unanimously that the scheme should at least be amended to allow successful applicants to obtain a PhD. Some also felt that the scheme should be re-structured into a dedicated and structured PhD training programme for medical and dental graduates in order to effectively train future cadres of academic clinicians. There was also a general consensus among interviewees that resolution was urgently required of key contextual issues affecting the development of a career path for academic clinicians, most notably the lack of available positions in academic institutions for suitably qualified individuals and of provision for research and teaching in a new consultant contract. For comparative purposes, information was also provided concerning clinical research training programmes in other countries that could inform the current evaluation.

A specially convened Working Group put forward a series of recommendations for the CRT scheme based on the findings of the evaluation, and concerned with (i) the need to clarify the objectives of the scheme, (ii) the conditions of the award, including eligibility, and the adoption of a more flexible approach to clinical sessions during the term of the fellowship, (iii) the structure of the scheme and how this might be altered to better meet the scheme objectives, and (iv) the quality of mentoring and supervision. Some other suggestions concerning the HRB's support for clinical research as a whole were also put forward based on the views of the clinical research community.

2 INTRODUCTION



2. Introduction

2.1 Background to the scheme

The CRT fellowship scheme was established in 1998 as a result of funding made available to the HRB through the three-year Matching Funding Agreement (MFA) between the Wellcome Trust in the UK and the Irish Government. The primary objective of the scheme was to enable medical and dental graduates at any career level, up to and including senior registrar, lecturer or equivalent level, to gain specialised research training in the biomedical field in Ireland. This research training could be undertaken in any recognised institution, such as a university, teaching hospital or research institute, while the research to be conducted could be of a basic nature with relevance to a particular clinical issue.

In the first year of the scheme in 1998, the HRB received 24 applications, of which eight were successful. The average amount awarded was €74,924 over a two-year fellowship period. Over the course of the following two years, the number of applications to the scheme rose steadily; 33 applications were received in 2000, of which six were funded. When the MFA completed its three-year term at the end of 2000, the HRB continued to fund the CRT scheme through its core revenue, financed by the Department of Health and Children (DoHC). Fortunately, the end of the MFA coincided with a significant increase in the HRB revenue budget in 2001, which enabled the HRB to make 11 awards from among 36 applications in that year. By this time, the average amount awarded to a CRT fellow for a period of two years was €109,421. By 2003, however, the number of fellowships awarded had dropped to three, despite a record 38 applications, due to a negligible increase in the core revenue budget that year and the increased financial commitments accruing from the previous two years. The situation only slightly improved in 2004, with six awards made out of 46 applications, but by 2005, with a substantial (29 per cent) increase in the HRB revenue budget, the amount of fellowships awarded had risen to eight out of 43 applications, with an average two-year award of €170,573. Overall, the amount awarded through the CRT scheme since its inception stands at €6,481,626 to 56 fellows.

Prior to the establishment of the CRT scheme, medical graduates were eligible to apply to the HRB's Post-doctoral (PD) fellowship scheme which dates back to 1990. However, the PD fellowship scheme is now restricted to applicants with a PhD in a health-related research area. Additionally, the Health Services Research (HSR) Fellowship scheme is open to all graduates with a research interest in this area, although medical graduates applying to this scheme must be in the final year of, or have completed, their higher specialist training (or specialist registrar training). This is not a specified condition for application to the CRT scheme, although an analysis of fellows' career positions at the time of application showed that 66 per cent of them had either completed (18 per cent) or were enrolled in (48 per cent) a higher specialist training programme.

The proportion of specialist registrars who undertake research as part of their higher medical training is unknown, although an estimated figure of 50 per cent was put forward by a representative of the Irish Committee on Higher Medical Training (ICHMT). Although the ICHMT encourages trainees to acquire research experience, the training programme is not designed to facilitate this and the focus is exclusively on service provision. At present, a trainee can receive credit for only one year of research, regardless

of the amount of time spent doing this research. Also, the period of time used to undertake research is unpaid and trainees must source their own funding, either from public (e.g. CRT fellowship) or private sources (e.g. pharmaceutical companies), which usually involves reduced earnings for the trainee. These constraints may prevent higher medical trainees from investing a significant proportion of their time in research training that might lead to a higher degree. This, in turn, has a knock-on effect on the capacity of the health services to undertake high-quality, patient-centred research.

The benefits of a strong research function in the health services as a whole have been addressed in detail by the DoHC in the Health Research Strategy published in 2001, *Making Knowledge Work for Health*.¹ This strategy highlights the importance of promoting a research ethos in the health service by enhancing the capacity of health professionals to conduct research, by investing in the appropriate physical infrastructures, by removing obstacles to a research-oriented career and by providing high-quality research training to postgraduate students.

The argument for research as an integral part of all medical training programmes was made in a recent report prepared by the Postgraduate Medical Education and Training (MET) Group.² The Group advised that ‘a strong research environment is central to ensuring the quality of medical education and training and improves the quality of care provided to patients’. Among the recommendations made in the MET report which have resonance for the CRT scheme are that the training bodies should (i) recognise research as a core competency of all postgraduate medical programmes (see Figure 2.1) and require trainees to complete a generic research methodologies module, (ii) consider the amount of accreditation given for research, particularly for candidates who wish to pursue higher degrees such as PhD, and (iii) engage closely with the university medical schools in planning and delivering the curriculum for research in postgraduate medical education. Additionally, the HSE should fund (i) a proportion of medical graduates to undertake paid research training in high-quality research teams in Ireland or overseas to enable achievement of higher degrees, and (ii) a dedicated PhD fellowship programme for aspiring academic clinicians on a competitive basis through the HRB. Finally, to ensure a sufficient number of mentors in academic medicine, the MET Group recommended that changes be made to the academic consultant contract to facilitate the appointment of clinician scientists (i.e. clinicians with a major commitment to research and who are willing to train and mentor aspiring clinician scientists).

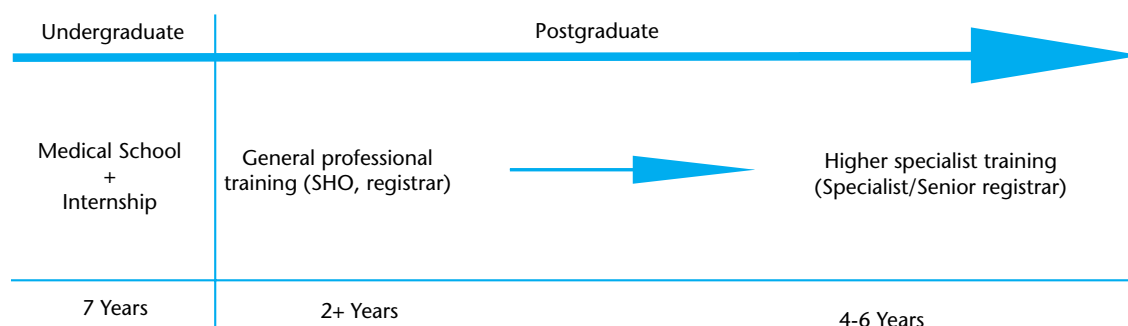
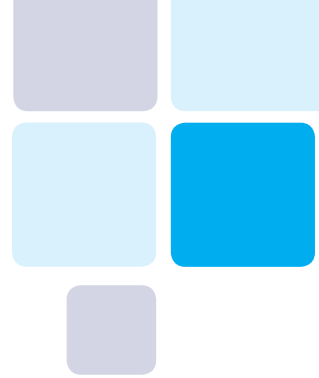


Figure 2.1 Consultant career path in Ireland



2.2 Aims and objectives of the evaluation

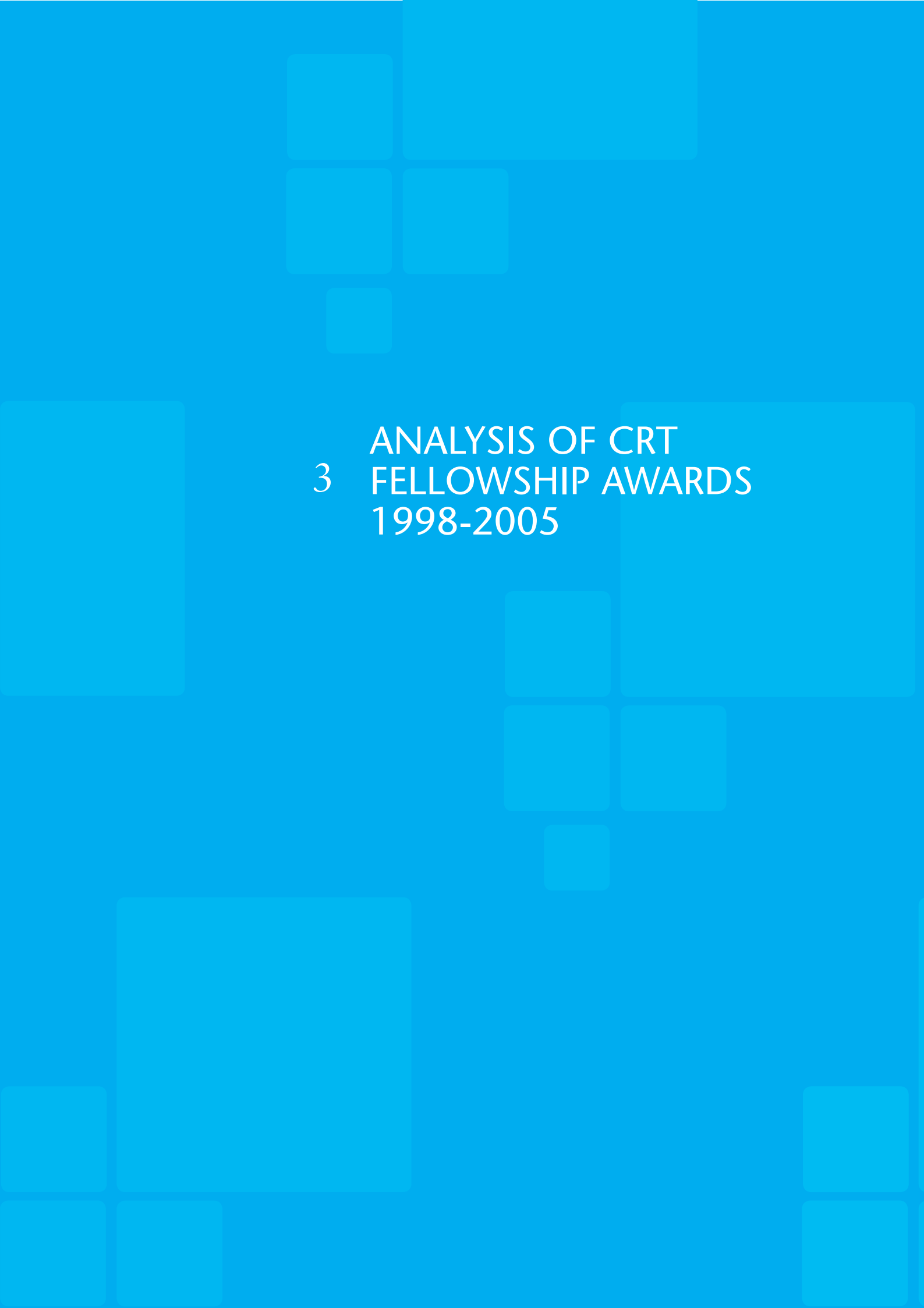
The main reasons for reviewing the CRT fellowship scheme at this time were:

- The need to assess the objectives of the scheme in terms of their clarity and appropriateness in the context of the HRB strategy and policy reforms concerning key contextual issues (e.g. postgraduate medical training).
- The need to examine the issue of clinical research training at a time of unprecedented investment in clinical research infrastructures (e.g. Clinical Research Centres, Clinician Scientist Awards).
- A focus at an international level on the issues pertaining to clinical academia, including the introduction of flexible career paths for clinician scientists and the training of future cadres of academic clinicians.

