Improving health through research and information

HRB
Health Research Board

Primary Care R&D in Ireland

An external report
commissioned by the Health Research Board

Primary Care R&D in Ireland

Improving health through research and information

HRB
Health Research Board

An external report commissioned by the Health Research Board

Published by:
Health Research Board
An Bord Taighde Sláinte
73 Lower Baggot Street
Dublin 2
Ireland

t +353 1 676 1176
f +353 1 661 2335
e hrb@hrb.ie
w www.hrb.ie

ISBN 1-903669-11-1

Contents

Foreword

This report was prepared in response to a request to the HRB in early 2006 from the Association of University Departments of General Practice in Ireland (AUDGPI) to commission an independent report on research and development in primary care in Ireland.

The HRB agreed to commission this work and we were very pleased that Professor David Mant, Head of the Department of Primary Health Care at the University of Oxford and a leading authority on primary care R&D, accepted our invitation to prepare a report. Professor Mant took a sabbatical from Oxford to conduct this work and administrative support, funded by the HRB, was provided by the Department of General Practice in University College Cork.

Professor Mant was asked to review current activity and investment in primary care research in Ireland, to identify strategic priorities for Ireland and to make recommendations to the HRB, the Health Service Executive and others as to how strengthen research in primary care. His report is based on a review of national and international policy documents, interviews with many stakeholders and quantitative analyses of peer-reviewed journals to assess quality and impact of primary care research publications. A draft of the report was sent to all stakeholders consulted to enable them to comment and make corrections where necessary. The final, completed report was submitted to the HRB in October 2006.

The case for primary care R&D was well made in the Primary Care Strategy published by the Department of Health and Children in 2001. However, it is clear from Professor Mant's report that existing R&D capacity does not reflect the importance of the role of primary care in the health system and that current Irish research output and impact are modest when benchmarked against the UK and other European countries. The report analyses the reasons for this situation and puts forward 14 recommendations for the development of primary care R&D in Ireland. The recommendations are addressed primarily to the HRB, the Health Service Executive and third level institutions.

The HRB will host a seminar in Dublin on 14 December 2006 to which key stakeholders will be invited to discuss the findings of the report and how to take forward the recommendations. Following the seminar, the HRB will propose an initiative to develop the capacity of R&D in primary care. The objective of this initiative will be to provide an evidence base to support the best possible care for patients in primary care, where 90% of all patient contacts in the health system take place.

On behalf of the HRB, I would like to thank Professor Mant for his excellent report. I also thank the Department of General Practice in UCC for their support, and all those whose expertise and experience informed this exploration of how R&D in primary care might be developed in Ireland.

Ruth Barrington PhD
Chief Executive

November 2006

Preface

This report was commissioned by the Health Research Board of Ireland. It reports the results of an enquiry undertaken by Professor David Mant (Head of the Department of Primary Health Care, University of Oxford) in May–June 2006. The original data reported in Annexes 1, 3 and 4 were collated by Dr Louise Burgoyne (University College Cork). A list of the individuals and policy documents consulted is included in Annex 3.

The consultancy agreement specified three tasks:

1. Review current investment and activity in primary care R&D in Ireland.
2. Identify the strategic priorities for the Irish Health Service Executive and the Health Research Board.
3. Make recommendations on the actions necessary to achieve these strategic priorities.

The structure of the Report reflects these tasks by identifying the need for primary care R&D in Ireland, describing the capacity of existing institutions to meet this need, and making recommendations to fulfil unmet need.

The most widely accepted definition of primary care is: 'first contact, continuous, comprehensive and co-ordinated care provided to individuals and populations undifferentiated by age, gender, disease or organs system'. Consequently, the boundaries of primary rare are difficult to define precisely. Primary care in Ireland is still provided predominantly by general practitioners but an increasing range of other health professionals also provide care outside hospitals. In the Report, the word 'clinician' refers to all health professionals delivering care in a community setting and the enquiry specifically included nurses, therapists, pharmacists and dentists as well as general practitioners. However, it does not include hospital outreach (e.g. community-based psychiatric care) nor extend to R&D in support of social care, ambulatory emergency care, or public health practice.