The fundamental question this evaluation addressed was the degree to which the scheme in its current state is meeting its primary objective of developing clinical research careers in Ireland. The main concern was that the current structure of the scheme was not facilitating the extensive research training required by medical graduates who choose research as their preferred career option, for which the attainment of a PhD is increasingly seen as a necessity. The aim of the evaluation was to provide clarification of the scheme's objectives and to make recommendations for the future of the scheme in the context of current developments concerning clinical research training at national and international levels.

The evaluation of the scheme was carried out between June and September 2005 and consisted of three strands:

1. A desk-based analysis of all awards made since the inception of the scheme in 1998, including an analysis of costs, successful applicants and the scheme's outputs.
2. An online questionnaire survey of past fellows to track their current career positions and, in particular, their present research commitment.
3. A set of interviews with seven key individuals with a strategic involvement in clinical academia and a particular interest in clinical research training.

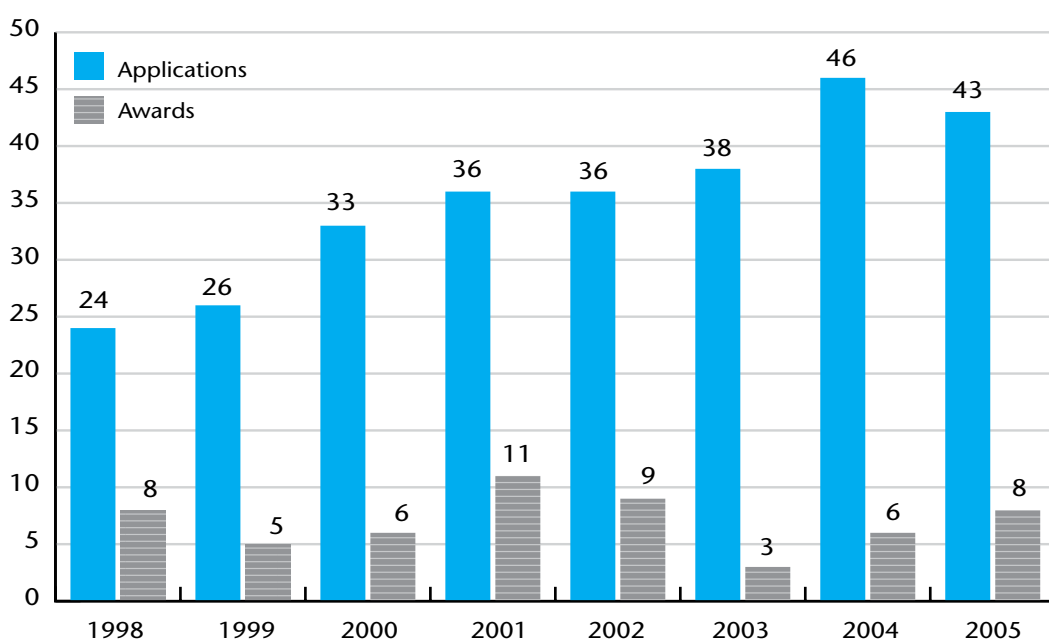


3 ANALYSIS OF CRT FELLOWSHIP AWARDS 1998-2005

3. Analysis of CRT Fellowship Awards 1998–2005

3.1 Funding

Since the inception of the scheme, 282 applications have been received and 56 awards made, representing an overall success rate of 19.9 per cent (see Figure 3.1). The successful applicants include 37 males and 19 females, ranging in age from 26 to 38 years, with an average age of 31 years. The success rate over the eight years has ranged from a low of 7.9 per cent in 2003 to a high of 33.3 per cent in 1998, while the success rate of 18.6 per cent in 2005 is just below the eight-year average. There has been a general upward trend in the number of applications since the scheme began, reaching a high of 46 in 2004.



Year	1998	1999	2000	2001	2002	2003	2004	2005
Success rate	33.3%	19.2%	18.2%	30.6%	25.0%	7.9%	13.0%	18.6%

Figure 3.1 Success rate for the CRT scheme 1998–2005

As demonstrated in Table 3.1, the average amount awarded under the scheme has generally increased over the years, ranging from €74,924 in 1998 to €170,573 in 2005 (the 2005 figure includes amounts required under the Protection of Employees (Fixed-Term Work) Act 2003, including a 20 per cent pension contribution). The average figures displayed in Table 3.1 are skewed by the relatively high rate of fellowships funded for less than the original maximum term of two years (14 per cent of all fellowships since 1998). The maximum amount awarded for a single fellowship over two years was €183,612 in 2005, of which 61 per cent was direct salary costs (this rises to 80 per cent when employer's PRSI and pension contribution are factored in). In comparison to the other HRB fellowship schemes,

more variability exists in the CRT scheme in the amounts awarded in a given year because the salaries paid correspond to a fellow's particular level on the registrar's scale or the equivalent academic level (see Table 3.2). In addition to salary costs, postgraduate fees are contributed to where applicable, and up to €15,000 per annum is available as a bench fee, including expenses for small items of equipment and consumables. A once-off grant of up to €7,000 is also available to enable fellows to gain research experience overseas or in Northern Ireland for a period of the fellowship not exceeding six months. The total amount invested in the CRT fellowship scheme since its inauguration stands at €6,481,626.

Table 3.1 Amounts awarded by the CRT Fellowship Scheme 1998–2005

Year	No. of awards	Total of awards	Average award
1998	8	€599,392	€74,924‡
1999	5	€406,215	€81,243
2000	6	€576,798	€96,133
2001	11	€1,203,631	€109,421**
2002	9	€1,058,292	€117,588‡
2003	3	€422,358	€140,786
2004	6	€850,356	€141,726†
2005	8	€1,364,584	€170,573*
	56	€6,481,626	

‡ includes one 12-month award and one 18-month award (average in 1998 without these awards is €83,000; average in 2002 without these awards is €129,671)

** includes two 12-month awards (average in 2001 without these awards is €120,973)

† includes one 18-month award (average in 2004 without this award is €148,213)

* includes one 15-month award (average in 2005 without this award is €179,221)

Table 3.2 Registrar salary scale as of October 2005

Point 1	€46,909
Point 2	€48,895
Point 3	€50,832
Point 4	€52,258
Point 5	€54,159
Point 6	€56,066

3.2 Analysis of successful applicants

3.2.1 Professional qualifications

The level of professional qualifications of successful applicants as shown in Figure 3.2 is an indicator of the high calibre of fellows funded by the scheme. As stated previously, all candidates must hold as a minimum a primary degree in medicine or dentistry. However, no dental graduates have as yet successfully applied to the CRT scheme (the number of dental applicants to the scheme going back to 1998 is unknown; however, only one application has been received since 2003 from a dental graduate). Therefore, all CRT awards made thus far have been to medical graduates. As shown in Figure 3.2, only 16 per cent held the minimum qualification, while all other successful applicants held at least one higher professional qualification at the time of application. The majority of fellows (66 per cent) had earned Membership of the Royal College of Physicians (MRCP) in the UK or in Ireland. A further 18 per cent had earned the more prestigious status of Fellowship of the Irish Royal College of Physicians (FRCPI, 5 per cent) or Surgeons (FRCSI, 13 per cent – two fellows were FFACRSI, one was FCARCSI).

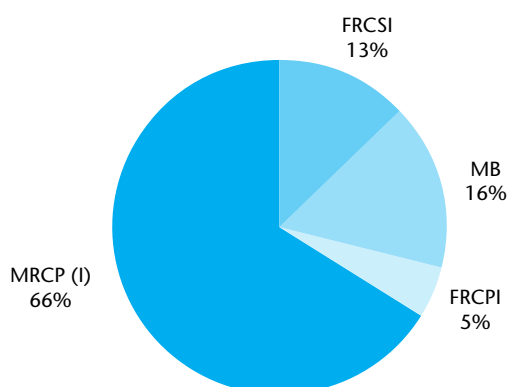


Figure 3.2 Professional qualifications of successful applicants

3.2.2 Occupational backgrounds and career intentions

An analysis of the occupational backgrounds of successful applicants shows that quite a significant proportion (39 per cent) were employed in a research environment at the time of application (see Figure 3.3). All such fellows described themselves as either full-time researchers with various sources of funding (30 per cent), or research registrars (9 per cent), of which the part-time research work was voluntary and unfunded. A further 11 per cent held lectureships in a university or associated teaching hospital, while 43 per cent were in a full-time registrar position at the time of application. The 'Other' category, comprising 7 per cent of all successful applicants, was composed of a medical trainee, a senior house officer (SHO), an instructor of medicine and a postgraduate tutor.

Interestingly, some 71 per cent ($n = 40$) of fellows stated on their application form that their career intention was to become a clinical academic or physician scientist, and that they perceived the CRT fellowship scheme as the first step to this end. A further 23 per cent ($n = 13$) stated that they would maintain an ongoing career interest in research in their clinical area. Just 3 per cent of fellows were interested in the fellowship solely as a means to further their clinical careers, although acknowledging the importance of understanding research in their clinical field or stating that the CRT fellowship would enhance their clinical training.

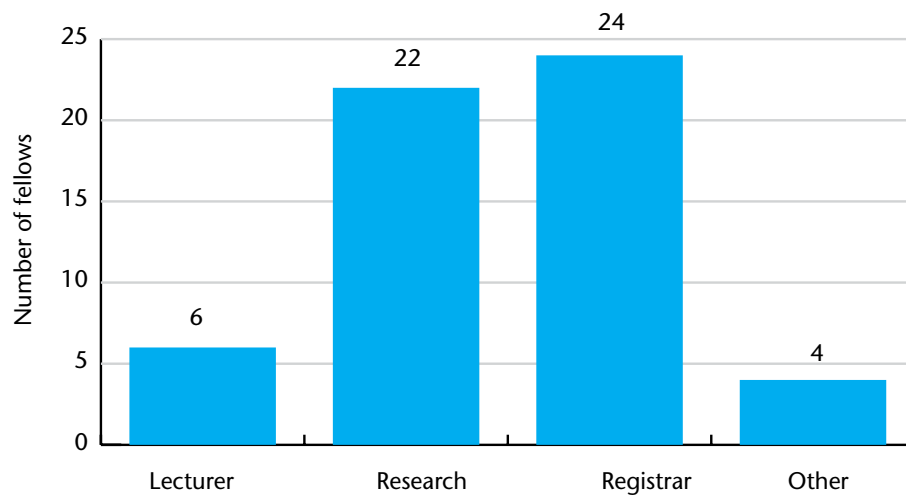


Figure 3.3 Career position at the time of application

3.2.3 Target degrees

While most applicants to the scheme indicate their intention to conduct research leading to a higher degree, this is not a condition for the uptake of a CRT fellowship award,. As shown in Table 3.3, at the time of application the overwhelming majority of CRT fellows intended to register for an MD (n=45 or 80 per cent), while 16 per cent intended to register for a PhD. The latter figure is surprisingly high when one considers that funding under the scheme was available for a maximum of two years. A possible explanation is that such applicants held an existing appointment as a postgraduate student at the time of application. It is known that 39 per cent of fellows were employed in a research environment at the time of application (see Figure 3.3) and some of these would probably have collated enough data by the commencement of the fellowship to enable registration for a PhD degree. Alternatively, some fellows might have expected to secure additional funding from an alternative source in order to complete a PhD following completion of the CRT fellowship. The extent to which either of these scenarios contributed to the relatively high percentage of PhD registrations will be discussed in the section describing the results of the fellows' survey.