The quantitative analyses in this Report focus on peer-reviewed journal publications as the best comparative measure of R&D output, quality and impact. However, the Report acknowledges that both research staff and professional bodies such as the Irish College of General Practitioners (ICGP) have made a substantial contribution to health policy and service development which is not reflected in journal publications. It makes a specific recommendation on how this policy and service support might be sustained and strengthened at national level.

The advantage of commissioning an external Report is that it provides an overview which is unbiased by internal interests and informed by international comparison. The potential disadvantage is that it may lack in-depth understanding of the national context. Any such misunderstanding reflects the limitations of the author rather than those who willingly gave their time to provide evidence.

The need for primary care R&D identified in this Report reiterates a number of generic issues identified in the report of the UK National Working Group, *R&D in Primary Care,* in 1997. However, there is less overlap in the recommendations made. This reflects differences in initial R&D capacity and the unique features of the Irish health care system. It also reflects lessons learned from the success and failure of initiatives to increase R&D capacity in primary care in the UK and other countries over the past decade.

The most widely accepted definition of primary care is: 'first contact, continuous, comprehensive and co-ordinated care provided to individuals and populations undifferentiated by age, gender, disease or organ system'.

- Barbara Starfield

1. The need for primary care R&D in Ireland

1.1 Primary care is of central importance to an Irish health care system that is currently experiencing a rapidly rising demand for secondary health care.

1.1.1 In 2001 the Department of Health and Children acknowledged 'the central role of primary care in the future development of modern health services' in its strategy document *Primary Care – A New Direction*. This 10-year blueprint outlined an increasingly multi-disciplinary approach to the delivery of primary care. It also stressed the important strategic role of primary care in managing demand for specialist health services (it is estimated that there are currently 16 million consultations in general practice, of which 5% lead to hospital referral). The commitment in *Primary Care – A New Direction* is to 'deal with problems at the lowest level of complexity'.

1.1.2 In making this commitment to primary care, the government was rightly acknowledging comparative international research showing that the cost-effectiveness of any national health care system is strongly correlated with the strength and position of primary care within that system. Lack of effective primary care is associated with spiralling health care costs and decreasing value for money from public expenditure on health care.

1.2 The need for a firm evidence base is as great in primary care as in hospital care.

1.2.1 *Primary Care – A New Direction* also recognised that 'A key component of a high-quality [health care] system is a high performing research and academic community' (p39). It further stated that 'a small number of academic centres of primary care will be created as an authoritative source of policy and practice advice'. This policy is entirely consistent with the approach taken by governments in other countries who have found it cost-effective to commission primary care R&D in two areas of specific relevance to service delivery: 1) health policy research to determine the optimal staffing and organisation of primary care; 2) applied clinical research to underpin service delivery and clinical standard-setting by government agencies such as the Health Information and Quality Authority.

1.2.2 In 2003 the Irish College of General Practitioners (ICGP) produced a strategy document, *Strategy for Research 2003–8,* which highlighted that 'over 90% of contacts between the population and health service take place in primary care'. It emphasised that:

- A key determinant of the outcome of serious disease such as cancer and meningitis is the speed and route of referral from primary care.
- Continuing care for chronic illness such as asthma and heart failure is provided mainly in primary care.
- Most preventive health care, including management of risk of disease, takes place in primary care.
- Most 'minor' illness (except trauma) is treated entirely in primary care but can have major impact both on the individual and the national economy.

It therefore concluded that in order to deliver high-quality health care (i.e. care in which clinical decisions are based on sound information derived from research findings and scientific developments), a firm evidence base is as important for primary care as it is for secondary care.

1.2.3 *Strategy for Research 2003–8* also pointed out correctly that primary care is the place in which many important decisions are made which have life-long implications for the individual patient and for the cost of their subsequent health care:

- Diagnostic decisions about the cause of symptoms
- Decisions about hospital referral and clinical investigation
- Decisions about prescribing of long-term medication.

It identified significant gaps in the evidence base to underpin these clinical decisions, particularly decisions about the clinical management of diseases seldom seen in hospitals, the early recognition of symptoms of serious disease presenting outside hospitals, and the long-term monitoring of patients after discharge from hospital.