Table 3.3 Target degrees of CRT fellows at the time of application

Year	PhD n	MD n	None n
1998	2	6	
1999	1	4	
2000	1	4	1
2001	2	8	1
2002		9	
2003		3	
2004	1	5	
2005	2	6	
Totals	9	45	2

Related to the relatively high percentage of PhD registrations, the HRB reviewed the two-year duration of the CRT award. This review was initiated following submission to the HRB of a request for an additional third year of funding by an existing fellow who intended to upgrade his degree registration from MD to PhD. As a result, all current fellowship holders were contacted in order to ascertain the likely rate of uptake of an additional year's funding should that option become available. Out of six fellows funded in 2004, four stated their desire to register for a PhD and avail of an additional year's funding, while two out of eight fellows funded in 2005 expressed a similar interest. However, it is likely that this latter figure will increase when the 2005 cohort enter the second year of the fellowship as they will then be in a better position to decide whether or not their research progress is such that a PhD is attainable given an additional year of funding.

3.2.4 Host institutions

There was a relatively wide distribution of CRT fellowships across academic institutions and their associated teaching hospitals on the island of Ireland (see Figure 3.4). While UCD and its associated teaching hospitals (St Vincent's University Hospital and the Mater Hospital) and one award in association with the Mid-Western Health Board accounted for almost 45 per cent of the 56 awards (n=25), the other 31 awards were distributed between the following six institutions and their associated teaching hospitals: RCSI with Beaumont Hospital (11 awards), TCD with St James Hospital and the AMNCH (nine awards), UCC with Cork University hospital (five awards), NUIG with University College Hospital, Galway (three awards), Queen's University, Belfast with Belfast College Hospital (two awards), and The Children's Research Centre, Our Lady's Hospital for Sick Children, Crumlin (one award).

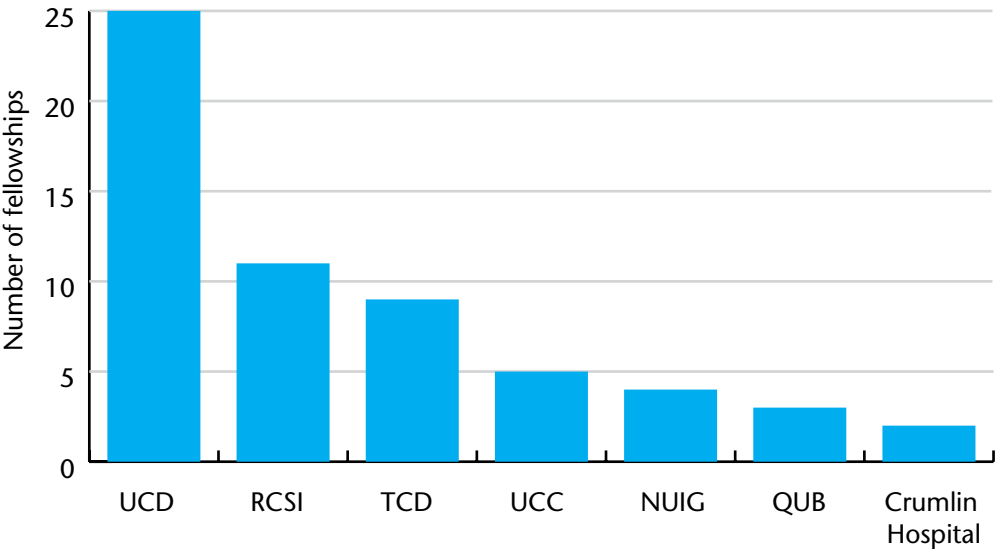


Figure 3.4 Academic institutions of fellows

3.2.5 Research areas

An analysis of successful applicants' research areas of interest shows that, in total, the 56 awards were spread across 17 clinical sub-fields, covering most of the clinical spectrum (see Table 3.4). While not all fellows had commenced higher specialist training (HST) in a clinical field at the time of application

(34 per cent had not commenced HST, while 18 per cent had completed it), most of these fellows either aimed to obtain a place on a HST programme following completion of their CRT fellowship, or had a particular interest in a specific research field that they intended to continue throughout their subsequent career.

An important issue surrounding the CRT fellowship scheme concerns the level of patient-oriented clinical research training undertaken by fellows compared to basic research training without a direct clinical link, for example. The HRB guidelines on the CRT scheme point out to applicants that the research can be of a basic nature with a link to a clinical area of interest. However, a definition of such a clinical link, or indeed of clinical research, is not offered. The NIH in the US define patient-oriented clinical research as follows:

Patient-oriented research – that is, research conducted with human subjects (or on material of human origin such as tissues, specimens and cognitive phenomena) for which an investigator directly interacts with human subjects. Excluded from this definition are in vitro studies that utilise human tissues that cannot be linked to a living individual. Patient-oriented research includes (a) mechanisms of human disease (b) therapeutic interventions (c) clinical trials and (d) development of new technologies.

Only 61 per cent of CRT fellows are engaged in research that can be described as patient-oriented according to this definition. Overall, however, the research projects of 84 per cent of fellows could be described as having a clinical link, incorporating basic or clinical research in the four sub-categories listed (a) to (d) in the NIH definition. An additional issue of potential impact on the quality of clinical research training received by fellows concerns the background of the supervisor. Interestingly, some 70 per cent of CRT fellows were under the sponsorship of an academic clinician.

Table 3.4 Clinical fields of CRT fellows

Clinical field	Fellowships n
Cardiology/Vascular disease	7
Neurology	5
Surgery	5
Respiratory medicine	5
Nephrology	4
Rheumatology	4
Endocrinology	4
Gastroenterology	4
Psychiatry	3
Haematology	2
Pathology	2
Hepatology	2
Microbiology	2
Paediatrics	2
Dermatology	2
Oncology	2
Gerontology	1
Total	56



4 VIEWS OF THE CLINICAL RESEARCH COMMUNITY

4. Views of the Clinical Research Community

4.1 Results of the survey of past fellowship holders

In order to effectively evaluate a career development programme such as the CRT fellowship scheme, it is necessary to track the career paths of fellowship holders following completion of the award. Thus, in order to ascertain whether the CRT scheme was meeting its primary objective of developing careers in clinical research by enhancing fellowship holders' clinical service careers, it was necessary to elicit information concerning the level of fellowship holders' engagement in research in their subsequent career positions.

To this end, an online questionnaire survey of fellows funded through the scheme from 1998 to 2003 was conducted. (Current grant holders funded in 2004 and 2005 were excluded from the survey; the questionnaire is shown in Appendix B.) Contact details were identified for 40 of the 42 fellows funded in these years, and details of the survey and personalised online access were circulated to each fellow. The total number of respondents was 28, representing a response rate of 70 per cent.

4.1.1 Current profile of respondents

Respondents were asked to enter their current position (see Table 4.1). Approximately 79 per cent of respondents are currently employed in a clinical environment, i.e. clinical consultant, specialist registrar, 'Other' category of chef de clinique, clinical scholar, general practitioner or medical director. The remaining 21 per cent are employed in an academic environment, i.e. lecturer, research fellow. The majority of respondents are based in Ireland (71 per cent, with one respondent based in Northern Ireland), while 29 per cent are based overseas (7 per cent in the US, 11 per cent in Canada, 11 per cent in Europe).

Table 4.1 *Current positions held by respondents*

Position	Number	Percentage of respondents	Conducting research in current post
Clinical consultant	8	28.6	8
Lecturer	4	14.3	1
Specialist registrar	10	35.7	6
Research fellow	2	7.1	2
Other	4	14.3	2
Total	28	100.0	19

When asked whether they conducted research in any capacity in their current position, 68 per cent of respondents indicated they did so, while 32 per cent did not. Surprisingly, while 73 per cent of clinical appointees are currently involved in research in some capacity, only 50 per cent of academic employees replied positively to this question (three of the four lecturers were not conducting research). Respondents who replied that they did not conduct research in their current capacity were then asked if they had

conducted research since completing their fellowship, to which 34 per cent replied that they had. However, 88 per cent of these respondents indicated that they would like to conduct research at some future point in their careers. Of further interest was the fact that only two of the 19 respondents who do currently conduct research were in receipt of a research grant, one from the DoHC and one from the HRB.

4.1.2 Management of time during fellowship

Respondents were first asked for some background information concerning their fellowship award. Overall, 90 per cent of respondents completed the full term of the fellowship, while, of the three respondents who resigned from the fellowship in order to take up a medical position, two continued to work on their research project in their new positions. Respondents were then asked to specify the degree they had registered for during the course of their fellowship, and whether or not they had successfully completed this degree (Table 4.2). Interestingly, while half of all respondents registered for a MD, almost 40 per cent registered for a PhD despite the maximum two-year term of the award. Of no surprise then was the fact that additional funding had been obtained from an alternative source by all of those respondents who had actually completed their PhD (64 per cent of registrants). However, three-quarters of those respondents who had completed an MD had also required additional funding from an alternative source. Of those respondents who had not as yet completed their degree, 40 per cent intended to do so (Figure 4.1), while 60 per cent stated they did not have sufficient time or funds to continue the research (with the exception of one respondent who had lost interest).

Table 4.2 Degrees attained by respondents

Registered degree	Number of respondents	Completed	Did not complete	Additional funding needed
None	2	N/A	N/A	N/A
MD	14	8	6	6
PhD	11	7	4	7
MSc	1	1	0	1
Total	28	16	10	14

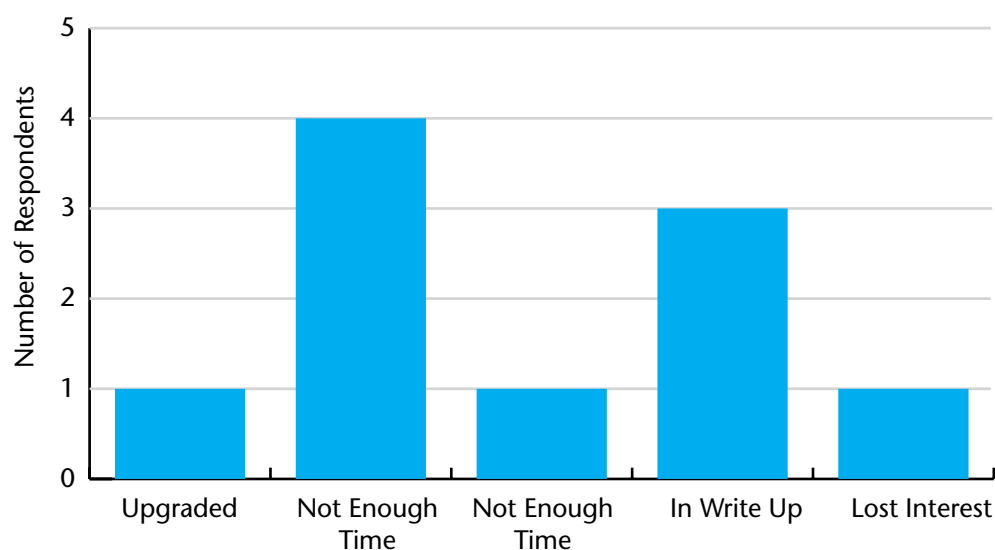


Figure 4.1 Reasons given for failure to complete degree

Although CRT fellowships are awarded to recipients to conduct research on a full-time basis, anecdotal evidence suggested that some fellows continued to carry out part-time clinical sessions during the course of the award. When asked to indicate the proportion of time in a typical working week that was given to research work, as opposed to clinical work, 75 per cent of respondents reported committing between 80 and 100 per cent of their time to research, a further 18 per cent spent between 60 and 79 per cent of their time doing research, while two respondents admitted to committing less than 40 per cent of their time to research (Table 4.2). Conversely, most respondents (82 per cent) did not find it particularly difficult to balance their time between research and any clinical work undertaken during the fellowship. However, 14 per cent of respondents did admit to finding it very difficult or impossible to balance the two. The results show that at least a quarter of all respondents engaged in clinical work during a typical working week during their fellowship, despite the full-time nature of the research award.