1.3 The evidence required to underpin clinical practice and health care policy must in part be obtained by R&D in primary care.

1.3.1 The importance of applied clinical research undertaken in hospitals to the knowledge base for primary care practice must not be under-estimated. Research is often easier where there is a gathered field of patients and a stronger research infrastructure. The difficulty of extrapolating results from a hospital to a primary care setting can be over-estimated but, equally, the importance of research to assess the applicability of hospital studies to primary care should not be under-estimated.

1.3.2 There are a number of clinical situations where the necessary research to underpin clinical practice in primary care cannot be undertaken in hospitals, for example:

- Discovering how best to treat illness that is seldom seen in hospitals (e.g. otitis media, hay fever, common skin conditions).

- Documenting the evolution of symptoms before hospital admission to avoid diagnostic delay in identifying serious disease.

- Testing ways in which chronic illness can be managed effectively without long-term hospital care, particularly for those illnesses where patients can take substantial responsibility for their own self-management (e.g. type-2 diabetes).

1.3.3 R&D to inform health care policy on the staffing and organisation of primary care in Ireland must be undertaken in Irish primary care. This does not imply that important lessons cannot be learned from R&D about health care systems in other countries. However, differences in health and health care provision between countries mean that it cannot be assumed that 'one size fits all' – proposed changes in the staffing and structure of primary care will inevitable require careful assessment and piloting within an Irish health care context before national implementation. This requires some national capacity in primary care policy R&D.

1.4 Effective planning of health care requires observational data on primary care and input from primary care practitioners with research knowledge and expertise.

1.4.1 The lack of comprehensive patient registration, incomplete registration of practitioners providing primary care, and limited use of computers for medical record keeping, make it difficult to obtain observational data to allow effective planning and management of primary care in Ireland. The *Structure of General Practice in Ireland* survey provides information only on staffing levels, equipment, and services provided in primary care. There are very few data on morbidity outside hospitals, there is no national electronic database of primary care consultations to document use of the service, and knowledge of the quality of the care delivered in the community seems to be based on local audits. R&D to fill this information gap about the provision and quality of care is therefore of great importance.

1.4.2 In order to ensure that quality standards and planned health pathways meet the declared commitment to 'deal with problems at the lowest level of complexity' it is essential that the Health Service Executive can draw on the advice of clinicians in primary care with high-level expertise across a range of clinical conditions. Such expertise is difficult to achieve without active involvement in R&D. If research knowledge and expertise on a condition is limited to clinicians working in the hospital sector then a balanced discussion of care options is more difficult. For example, clinicians working in hospitals may lack detailed knowledge of research demonstrating the limited predictive value of investigations in a community setting and the health gains to be had by providing long-term follow-up care outside the hospital sector.

1.5 Active involvement in clinical research improves care quality and the ease with which research evidence is disseminated and adopted in clinical practice.

1.5.1 The 1997 UK Report *R&D in Primary Care* cited four reasons why the involvement of primary care staff in R&D increases the quality of service care:

- The process of conducting research as well as its outcome has a direct impact on quality of care provision (e.g. control patients in clinical trials have better outcomes than those not entered in trials).
- Quality standards and quality-assured protocols for service delivery often arise from applied clinical research.
- In secondary care, case-survival is better in centres of excellence engaged in R&D and there is no reason why this should be different in primary care.
- Engagement in R&D promotes a self-critical professional culture.

The Report also argued that involvement in R&D, particularly of staff involved in teaching, leads to 'faster dissemination and adoption of research evidence'.

1.5.2 It is difficult to create a culture of self-audit and the use of knowledge if there is no culture of contributing to the production of this knowledge. The chief executive of the Irish College of General Practitioners admitted in 2005 that 'we have yet to create a research culture in general practice'. Other primary care professionals appear to have even less of a culture of justifying clinical decisions by reference to carefully collected evidence rather than personal experience.

1.5.3 There appears to be a particular problem in relation to nursing and midwifery and the therapy professions. Despite the commitment of professional leaders, very few clinical academics in these professional groups involved in primary care activities have high-level R&D experience. Moreover, many no longer provide a clinical service. This must make it more difficult for them to demonstrate the clinical relevance of evidence-based teaching.