Table 4.3 Proportion of respondents' work time given to research

Percentage of time to research	How difficult was it to balance research work with clinical work?					Total
	Not difficult at all	Sometimes difficult	Very difficult	Impossible to balance	No comment	
0-19	0	1	0	0	0	1
20-39	0	0	1	0	0	1
40-59	0	0	0	0	0	0
60-79	0	3	2	0	0	5
80-100	17	2	0	1	1	21
Total	17	6	3	1	1	28
Percentage of total respondents	60.7%	21.4%	10.7%	3.6%	3.6%	100.0%

A further analysis was carried out to see if there was any difference in the proportion of respondents' time spent on research during a typical week according to the type of degree registered for. The analysis showed that 71.4 per cent of those respondents who registered for an MD spent between 80 and 100 per cent of their weekly time on research, while a slightly higher 81.8 per cent of PhD registrants committed a similar proportion of their working week to research. This is consistent with the hypothesis that those individuals with a career interest in research would be more likely to achieve a PhD and invest a greater proportion of their time to research training as opposed to medical training.

4.1.3 Training and supervision

An important aspect of any research training scheme concerns the quality of training and supervision received, and the extent to which those individuals who have undergone such training consider themselves competent researchers on completion of the training period. To this end, respondents were asked a series of questions relating to their opinion of the training and supervision experienced during the course of their CRT fellowship.

As shown in Table 4.4, respondents rated the general level of academic supervision very positively, with 80 per cent rating it as 'good' or better. The respondents' rating of the training received was not as encouraging, although generally positive, with 64 per cent rating it as 'good' or better (see Q20 in Appendix B for list of training areas). However, only 39 per cent rated it as 'very good' or 'excellent',

compared to 61 per cent rating the academic supervision similarly. Furthermore, a quarter of all respondents rated the training as only ‘satisfactory’, while a further 11 per cent rated it as ‘poor’. When asked if they had supplemented this training by undertaking training in an external institution, 36 per cent of respondents indicated that they had; of these, 70 per cent had travelled abroad for this training (only one respondent had availed of the supplementary travel grant for this purpose). With the exception of one respondent who did not comment, all respondents described the training as useful or better (40 per cent found it ‘extremely useful’ to their research).

Table 4.4 Respondents’ rating of training and supervision

	Supervision (no. respondents)	Training (no. respondents)
Poor	2	3
Satisfactory	4	7
Good	5	7
Very Good	7	5
Excellent	10	6
Total	28	28

Respondents were then asked if they felt that there were adequate support structures in place when they encountered problems in the following areas: laboratory techniques, scientific method, data analysis, team conflict, supervisor conflict (Figure 4.2). The analysis revealed that significant minorities of respondents did not believe that there were accessible support structures in place when they encountered problems concerning team conflict (28 per cent), data analysis (35 per cent) and, in particular, supervisor conflict (42 per cent). This would suggest that a suitable mechanism should be put in place by the host institution, independent of the fellow’s supervisor, to allow a fellow to seek appropriate help when required.

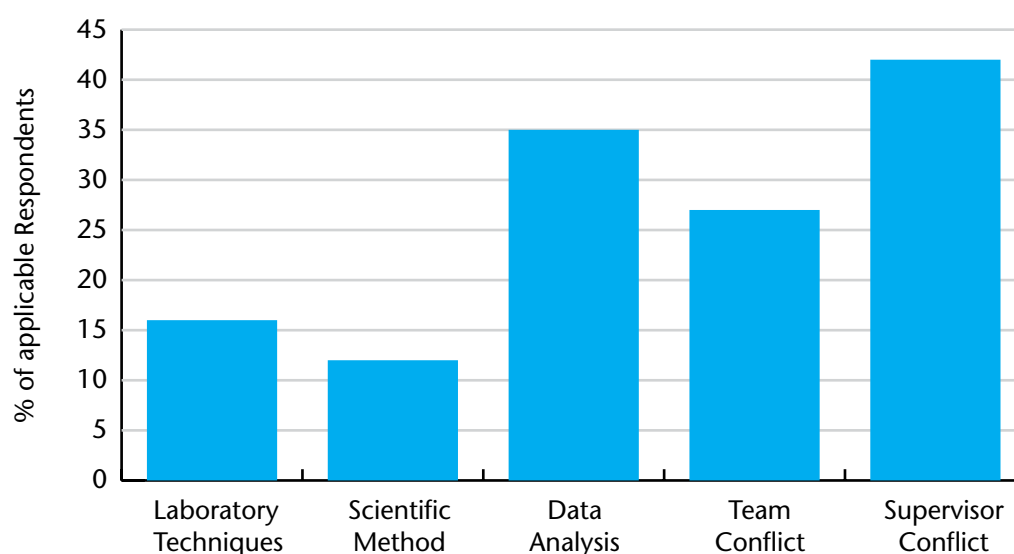


Figure 4.2 Areas with inadequate support structures

Next, respondents were asked to rate their level of competence across a broad spectrum of research skills (Table 4.5). Consistent with the perceived lack of training support concerning data analysis, respondents generally rated themselves less competent in this research skill than in others, with 41 per cent rating their skills as ‘satisfactory’ or ‘poor’. Conversely, only 11 per cent of respondents considered themselves to have ‘very good’ (none ‘excellent’) data analysis skills. This compares to an average of 54 per cent of respondents rating themselves ‘very good’ or ‘excellent’ across the other four competencies. No significant differences were observed when ratings across the research skills were analysed by target degree, with the exception of scientific writing, in which 27 per cent of PhD registrants considered their skills as ‘excellent’, compared to none of the MD/MSc registrants.

Table 4.5 Respondents’ self-rating of research competencies

	Poor	Satisfactory	Good	Very Good	Excellent	Total no. of respondents
Project management	0	6	8	11	2	27
Laboratory techniques	1	4	14	6	2	27
Data analysis	1	10	13	3	0	27
Scientific writing	0	2	8	14	3	27
Presentation skills	0	0	7	13	6	26

Interestingly, when respondents were asked if they believed they had acquired the skills necessary to be an independent researcher following completion of their fellowship, 82 per cent of all respondents answered ‘yes’, while 18 per cent replied ‘no’. A breakdown of the cohort by target degree revealed that 87 per cent of MD/MSc registrants considered that they possessed the skills necessary to be an independent researcher, compared to 73 per cent of PhD registrants, a surprising statistic given the more extensive research training required in order to complete a PhD.

4.1.4 Outputs

An analysis of the outputs of a funding scheme should inform any evaluation of the scheme. This is because the quality of the outputs arising from a scheme is an indicator of the quality of research undertaken by the award recipients. However, it should be borne in mind when considering the outputs that have arisen from the CRT scheme to date that this scheme is primarily a capacity-building intervention and the success of the scheme is better assessed by the subsequent career path of fellows and, specifically, their capability and enthusiasm for conducting high-quality health research in their current career positions.

Notwithstanding this fact, respondents were asked to list all outputs that arose as a direct result of their fellowship award. The level of the research output in terms of peer-reviewed publication was impressive, with 75 such publications reported by 21 respondents (Table 4.6). Only 7 respondents reported no such publications, while most (71 per cent) recorded between 2 and 4 publications (1 respondent managed 10 publications). An analysis of publication output by target degree did not show up a significant difference, with PhD and MD registrants averaging 2.8 and 3 peer-reviewed publications respectively. The average peer-reviewed publication rate of 2.7 across all respondents compares very favourably with the average rate across the four HRB fellowship schemes of 2.4 per fellow (although the average peer-reviewed output from the Post-Doctoral Fellowship scheme in the same period was 3.4 publications),

and with the output from research project grants completed in 2004, which averaged 2.8 peer-reviewed publications per project in the biosciences. However, the figures should be considered in the context of the CRT scheme being only two years in duration, in comparison to the three-year duration of the other schemes referred to above. Also, not all of the outputs from fellowships completed in 2005 will have been captured in the survey due to the output 'lag' period – that is, the emergence of research outputs some considerable time following the completion of a research project.

Table 4.6 Peer-reviewed publications

No. of peer-reviewed publications	No. of respondents	Cumulative no. of publications
0	7	0
1	2	2
2	6	14
3	4	26
4	5	46
6	2	58
7	1	65
10	1	75
Total	28	75

While the number of peer-reviewed publications as a research output is an indicator of the productivity of the funded researcher, the number of times an article is cited in other research publications is a measure of the impact of this research in the scientific community. A citation analysis was therefore conducted on the 66 publications reported by CRT fellows in this survey from 1999 to 2004 (the nine articles published in 2005 were omitted as they are considered too recent to have accumulated citations). The analysis revealed a total citation count of 354 for these 66 publications, ranging from zero to 73 citations for an individual article, with an average citation rate of 5.36. This compares to an average citation rate of 10.34 for publications arising from research funded under the HRB Research Project Grants scheme.³

Aside from peer-reviewed publications, a variety of other significant outputs arose from the CRT fellowship scheme as reported by respondents (Table 4.7). For example, with the exception of two respondents, all had presented their research at an international conference, while a significant proportion had established formal collaboration with both national and international researchers – an important networking initiative. An additional indicator that is of growing importance in the modern research environment is the extent of knowledge transfer to the private sector, or research exploitation and/or commercialisation. An encouraging finding of the current survey was the fact that four respondents indicated knowledge transfer activity with colleagues (one had applied for copyright ownership; three were 'likely to apply' for intellectual property rights). Finally, some 32 per cent of respondents reported other types of potential economic and social outcomes from their research (including one respondent who stated that the 'major finding was likely to be very influential in influencing the management of intensive care patients').

Table 4.7 Summary of research outputs

Type of output recorded		Number of respondents who recorded output	
		Sub-total	Total
Peer-reviewed publication			21
International presentation			26
National collaboration	Formal	8	14
	Informal	6	
International collaboration	Formal	6	14
	Informal	8	
IP rights	Have applied	1	4
	Likely to apply	3	
Other	Novel research technique	3	9
	Publicity in general non-scientific media	3	
	Novel health-related therapies or products	2	
	Supervised MSc students to completion	1	

4.1.5 Respondents' comments and recommendations

Respondents were asked a series of questions in the final section of the survey to ascertain their general opinion as to the usefulness of the scheme to their subsequent careers, the effectiveness of its administration and the extent to which they perceived it to be meeting its primary objective. Overall, and rather encouragingly, 96 per cent of respondents agreed that having held a CRT fellowship was a significant advantage in their subsequent careers. A further 32 per cent of respondents believed that they would not have attained their current position without having been awarded the CRT Fellowship (including 37.5 per cent of consultants, 75 per cent of lecturers, 20 per cent of specialist registrars, and 50 per cent of research fellows). All respondents, with one exception, were of the opinion that the CRT fellowship scheme was suitable for medical graduates undergoing postgraduate medical training, while 75 per cent believed the scheme to be meeting its primary objective of developing careers in clinical research 'more than well' (39 per cent) or 'very well' (36 per cent).

The comments concerning the administration of the scheme (12 respondents) were also overwhelmingly positive, with 83 per cent expressing satisfaction. Two respondents, however, expressed criticism of the time interval between the grant application and notification of award stages (e.g. 'Let applicants know whether they have funding or not much sooner prior to starting research to facilitate contingency planning'). Respondents were also asked for suggestions on how the HRB could improve either the duration or the structure of the scheme to better meet their needs. Out of 12 respondents who commented on the duration of the award, an emphatic 83 per cent were of the opinion that an option of a third year should be offered to fellows who want to register for a PhD (e.g. 'It would be good to allow a third year which candidates could apply for after 18 months or so – I would not think it wise to give a three-year grant up front').

With regard to the structure of the award, commented on by 11 respondents, three suggestions made reference to a laboratory skills 'boot camp' in the first month or so of the fellowship to enable fellows to undergo some basic laboratory training before commencing their research project proper. Another two respondents expressed the view that the structure of the scheme should be altered to allow fellows to continue clinical practice or training during the course of the fellowship (because clinical skills can 'degrade over time'). This could take the form of part-time awards funded over a longer duration (one other respondent thought this arrangement would be particularly helpful for female applicants), or a fixed clinical commitment agreed at the outset between hospitals and the HRB. A single respondent complained that the 'financial allocation for equipment and consumables is insufficient for these projects'.

When invited to comment on how the HRB could more effectively support clinicians with an interest in conducting health research, 14 respondents expressed an opinion. To summarise the majority of these comments, it was suggested that more emphasis be put on funding clinical research and clinical academics, either through existing schemes such as the research projects grant scheme (one respondent), or by putting in place specialised programmes to support the career development of academic clinicians and clinician scientists, particularly at post-doctoral, pre-consultant and junior consultant levels (six respondents). Another group of respondents emphasised the importance of the HRB encouraging collaborative networks of basic scientists and clinicians with an interest in research (three respondents). Among other suggestions were: that the HRB run 'educational courses in research methodologies, collaboration and acquisition of funding for clinicians who are not attached to universities or research

institutions'; and that some smaller grants be made available to fund lesser projects carried out in parallel with clinical training to allow more clinical trainees to get involved in research.

Finally, some respondents provided additional comments and recommendations concerning the CRT fellowship scheme. All the comments were of a positive nature, while the recommendations referred to better mentoring of fellows and support for their re-integration back into the clinical workplace, which is important following a two-year absence.

4.2 Views of key stakeholders

As a further qualitative input to the current evaluation, interviews were conducted with a sample of seven individuals in key administrative, clinical academic or consultant posts (see Appendix C for names of interviewees). The interviews were conducted over a four-week period and participants were invited to express their opinions of, and recommendations for, the CRT scheme in the national context of clinical academia and clinical research as a whole. The comments and recommendations of the interviewees are thematically summarised below.

4.2.1 Appropriateness of the existing CRT scheme

In general, the interviewees felt that the appropriateness of the CRT scheme as currently structured depended on the HRB's intended objective when establishing the scheme. If the objective of the scheme was merely to allow future clinical and dental practitioners to gain some experience of research then it was adequately structured. Indeed, one participant was of the opinion that the scheme was structured in a way that inadvertently favoured those graduates for whom research was not a career interest, but who would rather avail of the award to move on to the next stage of their clinical service careers. However, if the aim was to train a future cadre of independent researchers holding academic positions in clinical departments, then the scheme was not appropriately structured to meet this objective, and should be re-structured to allow sufficient time to undertake a doctoral degree. As one interview participant described, trainee clinicians have different levels of interest in conducting research. While some just want to 'dip into' research and gain some experience, others perhaps do it to further their clinical service careers, while others are much more serious about a career in clinical academia; it is this last cohort that the CRT scheme should serve.

With regard to the full-time research commitment required under the current terms of the CRT award, opinions differed as to whether or not this was appropriate, given that some fellows needed to maintain their clinical skills over the course of the fellowship. On the one hand, it was felt that it could be very difficult to control the number of clinical sessions undertaken by a fellow once a part of the working week could be formally committed to that purpose. This was particularly true in the case of those fellows undergoing clinical training. Therefore it would be preferable for all candidates to have completed clinical training before commencing the award. Related to this, having to undertake several years' clinical training following completion of the fellowship could lead to research skills becoming obsolete or redundant. On the other hand, however, one participant argued that the reality is that most fellows continue to undertake clinical training or practice during the fellowship, and maintenance of clinical skills is in any case desirable for aspiring clinician scientists.

Another issue raised regarding the current CRT scheme concerned the focus of the research training undertaken by fellows. Specifically, are fellows being trained across a range of core research skills

necessary for the effective operation of clinical research facilities, such as basic research techniques, patient-orientated research, and clinical trials management, for example? The concern is that, while physical infrastructures for clinical research are starting to be put in place, there may be a lack of appropriately trained personnel for their effective operation unless effective training and educational programmes are developed.

4.2.2 Key contextual issues

There was unanimous agreement among all of the interview participants that key contextual issues impeding progress on the career path of aspiring clinician scientists required urgent resolution. Moreover, the impact of the CRT scheme would remain difficult to ascertain in the absence of such a structured career path and the lack of incentives to conduct research further on in the clinician's career.

At the outset, postgraduate medical training programmes are under the aegis of the Royal Academies, which do not necessarily perceive research as an important aspect of the clinician's training. The Committee responsible for higher specialist training, for example, views research experience as desirable rather than necessary. The fact that the maximum period of accreditation for research during postgraduate medical training is one year (although a further six months' accreditation can be awarded on rare occasions) is testament to this. A key development, therefore, will involve the acknowledgement by those bodies that organise medical training of the vital importance of all trainees undergoing research training, and the adoption of a much more flexible and incentivised system to enable clinicians attain full clinical accreditation through the 'academic' or research-focused route.

Another problem in the current system is the lack of available positions in Ireland for young academic clinicians, which means that most individuals with such aspirations are forced to go abroad initially to realise their career ambitions. To retain such talented individuals in the Irish national research system, we need more university-based positions for academic clinicians and hospital-based posts for clinicians with a high research focus. Ideally, the country requires a system comprising hundreds of clinician scientists (possibly in 50:50 research/clinical service appointments) to maximise the research-based gains for patients. This would also serve as an incentive for young medical graduates to undertake significant research training and orientate themselves towards a research-focused career. One interview participant also felt that there was a need for a particular focus at post-doctoral level, and on keeping academically qualified clinician scientists in the national system. Presently, there is no such targeted funding scheme in operation in this country, although such individuals are eligible to apply to the Wellcome Trust's Intermediate Clinical Fellowship scheme (see Section 5.1 for more information about this scheme).

A high proportion of clinical trainees move abroad to develop their research skills. Many of these are understandably reluctant, once fully qualified, to return to a clinical position that does not include protected time to conduct research, as is the case with the current consultant contract. Conversely, when such individuals do return to the Irish system after several years abroad establishing excellent track records in research, their research skills are soon degraded due to the service-exclusive nature of consultant posts. Therefore, one of the most important issues to be resolved is that of devising a consultant contract which will include protected time to enable those clinicians with an interest in conducting research to do so. Related to this, hospitals need to develop research strategies to formally recognise the vital importance of clinician-led research and to facilitate the development of research programmes. Additionally, clinical research facilities need to be established where clinician scientists and

basic researchers can interact to ensure the effective translation of important basic research discoveries to a clinical setting.

4.2.3 Comparison with international models

A similar fellowship programme run by the R&D Office in Northern Ireland was described by one interview participant. This programme is divided into two: a three-year programme for those wishing to work towards a doctoral degree and a one- to two-year programme for those wishing to work for an MD degree. The fellowship programme is open to all health and social care professionals employed by the Health and Personal Social Services (HPSS) or by health-related voluntary organisations, and has a highly competitive application rate. The programme guidelines specify that the topics of research must be in clinical science or in health and social care services research and the applicants assign their application to one or other of these areas. In recent years there has been an increasing number of applications in health and social care services research. The applications are evaluated by two separate panels with overlapping membership. An annual report is required from each of the successful applicants as well as a final report including a copy of the summary of their thesis. The completion rate for higher degrees is virtually 100 per cent.

Another participant had recently returned to Ireland having spent 20 years in the US, where as a member of a NIH Steering Committee that examined the career path of the academic clinician, had identified four stages of intervention:

1. Undergraduate – MB/PhD programmes and intercalated BSc degrees for young students with an interest in the clinical academic career path
2. Postgraduate general medical training – the NIH funds about 80 clinical research facilities that run one- to two-year foundation programmes to expose recent medical graduates to research, e.g. clinical research methodology, techniques. An essential element of any clinical research facility set up in Ireland should be the education and training of clinical researchers. The Mater Hospital runs a short course on research techniques for medical graduates which is very popular. In addition, the DMMC is establishing and co-ordinating further training courses across the Dublin-based medical schools.
3. Higher specialist training – this is the most likely time for medical trainees to complete a higher degree, such as a PhD.
4. Consultant level – following the completion of a PhD training programme, the clinician is then eligible to apply for the equivalent clinician scientist award.

The US system as applied to the Irish context would see an academic institution receive an initial five-year grant (i.e. a K12 award – see section 5.2 for more details) to train medical graduates in clinical research methods. Following completion of a minimum period of two years in this scheme, the graduate would be in a position to compete for a four-year mentored clinical scientist development award (i.e. a K08 award – see section 5.2) which would lead to a PhD degree. Such awards would ideally be made on an 80:20 research/clinical practice basis. This model has been very successful in the US and the key is to incentivise institutions, such as hospitals, to devise research strategies and to put in place training infrastructures.

4.2.4 Recommendations for the CRT scheme

All interview participants agreed that the CRT scheme should enable research trainees to undertake a PhD degree. There were differences of opinion, however, as to how significantly the scheme should be re-structured without the prior resolution of the key contextual issues described above, and the establishment of a clear and structured career path for clinicians with an academic focus. Some of the participants were of the view, for example, that the lack of a research training strategy and available posts for academic clinicians restricted the potential impact of the CRT scheme, such that a significant financial investment by the HRB in a substantial re-structuring of the scheme might not provide maximum value for money. Instead, the current structure of the scheme should be maintained, but with the option of a third year's funding to enable completion of a PhD. It would be hoped that, gradually, more fellows would register for a PhD rather than an MD and this could be encouraged at the application stage (the view expressed by one participant was that the MD degree is becoming defunct and is increasingly devalued as a research qualification). This scenario would be made more likely if medical graduates with an interest in research could first complete basic research training, perhaps leading to an intercalated MSc, as one participant suggested. Consideration should also be given to the next stage of the CRT fellow's career path, however, to maximise the HRB's investment in the CRT scheme.