1.5.4 There is a long tradition in hospital medicine of conducting teaching and vocational training in institutions that also engage in research. This increases the likelihood that the content of teaching is based on research evidence, that scientific advance after completion of training is more easily assimilated, and hence that those taught continue to base their subsequent clinical practice on the best available scientific evidence. There is no reason why the benefits of linking teaching and research should not also apply in primary care.

2. Existing R&D capacity in primary care

2.1 Current output of primary care research is modest and the number of papers in high-impact international journals is small.

2.1.1 The primary care research output in peer-reviewed journals from January 2001 to June 2006 is summarised in Annex 1. Almost 300 original papers were identified. Most (71%) were in national journals; only a third (35%) were in journals with an impact factor >1 and only 16 (6%) in journals with an impact factor of 5 or more.

2.1.2 The most productive clinical researchers were the general practitioners (contributing 35% of the total research output), particularly where they receive strong support from researchers in epidemiology and public health. In four out of the five medical schools, the department of general practice has the lead role in primary care R&D (i.e. it produces the most research output relevant to primary care). Of the 16 papers identified in high-impact journals in 2001–2006, five were from departments of general practice.

2.1.3 There is also significant research output related to primary care from community dentistry (29 papers), primary care pharmacy (30 papers) and epidemiology and public health. In both community dentistry and primary care pharmacy, one institution stands out as taking a national lead role.

2.1.4 There is less R&D capacity evident in other clinical professional groups. The schools of nursing and midwifery together contributed 15 papers, only five of which were published in journals with an impact factor >1. Seventeen papers were identified from the therapy professions, nine in journals with impact factor >1.

2.2 Primary care research output in Ireland lags behind the UK and Europe.

2.2.1 The international comparison in Annex 4 suggests that output of research likely to impact on primary care practice compares poorly with many other northern European countries. Ireland is ranked 14th, with an output estimated as one-fifth of that in the UK even after adjustment for its smaller population size.

2.2.2 One obvious cause for low output is the small size of the primary care research groups. For example, the number of senior academic staff in UK departments ranges from 6 to 23 (median 10). The range in Ireland is 3 to 7 (median 6).

2.2.3 Direct comparison with the UK departments of the extent of publication in high-impact research journals (see Annex 2) estimates a median rank position for the Irish departments of 21 (out of 30). This compares to a median rank of 12 for the Scottish departments and 11 for the English and Welsh. The most productive researcher in an Irish department had a publication rate in high-impact journals of about a third of the rate of the best researcher in a UK department.

2.2.4 Comparison of research output with general practice-led departments in Canada, Australia and the Netherlands again showed that the best Irish departments achieved a level of publication in high-impact journals similar to the average department in those countries but substantially less than the leading departments.

2.2.5 The titles of the Irish papers listed in Annex 4, particularly in comparison with the overseas papers from the *Lancet* and *BMJ*, confirm that too small a proportion of the Irish output is tackling major clinical issues of importance to the health service, so it is unsurprising that few papers will have an important impact on clinical care.

2.3 There is heavy involvement in clinical service development but a noticeable lack of published applied clinical research; this probably reflects the failure to meet service support costs.

2.3.1 Annex 4 lists a number of unpublished reports which reflect heavy involvement of the universities in both public health policy and clinical service development at both a local and national level. This may be of value to government and local service providers, and involvement of universities in the 'D' of R&D is undoubtedly important for implementation of research, but the lack of international quality research output already documented suggests that this level of involvement without planned expansion of critical mass has a substantial opportunity-cost for the core research function.

2.3.2 Annex 2 reveals that most of the Irish papers published in 2005–6 (89%) reported either health services research or public health research. Only 7% reported applied clinical research (i.e. research that informs the clinical management of patients in primary care). In comparison, 60% of the primary care papers listed from other countries reported applied clinical research. This substantial difference cannot be explained simply by the fact that the overseas list was generated from general clinical journals.

2.3.3 This lack of clinical involvement in research must in large part reflect the slow pace in implementation of the national Primary Care Strategy. There remains a predominance of single or two-handed practices with few support staff and a traditional emphasis on delivery of acute care. It is more difficult for a research culture to thrive in this environment.