Other participants were of the view that the scheme should target those individuals who have demonstrated a serious commitment to research and are intent on a career in clinical academia, or at least as a clinician scientist. To this end, the scheme should be re-structured into a dedicated three- to four-year career development programme leading to a PhD qualification, and pitched at the level of individuals undergoing higher specialist training. Also, as one participant put it, the key to effective research training is to have a good supervisor and a good research environment and these factors should be taken into account in the selection of successful applicants for such a scheme. Upon completion of such an award, the fellow should have the means to apply for an independent project grant or clinician scientist award and more of these awards should be made available for newly qualified candidates.

Two participants expressed the view that the HRB should encourage those institutions with a structured, formal approach to research training (e.g. a didactic core, seminars, courses in research ethics, statistics, research commercialisation). Akin to the four-year PhD training sites funded by the HRB, awards for clinical research trainees could be made to institutions based on the quality of their training structures. Such a targeted model would have to be given further consideration, but one participant did not think it necessary for medical graduates to undertake a series of rotations in the first year, as is the case for students in the PhD training sites. This is because medical graduates undergoing higher specialist training would generally take a more focused approach to research at this stage in their careers.

With regard to the impact of an increased commitment to research training during the postgraduate medical training period, participants did not consider the alignment of a three-year PhD programme with clinical training requirements to be problematic if the aim was to train academic investigators. For those aspiring to careers as clinic-based scientists, the amount of clinical work undertaken during the fellowship should be minimal, e.g. some on-call duties, perhaps one clinical session per week. While a three-year PhD programme might delay clinical accreditation for those candidates who had not completed higher specialist training at the time of uptake of the award, this should not be problematic for the training committees or the individuals themselves. Also, the one-year accreditation limit for

research undertaken by medical trainees would not necessarily act as a disincentive to those individuals who would attain a PhD and embark on a career in academic medicine.

4.2.5 Other suggestions

There was a general consensus that there exists a significant deficit in clinical research in Ireland, and that the HRB should take the lead in addressing this deficit by re-orientating its remit to fund clinical and translational research as there now exist other agencies to fund basic research. Participants also put forward a number of other suggestions relating to the national clinical research system and the support of the HRB for clinical research:

- the putting in place of structured career support for academic clinicians, akin to that in place in the UK (e.g. the Wellcome Trust's junior, intermediate and senior clinical fellowship awards);
- the introduction of 'mentoring programmes' to support senior clinicians in identifying and developing young clinician investigators. Senior clinicians require some protected time to 'think', to design research projects and to 'mentor' young researchers;
- the allocation of clinically-oriented 'pump-priming' awards, maybe up to €50,000 for a maximum of one year, to facilitate smaller clinical research projects;
- the re-introduction of the intercalated BSc for medical students, which proved very effective at bringing medical students into clinical research at an early age; such students relied on scholarships and bursaries awarded by bodies such as the HRB;
- the introduction of a 'repatriation' scheme to attract high-quality clinical researchers back into the Irish research system;
- support for basic laboratory training of fellows before commencing the CRT award would be beneficial;
- a 're-entry phase' comprising the final six weeks of the CRT fellowship to enable fellows to shadow a clinical team;
- the establishment of a 'returns' fellowship scheme to allow research trainees to acquire two years experience abroad (which is desirable) and return to the Irish host institution where they would take up a 50:50 research/clinical appointment;
- the creation of academic clinician posts which preclude the clinician from undertaking private clinical sessions, although 20 per cent of their time can go to public sessions (similar posts in the US are very competitive);
- the HRB should fund more clinical and translational research in general and consider particular areas such as clinical epidemiology and database research, which have been difficult to procure funding for.

5 INTERNATIONAL MODELS



5. International Models

This section provides a summary of the approaches taken by countries such as the United Kingdom (UK) and the United States (USA) with well-established systems of training and supporting academic clinicians that may inform the recommendations proposed as a result of the current evaluation.

5.1 UK

A recent report⁴ published by the Academic Careers Sub-Committee of Modernising Medical Careers and the UK Clinical Research Collaboration sets out a series of recommendations to address the deterrents for a clinical academic career. These deterrents were summarised as (i) lack of both a clear route of entry and a transparent career structure, (ii) lack of flexibility in the balance of clinical and academic training and in geographical mobility, and (iii) shortage of properly structured and supported posts upon completion of training. The report's recommendations were grouped into four sections, each addressing the key stages of a clinician's career, and can be summarised as follows:

Medical School – Attract students to a career in academic medicine by ensuring that they are taught by some leading clinical academics; the opportunity to undertake an intercalated BSc is maintained through the provision of scholarships and bursaries, and a limited number of MB-PhD schemes are maintained with appropriate funding.

Foundation Programmes (basic medical training) – Provide an integrated academic programme designed for those who show an aptitude and commitment for research, with a four-month academic rotation to enable the trainee to explore his/her interest in research.

Specialist training – Develop dedicated academic training programmes in strong host institutions consisting of two phases: an academic clinical fellowship phase leading to a competitive externally-funded training fellowship and a higher degree; and the clinical lectureship phase, leading to a certificate of completion of training and providing opportunities for postdoctoral experience. Such programmes would have a variety of entry and exit points to enable flexibility between academic and clinical training. Furthermore, direct entry to the Specialist Register through the 'academic route' under the auspices of the Postgraduate Medical Education and Training Board would be maintained and enhanced.

Consultant/GP grade – Create 'new blood' senior lectureship posts in order to accommodate a new generation of trained clinical academics, among other initiatives, including the development of a clear pathway back into full-time clinical practice, and the establishment of programmes that allow further clinical training of consultant academic staff.

With specific regard to clinical research training, the Wellcome Trust and the Medical Research Council (MRC) operate a variety of fellowship awards aimed at different levels of research competency. The Wellcome Trust's awards are as follows:

Research Training Fellowships provide funding for up to three years for graduates in medicine (who have completed general professional training), dentistry or veterinary medicine who have little or no research training but who wish to develop a long-term career in academic medicine. The scheme encourages applications from individuals who wish to undertake substantial training through high-quality research in an appropriate institution or clinical research facility leading to a PhD or an MD qualification. The guidelines to the award recommend that candidates have a good performance record, indicating keenness and aptitude in pursuing a career in academic medicine. Fellowships may be taken up on a part-time employment basis, and a maximum of eight hours or two programmed activities each week is permitted for clinical duties or other non-research activity during the fellowship.

Intermediate Clinical Fellowships are four- to five-year awards that enable successful candidates to continue their research interests at a postdoctoral level and to develop towards independence with a view to a long-term career in academic medicine during the course of the fellowship.

Senior Research Fellowships in Clinical Science provide five-year support for clinical investigators to further develop their research potential and to establish themselves as leading investigators in clinical academic medicine. After the first period of award, the fellowships are subject to a competitive, rolling scientific review every five years.

The MRC awards are broadly similar and can be summarised as follows:

Clinical Research Training Fellowships provide funding for up to three years and are aimed at clinical pre-doctoral/ entry level, or early postdoctoral level for medically qualified applicants who obtained their PhD some time ago. The fellowship provides support for clinically qualified and active professionals to undertake specialised or further research training in the bio-medical sciences within the UK. Fellows are required to register for a research degree, normally a PhD, based on research undertaken during the period of the award.

The guidelines specify that medical/dental graduates who apply should be at a level up to and including Specialist Registrar grade or be at the equivalent level in general practice. Applicants are expected to have completed MRCP exams by the time of commencement of the award. The MRC operates the scheme flexibly to enable clinicians to combine research training with the demands of a clinical career and fellows are permitted to spend up to two periods a week on NHS clinical sessions, and can place their award into abeyance for up to one year to undertake clinical training over a concentrated period.

Clinician Scientist Fellowships are post-doctoral fellowships providing up to four years' support to enable outstanding clinical researchers to consolidate their research skills and make the transition from postdoctoral research and training to independent investigation. All applicants must have obtained a PhD, DPhil or MD in a basic science or clinical research project, or expect to have received their doctorate by the time they intend to take up an award.

Department of Health Clinician Scientist Award for Applied Clinical Research

This is a scheme intended to nurture a cadre of research-led clinical academics capable of leading development in their discipline. It provides up to five years' funding, with access to academic mentorship and flexible academic career development together with clinical specialist training.

Senior Clinical Fellowships are highly prestigious awards for clinical researchers of exceptional ability. All applicants are expected to be proven independent researchers, to be well-qualified for academic research and to demonstrate promise as future research leaders. Support is provided for five years and is renewable, in open competition, for a further five years.

5.2 USA

The NIH offer a variety of career development awards that individuals with a career interest in academic medicine can consider. There is the Mentored Clinical Scientist Developmental Program Award (K12) that is an award to specific institutions, as well as individual awards such as the Mentored Clinical Scientist Development Award (K08) that supports graduates interested in research in areas that do not involve human subjects. For those graduates with an interest in the latter type of research there is the Mentored Patient-Oriented Research Career Development Award (K23). These three awards are described in more detail below.

Mentored Clinical Scientist Development Award (K08)

The purpose of these awards is to support the development of outstanding clinician research scientists. This mechanism provides specialised training for individuals with a health professional doctoral degree who are committed to a career in laboratory or field-based research. Candidates must have the potential to develop into independent investigators. The K08 supports a three-, four-, or five-year period of supervised research experience that may integrate didactic studies with laboratory or clinically-based research. The proposed research must have intrinsic research importance as well as serving as a suitable vehicle for learning the methodology, theories and conceptualisations necessary for a well-trained independent researcher.

Although this award is made to an individual, the host institution must have a well-established research and clinical career development programme and qualified staff in clinical or basic research to serve as mentors. The institution must be able to demonstrate a commitment to the development of the candidate as a productive, independent investigator. Candidates also must have completed their clinical training, including specialty and, if applicable, subspecialty training prior to receiving an award. However, candidates may submit an application prior to the completion of clinical training. Candidates must identify a mentor with extensive research experience, requiring the candidate to devote a minimum of 75 per cent of full-time professional effort to conducting research.

Mentored Patient-Oriented Research Career Development Award (K23)

The purpose of these awards is to support the career development of investigators who have made a commitment to focus on patient-oriented research. This is defined as research conducted with human subjects (or on material of human origin such as tissues, specimens and cognitive phenomena for which an investigator directly interacts with human subjects). The area of research includes 1) mechanisms of human disease; 2) therapeutic interventions; 3) clinical trials; and 4) the development of new technologies. This mechanism provides support for three to five years of supervised study and research for clinically trained professionals who have the potential to develop into productive clinical investigators focusing on patient-oriented research. Applicants must justify the need for a period of

mentored research experience and provide a convincing case that the proposed period of support and their career development plan will substantially enhance their careers as independent investigators in patient-oriented research. As is the case for K08 awards, candidates also must have completed all their clinical training prior to receiving an award, but may submit an application prior to the completion of clinical training.

The goal of the programme is to ensure a future cadre of well-trained scientists working in patient-orientated research areas who will become eligible and compete for NIH research project (R01) grant support. The specific objectives of the scheme are to encourage research-oriented clinicians to develop independent research skills and gain experience in advanced methods and experimental approaches needed to become an independent investigator conducting patient-oriented research, to increase the pool of clinical researchers who can conduct patient-oriented studies, capitalising on the discoveries of biomedical research and translating them to clinical settings.