2.3.4 The other main explanation given for the lack of applied clinical research by Irish research staff is that general practitioners are independent contractors who are unwilling to engage in research unless the service costs are met. These service costs are currently not met in Ireland for publicly funded research. In the UK they would be met by NHS Support for Science funding.

2.3.5 A contrast was drawn by a number of researchers between the lack of service support for research in primary care and the recent allocation of health service funds to support the service costs of teaching. The latter have allowed universities to involve an estimated 42% of practices in undergraduate teaching. Experience from the UK suggests that these university-linked teaching practices will be receptive to engagement in research if the direct service costs of the research can be met.

2.3.6 The other important issue mentioned by many researchers was the structural and organisational barriers to conducting research in a community setting. The most recent 2005 *Structure of General Practice in Ireland* survey estimated that only 72% of general practitioners keep electronic consultation records, only 59% of practices maintain an age-sex register, and about a third employ a full-time nurse. So, many of the structural components which underpin primary care research in other countries are absent in Ireland.

2.3.7 The working environment for clinical professions working in the community but outside general practice is reported to be even less conducive to research. Paper record keeping still appears common (often with no attempt to maintain a morbidity index). Public health nurses and community-based therapists often work in relative isolation. There are very few ancillary staff to support research.

2.4 The clinical academic career structure is particularly unattractive; this reflects in part the lack of any manpower targets for the proportion of service practitioners that need to be involved in R&D in order to maintain the evidence base for primary care.

2.4.1 There has been no discernable manpower planning at national level to determine the proportion of clinical staff (medical and non-medical) that needs to be involved in academic activity in primary care in order to sustain the knowledge base that underpins the health service. The Fottrell Report indicates that this lack of manpower planning extends to teaching and workforce renewal as well as research.

2.4.2 The clinical academic career structure in primary care is generally unattractive and piecemeal. There is no mechanism to allow or encourage nurses and therapists to integrate academic and clinical work. The Health Research Board has recently funded a number of doctoral-level Fellowships but there are few post-doctoral opportunities to combine clinical and research work and the future career options for individuals completing Fellowships remains unclear.

2.4.3 The clinical academic career structure for general practitioners and community-based dentists is particularly adverse. There is no career structure comparable to that in hospital medicine. Despite the creation of a small number of academic training posts in recent years on a trial basis, there is no national integrated programme to combine academic and clinical training. It is difficult to cross between academic and service posts after training. There is no mechanism to ensure parity of academic and service salaries and taking up an academic post is generally associated with a substantial loss of income (and increase in workload) compared to a service post.

2.5 Incentives for universities to develop research capacity in primary care are small, particularly in relation to the incentives to prioritise teaching.

2.5.1 The predominance of teaching over research in primary care reflects both academic and financial incentives within universities and professional bodies responsible for vocational training. None of the high-impact journal papers cited in Section A4.3 in Annex 4 originated in Ireland and the potential of primary care research to make significant scientific advances has not been realised.

External funding for research in primary care has been limited and capricious. This compares starkly with the financial incentives for teaching in undergraduate primary care (i.e. secure long-term funding, guaranteed student numbers, and reducing teaching capacity in the hospital sector).

2.5.2 Many of the clinical disciplines other than general practice have university departments with high academic staffing levels but, characteristically, very few staff are research active and many undertake no clinical activity. The emphasis is on direct undergraduate, and sometimes postgraduate, classroom teaching. This reflects the fact that academic activity in these disciplines has only recently become university based.

2.5.3 The general-practice-based departments are much smaller than the non-medical departments but also have a substantial teaching commitment across four of the six years of the undergraduate curriculum (4%–7% of total curriculum time). Implementation of the Fottrell Report (i.e. an increase of 600–700 students per annum) will substantially increase this teaching load and further reduce research capacity.

2.6 R&D leadership in primary care is in short supply and over-committed; demand for senior posts is out-stripping supply and the policy of relying on recruitment of staff trained in R&D overseas is becoming less tenable.