Mentored Clinical Scientist Development Program Award (K12)

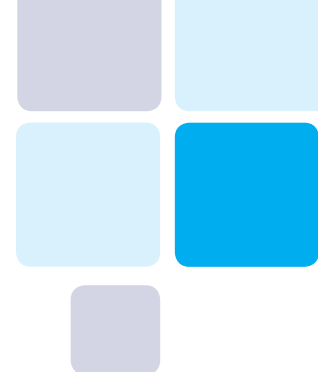
These five-year grants are awarded to an educational institution for the development of independent clinical scientists. The institution must have a well-established research and clinical career development programme and a faculty of staff qualified in clinical research. The research environment should be one in which there are active basic/behavioural/clinical research collaborations that demonstrate a dynamic two-way exchange of information and ideas between laboratory and clinical scientists. The research environment should also promote rapid translation of basic/behavioural/clinical research into clinical testing as well as stimulate new ideas and laboratory experiments, based on clinical observations and testing results. Additionally, the institution must demonstrate a commitment to the development of trainees as productive, independent investigators. Appointments of clinical candidates to the programme are for a minimum of two years, and if an award has been renewed following a review, individual candidates can be supported for up to seven years (as in the case of individual awards, candidates must commit 75 per cent of their time to research activities).

Some other conditions of the award include the appointment by the programme director of an advisory committee to provide an oversight function and annual evaluation of the clinical research development programme as a whole. Basic laboratory/behavioural research experience is essential, but it must be properly integrated with patient-oriented clinical research, thereby affording the candidate actual experience in the application of their own basic research to clinical research. The programme should also include core requirements that each candidate is expected to complete before meeting the programme's training objectives. These requirements include:

- (i) A didactic core component (e.g. formal courses in clinical trial design, biostatistics, informed consent, Institutional Review Boards; lecture series, seminars, and journal clubs) based on the experience and needs of each candidate.
- (ii) A clinical research core component that provides 'hands-on' experience (e.g., protocol development; clinical trials management including patient accrual, analysis of outcomes) in all aspects of clinical trials.
- (iii) A basic research core component that adequately prepares the trainee for communication, co-ordination and collaboration of clinical research activities with basic scientists; ideally this would be linked to the core clinical research component.



6 CONCLUSIONS AND RECOMMENDATIONS



6. Conclusions and Recommendations

6.1 Overall conclusions

Since the inception of the CRT fellowship scheme in 1998, the HRB has awarded almost €6.5 million to 56 fellows. The principal aim of the scheme was to enable medical and dental graduates to gain specialised research training in the biomedical field in Ireland. Although not clearly specified in the scheme objectives, it was hoped that this training would serve as the bedrock for a significant research commitment in the fellowship holder's subsequent career as an academic clinician or clinician scientist. An evaluation was conducted to assess the extent to which the scheme was meeting these objectives. The evaluation was also timely given the HRB's investment in clinician scientist and translational research awards, the recent announcement of funding for a clinical research facility in Dublin, and the publication of the Buttimer report, which highlighted the central role of research in postgraduate medical training.

The findings of the evaluation were more positive than expected in relation to the outputs of the scheme – the analysis showed an impressive peer-reviewed publication rate of 2.7 per fellow with an average citation rate per paper of 5.36 – and highlighted the high calibre of medical graduates attracted to research in Ireland (no dental graduates have successfully applied to the scheme as yet). Additionally, a web-based survey of past fellowship holders revealed that a significant proportion went on to complete a PhD, although finding it necessary to secure funding from alternative sources. On a less positive note, the evaluation revealed some deficits in the CRT training and support environment in relation to mentored supervision and developing competence in vital research skills and, in particular, data analysis. Moreover, while two-thirds of survey respondents stated that they were engaged in research in some capacity in their current career, a very low proportion were in receipt of a research grant; being awarded a research grant is probably the best indicator of a serious involvement in research. Some issues also arose in the evaluation concerning the maintenance of clinical skills during the period of the fellowship.

Notwithstanding the issues described above, any impact measurement of the CRT scheme as a capacity-building initiative for clinician-led research must be considered in the unfavourable context of the national clinical research system. Thus, the fact that only a very small proportion of CRT fellowship holders are in receipt of research grants or have taken up academic posts in their subsequent careers is probably more indicative of a lack of incentives within the current system for clinician-led research, as well as a paucity of available positions for academic clinicians in the higher education sector. Other well-documented impediments to a thriving clinical research sector include the exclusive clinical focus of the current consultant contract (the HRB made the first Clinician Scientist Awards last year which effectively 'buys out' five years of the consultant's contract exclusively for research purposes), and the lack of a coherent, well-funded national strategy for clinical research or an incentivised, structured career path for the academic clinician. It is inevitable that the maximal impact of the CRT scheme will only be realised upon resolution of these key contextual issues.

6.2 Recommendations of the CRT Working Group

The issues raised in the evaluation were considered by the Funding Priorities Sub-Committee of the Board of the HRB and a decision was taken to appoint a CRT Working Group, comprising a range of experts in clinical research (for a list of members, see Appendix D). The remit of the Group was to further examine the issues raised in the CRT evaluation report in the context of the recommendations of the Buttimer report, and to provide the Board with recommendations for the future of the CRT scheme. The Group met three times in total and discussed in detail issues relating to the objectives and structure of the scheme, the quality of research training, mentoring and supervision, as well as the balance of research and non-research activity during the period of the fellowship. The following is a summary of the Group's deliberations and its subsequent recommendations.

6.2.1 Objectives of the scheme

As stated above, the principal aims of the scheme when it was established were to enable medical and dental graduates to gain specialised research training in the biomedical field which would provide a solid grounding for a subsequent research-oriented career in academic medicine or dentistry. The findings of the evaluation would suggest that these objectives are not being satisfactorily delivered, while acknowledging the unfavourable climate that exists in Ireland for clinician-led research. Additionally, the scheme was originally intended for graduates who had completed all, or a large part, of their related clinical training. This was to ensure that fellowship holders did not have to undertake a significant amount of clinical training following completion of the fellowship, which would put the research skills acquired during the fellowship at risk of redundancy. However, the evaluation showed that less than one-fifth of successful applicants had completed higher specialist training at the time of application, while a further 48 per cent were enrolled in a higher specialist training programme. Furthermore, the survey of past fellowship holders revealed that 36 per cent had enrolled in a higher specialist training programme following completion of the fellowship, with only one-fifth of this group maintaining a research commitment during this time. Therefore, the HRB needs to consider amending the conditions of the award to include only those candidates who have completed, or are enrolled in, a higher specialist training programme. The NIH in the US place such a condition on their mentored clinical scientist development awards and both the Wellcome Trust and the MRC in the UK stipulate that applicants must have completed general professional training. The HRB was also encouraged to consider adopting a more flexible approach to non-research activities during the fellowship. In the UK for example, fellowship holders who have completed general medical training can undertake up to two clinical training sessions per week, can take up the award on a part-time basis, or can place their award in abeyance for up to one year to undertake clinical training over a concentrated period.

Recommendations of the Working Group:

- The objective of the scheme should be clarified as a means to support the career development, through specialised research training, of outstanding medically or dentally qualified individuals who have demonstrated an aptitude and commitment to research, and who have the potential and desire to become independent investigators.
- Applicants to the CRT scheme should have completed, or have enrolled in, a programme of higher specialist training.
- Applicants should be permitted to undertake up to a maximum of two clinical sessions per week during the term of the fellowship.

6.2.2 Structure of the scheme

One of the strongest messages taken from the evaluation survey and the stakeholder interviews concerned the structure of the CRT scheme and the duration of the awards, particularly in relation to the conflict between the desire to complete a PhD on the one hand and the two-year duration of the award on the other. There was strong agreement among stakeholders that the HRB should, at a minimum, extend the award to a third year for the significant proportion of fellowship holders who wished to complete a PhD (the HRB has introduced this option for current fellowship holders). Moreover, the Working Group was of the opinion that, if the objective of the scheme is to train a future cadre of independent researchers holding academic positions in clinical departments, it should be re-structured as a dedicated three-year PhD programme. Under this structure, high-quality applicants to the scheme should be able to demonstrate an aptitude and prior commitment to research and should have the potential to become independent investigators. The criteria for assessing applications should favour host institutions that have in place formal and taught research training modules and other structured support mechanisms for PhD students. The Working Group regarded such support and training structures to be of particular importance, bearing in mind the finding of the evaluation that a significant proportion of past fellowship holders rated themselves as less than adequately competent in vital research skills, such as data analysis and laboratory techniques.

The scope of research training undertaken by CRT fellowship holders is another issue that should be reviewed in the longer term, in the context of the HRB's endeavouring to build a strategic capability in all areas of clinician-led research, including basic research methods and core clinical research skills (e.g. 'patient-oriented' research, clinical trials management). It would be desirable for future clinician scientists to be highly competent in relation to communication with biomedical scientists as this would enhance the effective translation of basic scientific discoveries to the clinical setting. The current evaluation included an analysis of the research focus of fellowship holders' research projects and showed that nearly two-thirds were involved in patient-oriented research, with quite a significant proportion applying basic biomedical research techniques to these studies. The extent of fellows' involvement in the design, conduct and management of clinical trials was not explored in this study, although such training should be encouraged.

Recommendations of the Working Group:

- Re-structure the scheme as a dedicated three-year PhD Scholars Programme for individuals with a career interest in academic medicine or dentistry. Awards should be made initially on an individual basis but the possibility of the scheme operating as a national network should be considered in the long term by the HRB.
- Candidates should participate in formal taught training modules in the host institution relating to the conduct of research throughout the term of the fellowship. Such modules might include research ethics, data analysis, statistics, laboratory techniques, etc.

6.2.3 Mentoring and supervision

Another very important issue considered by the Working Group concerned the quality of supervision and mentorship received by fellowship holders. The evaluation highlighted some shortfalls in relation to support structures in the event of problems with the fellow-supervisor relationship, as well as a general absence of a 'mentoring' culture within academic institutions. Thus, the HRB should consider placing a greater emphasis on the host institution in terms of requiring it to have appropriate faculty staff qualified to supervise and mentor clinical research trainees. A mentoring committee should be appointed for each fellow to review and evaluate academic progress and to oversee the fellow's training and supervision. Members of the mentoring committee should have strong track records in research and mentorship and should be encouraged to view their role as part of a longer-term commitment to assisting the fellowship holder to realise his or her career aspiration to become an independent clinician investigator.

Recommendation of the Working Group:

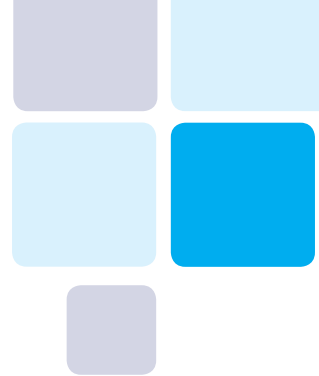
- All successful applicants to the scheme should be required to work under the guidance of a Fellowship Mentoring Committee comprising an academic supervisor, a clinician scientist mentor, and one or more independent advisors from outside the fellow's academic department. The Committee should hold regular meetings with the fellow to review academic progress, to advise on matters relating to the PhD thesis, and to provide the fellow with a supportive mentoring environment towards his/her ambition of becoming an independent clinician investigator.