2.6.1 The relatively low levels of publication in major journals documented in Annexes A1, A2 and A4 are evidence of very limited research leadership capacity. In the departments visited, often no more than one senior staff member had substantial experience of the process of raising research funding, organising research, and publishing in international journals. These individuals invariably also had substantial responsibilities for teaching and administration; the medical staff were also providing a clinical service.

2.6.2 The oral health research centre in Cork provides a good example of a very productive unit led by one over-committed enthusiast with high-level research skills supported by a senior colleague with an emeritus appointment. This dependence on one person makes for structural instability and arguably limits internal peer review and ultimately research quality. This heavy dependence on one individual for leadership and expertise in primary care R&D also characterised all the nursing and therapy units visited.

2.6.3 The general-practice-led departments have only slightly higher levels of clinical leadership capacity, also relying on the over-committed enthusiast model. The departments in Cork, NUIG and RCSI have only one clinician with high-level expertise, UCD has two and Trinity has three. This is reflected in the number of outputs in major journals from these departments. As mentioned in Annex 2, RCSI is about to appoint a second clinician with very high-level research expertise.

2.6.4 The more successful general-practice-led departments have increased their leadership capacity by recruiting staff with high-level expertise from other research disciplines. For example, Trinity employs a statistician, an epidemiologist and two health psychologists. NUIG has bolstered its high-level expertise by collaborating closely with non-clinical researchers in related disciplines such as health economics.

2.6.5 A barrier to increasing leadership capacity has been the difficulty universities have found in recruiting to senior academic posts. Some outstanding appointments have been made but the field of appointable applicants has invariably been very small and most have received their research training overseas. This is not a sustainable position as other countries also seek to expand research capacity in primary care.

2.7 Current levels of available external research funding are modest and mainly come from public sources; consequently, universities will not invest in new research capacity on the basis of short-term public funding.

2.7.1 The amount of external research funding for primary care R&D is modest. Annex 2 shows that the leverage achieved by the Irish departments is substantially less than departments in the UK. This consistent pattern of lower leverage must reflect the fact that there are fewer sources of funding for R&D in Ireland than in the UK.

2.7.2 The majority of research funding in primary care identified was from government sources (mainly the HRB and the HSE). Funding from industry was uncommon. Only one department had substantial charity support.

2.7.3 As the government appears to be the only major customer for primary care R&D in Ireland, there is limited potential for further financial leverage. Consequently, universities are unlikely to invest in primary care unless they perceive a sustained government demand with associated long-term funding (or evidence of sustained research funding from an alternative new source). A short-term 'burst' of funding will not grow research capacity and is unlikely to be effective in increasing R&D output.

3. Lessons from other countries

3.1 It is important to take an international rather than a national perspective.

3.1.1 R&D is not without cost and it therefore makes little sense to undertake research in Ireland that is being done, and particularly done better, elsewhere. So it is important that primary care R&D in Ireland, as in any other country, focuses on areas where there is a specific national interest or a competitive advantage in filling important gaps in the international literature.

3.1.2 Increased international understanding of the importance of primary care R&D has led to a number of international initiatives to increase research quality and capacity (e.g. the multidisciplinary Brisbane Initiative to bring together future research leaders and offer them training in international centres of excellence). Ireland would achieve added value from participation in such initiatives.

3.1.3 Health policy on primary care in countries with strong R&D has been substantially influenced and informed not only by policy and clinical research in that country but also by comparative research achieved through institutional collaboration with other countries (e.g. the UK government funded National Centre for Primary Care R&D has established a strong collaboration with the RAND organisation in the United States). Again, Ireland would achieve considerable added value by promoting such international collaboration.

3.1.4 In recognising the importance of an international perspective, it is important to consider whether primary care R&D could simply be 'bought-in' from overseas. This cannot be the sole solution, for two reasons. First, as stated above, the impact of R&D on clinical practice stems not only from published research outcomes but from the impact of the process and discipline of research on professional leaders and opinion-makers. Second, to have effective access to the international evidence base on health care, and to influence its content, it is necessary to contribute to it and be part of the international R&D community.

3.2 The most effective strategy for increasing primary care R&D capacity has been investment in a national career structure for clinical academics.