6.3 Further suggestions for the support of clinical research

In addition to specific recommendations put forward by the CRT Working Group relating to the CRT fellowship scheme, respondents to the evaluation survey and the interviewed stakeholders were invited to put forward suggestions and recommendations concerning the support of clinical research in Ireland. These recommendations are summarised as follows:

- Facilitate the career path to academic clinician by establishing a further career development fellowship scheme for clinical researchers at post-doctoral level (i.e. to bridge the gap between the CRT and Clinician Scientist Awards).
- Commit a proportion of the HRB budget to building research capacity in clinical research for exclusive funding of clinician-led research projects.
- Establish a small-grants programme to 'pump-prime' interest in clinical research among medical graduates and to provide basic research training for potential applicants to the CRT scheme (some fellowship holders referred to the usefulness of a laboratory 'boot-camp').
- Consider a 'returns' fellowship scheme, as run by the UK agencies, which would allow research trainees to acquire two years' experience abroad and return to a host institution where they would take up a 50:50 research/clinical appointment.
- Introduce 'mentoring programmes' to support senior clinicians in identifying and developing young clinical investigators.
- Provide better funding opportunities in the form of clinician scientist awards for junior consultants as well as senior consultants on exclusive service contracts.

7 APPENDICES



Appendix A – References

1. Department of Health and Children (2001) Making Knowledge Work for Health: A Strategy for Health Research. Dublin: Department of Health and Children.
2. Postgraduate Medical Education and Training Group (2006) Preparing Ireland's Doctors to meet the Health Needs of the 21st Century: Report of the Postgraduate Medical Education and Training Group. The Buttimer Report. Dublin: Department of Health and Children.
3. O'Donovan N and McCafferty AM (2004) An Evaluation of the Research Project Grants Scheme. Dublin: Health Research Board.
4. Modernising Medical Careers and the UK Clinical Research Collaboration (2005) Medically- and dentally-qualified academic staff: Recommendations for training the researchers and educators of the future. Report of the Academic Careers Sub-Committee of Modernising Medical Careers and the UK Clinical Research Collaboration.

Appendix B – Questionnaire for the online survey of CRT fellows 1998–2003

General Information

1. Present Status

Current Position:

Institution:

Held since:

2. In which year did you complete your CRT Fellowship?

1999 ☐ 2000 ☐ 2001 ☐ 2002 ☐ 2003 ☐ 2004 ☐ 2005 ☐

3. Did you complete the full term of your fellowship, or the duration applied for?

Yes ☐ No ☐

If No, please indicate primary reason for incompleteness:

Resigned to take up medical post ☐

Resigned to take up academic post ☐

Disliked conducting research ☐

Inadequate training/supervision ☐

Personal ☐

Other reason (Please specify)

4. If you resigned from your fellowship, did you continue to work on your research project in some capacity following your resignation?

Yes ☐ No ☐

5. Please specify the research degree for which you registered during the fellowship:

MSc ☐ MD ☐ PhD ☐ Other ☐ None ☐

6. Did you complete this degree?

Yes ☐ No ☐

If no, please indicate primary reason for incompleteness:

Upgraded to a higher degree ☐

Re-registered for a different degree ☐

Insufficient time to complete degree ☐

Insufficient funds to complete degree ☐

Resigned from Fellowship ☐

Other reason (Please specify)

7. Was it necessary for you to seek additional funding from an alternative source in order to complete this degree?

Yes ☐ No ☐

8. During the course of your CRT Fellowship, approximately what percentage of your working week on average was given to research work, as opposed to clinical work?

0-19% ☐ 20-39% ☐ 40-59% ☐ 60-79% ☐ 80-100% ☐

9. During the course of your Fellowship, how difficult was it to balance clinical work with research?

Not difficult at all ☐ Sometimes difficult ☐

Very difficult ☐ Impossible to balance ☐

10. Do you conduct research in any capacity in your current position?

No ☐ If No, please go to Question 11 Yes ☐ If Yes, please go to Question 13

11. Have you conducted research since completing your CRT Fellowship?

Yes ☐ No ☐

12. Would you like to conduct research at some future point in your career?

Yes ☐ No ☐

13. Are you currently in receipt of a research grant from any funding agency?

Yes ☐ From which funding agency?

No ☐

Training and Supervision

14. How would you rate the level of laboratory training you received during your Fellowship?

Poor ☐ Satisfactory ☐ Good ☐ Very Good ☐ Excellent ☐

15. Did you undertake any research training, technical or otherwise, in an institution other than your host institution?

No ☐ Yes ☐

If yes, please indicate where training was undertaken: In Ireland ☐ Abroad ☐

16. Did you avail of the HRB travel grant to finance this training?

No ☐ Yes ☐

17. How would you rate the usefulness of this training to your research?

Please rate on the following scale:

1 (Not useful at all) ☐ 2 ☐ 3 ☐ 4 ☐ 5 (Extremely useful) ☐

18. How would you rate the level of academic supervision you received during your Fellowship?

Poor ☐ Satisfactory ☐ Good ☐ Very Good ☐ Excellent ☐

19. Please indicate whether or not you felt there were adequate support structures in place upon encountering a problem in any of the following areas:

Laboratory technique	Yes <input type="radio"/>	No <input type="radio"/>	Not applicable <input type="radio"/>
Scientific method	Yes <input type="radio"/>	No <input type="radio"/>	Not applicable <input type="radio"/>
Data analysis	Yes <input type="radio"/>	No <input type="radio"/>	Not applicable <input type="radio"/>
Team conflict	Yes <input type="radio"/>	No <input type="radio"/>	Not applicable <input type="radio"/>
Supervisor conflict	Yes <input type="radio"/>	No <input type="radio"/>	Not applicable <input type="radio"/>

20. Please rate your level of research competency under the listed headings, following completion of your CRT Fellowship:

Research Project Management	Poor <input type="radio"/>	Satisfactory <input type="radio"/>	Good <input type="radio"/>	Very Good <input type="radio"/>	Excellent <input type="radio"/>
Laboratory techniques	Poor <input type="radio"/>	Satisfactory <input type="radio"/>	Good <input type="radio"/>	Very Good <input type="radio"/>	Excellent <input type="radio"/>
Data analysis	Poor <input type="radio"/>	Satisfactory <input type="radio"/>	Good <input type="radio"/>	Very Good <input type="radio"/>	Excellent <input type="radio"/>
Scientific writing	Poor <input type="radio"/>	Satisfactory <input type="radio"/>	Good <input type="radio"/>	Very Good <input type="radio"/>	Excellent <input type="radio"/>
Presentation skills	Poor <input type="radio"/>	Satisfactory <input type="radio"/>	Good <input type="radio"/>	Very Good <input type="radio"/>	Excellent <input type="radio"/>

21. In your opinion, have you acquired the skills necessary to be an independent researcher following completion of the Fellowship (including the ability to apply for research grants in your own name, supervise students etc)?

Yes ☐ No ☐ Research Outputs

22. How many publications in peer-reviewed journals were produced as a direct result of your Fellowship award?

None ☐ One ☐ Two ☐ Three ☐ Four ☐

More than Four (please specify)

23. Did you present your research at an international scientific conference during your Fellowship?

Yes ☐ No ☐

24. Did any new scientific collaborations arise from the research supported by this Fellowship award, either informal (contact) or formal (joint publication, grant application etc)?

No ☐ Yes ☐ If Yes, please indicate if collaboration was:
National ☐ Formal/Informal ☐
International ☐ Formal/Informal ☐

25. Have you applied, or will you apply in the future, for any form of intellectual property rights as a result of the research supported by this project grant?

Yes ☐ No ☐ Will apply ☐

If Yes:

1. What type of IP did/will you apply for? (eg Patent, Database rights)

2. Have IP rights been awarded as yet? Yes ☐ No ☐

3. How do you intend to commercially exploit this IP?

(i) Spin-off/Start-out company – please give details

(ii) Sell or license IP to a third party – please give details

4. Are you in receipt of any commercialisation support grants from Enterprise Ireland or any other source?

Yes ☐ No ☐

If Yes, please indicate for which phase of commercialisation grant was awarded:

(i) Proof of concept phase

(ii) Technology development phase

(iii) Business development phase

26. Did any other outcomes arise from the research supported by this Fellowship?

Data lodged in national or international database

Yes ☐ No ☐

Please give details

Research findings used in a sytematic review

Yes ☐ No ☐

Please give details

Novel research technique

Yes ☐ No ☐

Please give details

Novel health-related therapies or products

Yes ☐ No ☐

Please give details

Publicity in general non-scientific media

Yes ☐ No ☐

Please give details

Contribution to formulation of government policy

Yes ☐ No ☐

Please give details

Recognition of research (National/international awards)

Yes ☐ No ☐

Please give details

Other (Please give details)

Comments and Recommendations

27. Do you have any comments on the CRT Fellowship application/administration process?

28. Could the HRB improve either the duration or the structure of the CRT Fellowship scheme in any way? Please specify how

Duration

Structure

29. In your opinion, did undertaking the CRT Fellowship confer a significant advantage to your subsequent career prospects?

Yes ☐ No ☐

30. In your opinion, would you have attained your current position without having been awarded the CRT Fellowship?

Yes ☐ No ☐

31. Do you believe the CRT Fellowship scheme to be suitable for medical graduates undertaking postgraduate medical training?

Yes ☐ No ☐

Please provide further comment

32. How well do you think the CRT Fellowship scheme meets its primary objective of developing careers in clinical research in Ireland, as opposed to service provision?

Please rate on the following scale:

1 (Not at all) ☐ 2 ☐ 3 ☐ 4 ☐ 5 (Very well) ☐

33. How, in your opinion, can the HRB more effectively support clinicians with an interest in conducting health research?

34. Please provide additional comments or recommendations on any aspect of the CRT Fellowship scheme:

Appendix C – List of participants in the stakeholder interviews

Dr Orla Hardiman, Consultant Neurologist and Director of Neurology, Beaumont Hospital
Professor Paul McLoughlin, Department of Physiology, College of Life Sciences, UCD
Dr Pierre Meulien, Director of the Dublin Molecular Medicine Centre
Professor Bob Stout, Director of the R&D Office, Belfast
Professor Des Fitzgerald, Vice-President for Research, UCD and Chairman of the HRB
Professor Bill Powderly, Head of the School of Medicine and Medical Science, UCD
Professor Dermot Kelleher, Director of the Institute of Molecular Medicine, St James Hospital and Board member of the HRB

Appendix D – Members of the CRT Working Group

Professor Dermot Kelleher (Chair), Director of the Institute of Molecular Medicine, St James Hospital and Board member of the HRB
Professor Des Fitzgerald, Vice-President for Research, UCD and Chairman of the HRB
Professor Ian Robertson, Dean of Research, Trinity College Dublin
Dr Carmen Regan, Consultant Obstetrician, Coombe Women's Hospital
Professor Larry Egan, Department of Pharmacology and Therapeutics, Clinical Sciences Institute, University College Hospital, Galway
Dr Janet Allen, Director, Conway Institute for Biomolecular and Biomedical research, UCD
Dr Pierre Meulien, Chief Executive, Dublin Molecular Medicine Centre
Professor Fergus Shanahan, Department of Medicine, Cork University Hospital
Dr Ruth Barrington, Chief Executive of the HRB
Dr Mairead O'Driscoll, Head of the Research Funding and Policy Division, HRB
Dr Brendan Curran, Evaluation Manager, Research Funding and Policy Division, HRB