3.2.1 A key strategic decision that needs to be made by the Health Service Executive is the proportion of primary care clinicians (medical and non-medical) that need to hold tenured, full-time, university academic contracts to provide the teaching and research needed by the health service. An implementation strategy then needs to be drawn up to create a career structure that will recruit, train and retain this number of clinicians.

3.2.2 Academic clinicians are important role models and opinion leaders. It is as important in primary care as in secondary care that these posts are filled by the best clinicians and that these individuals feel a strong commitment to the publicly funded health service. The creation of a nationally advertised, competitive and secure career path for clinical academics in the UK was the key step in attracting the top prize-winning students into a clinical academic career. If the best students are recruited and retained, they will in time resolve the other strategic problems.

3.2.3 The 1997 UK Report *R&D in Primary Care* concluded that there was insufficient evidence to make a precise recommendation on the proportion of clinicians who need to hold an academic appointment in primary care to maintain the knowledge base, but it was clear that there were too few. The same is true in Ireland in 2006 – even in general practice, the most productive discipline, there appears to be fewer than 10 clinical academics with the ability to publish in high-impact journals. This is less than 0.25% of the clinical workforce and it does not provide critical mass. One per cent might be a sensible interim target.

3.3 The most effective strategy to improve the quantity of high-impact primary care R&D has been the provision of secure longer-term funding for a small number of focused research programmes on issues of enduring importance to the health service.

3.3.1 The need for research to guide government policy on the provision of primary care services in the UK has been very successfully met by investment in a national research centre (the NPCRDC in Manchester). The investment has been approximately £1m/year and the contract was initially awarded by competitive tender. A key feature of the national centre is that it brings together clinical researchers and experts in health policy and related disciplines. It benefits from strong international collaboration.

3.3.2 The most successful investments in applied clinical research in the UK have been made in focused research on enduring issues of clinical importance. In most cases, dual funding has been sought to maximise financial leverage from the government investment. For example, the OXCIS childhood infection programme (£300k/year) was a joint initiative with the Medical Research Council. The musculo-skeletal research programme in Keele is jointly funded with the Wellcome Trust. A key feature of both these programmes has been the strong involvement of experts from secondary care. The OXCIS programme also benefited from strong biomedical science support in the development of new molecular technologies.

3.3.3 All the examples cited in this Section illustrate the general point that the quality of primary care R&D can be improved even in the short term by accessing the high-level research skills of other disciplinary groups (statisticians, social scientists, health economists) and by increasing collaboration with hospital- and laboratory-based researchers.

3.3.4 The primary care R&D necessary to support health policy development and to underpin clinical practice require a different skill mix; it is important to develop national capacity in both areas (but not necessarily in the same institutions).

3.4 A number of countries have set up national infrastructure to support primary care R&D; this needs to build on existing university capacity.

3.4.1 A number of countries (England, Scotland, the Netherlands) have funded national schools of primary care on a federal basis which appear to be effective in encouraging joint working and development of critical mass where research leadership is in short supply. It is important that these national schools build capacity in, rather than asset-strip, existing departments.

3.4.2 The UK has recently set up a national structure of eight regional R&D networks to take responsibility for recruitment to research studies. These follow the model adopted for the MRC general practice research framework, the UK cancer research network and the clinical research organisations (CROs) used by industry. Responsibility for recruitment is separated from responsibility for scientific design and analysis. It is not yet clear whether this is a more workable and cost-effective strategy in primary care than working though informal university-led teaching networks, particularly for applied clinical research where local goodwill and support is essential. Whichever model is adopted, it is clearly important for the expansion of primary care R&D that the infrastructure to allow large-scale clinical trials (IT support, regulatory support, randomisation service) is made available. Perhaps the key lesson learned from other countries is that network funding should not be used to build empty nests but should be sufficiently flexible to follow research activity, providing investigators with recruitment support where and when needed.

3.4.3 In countries where investment in primary care R&D has been low, including the UK, small absolute increases in funding have achieved a large relative impact, whatever the chosen mechanism for investment.

3.5 It is no use undertaking primary care R&D if it has no impact on health service policy or clinical practice.

3.5.1 The 1997 UK Report commented that 'it is difficult to justify the acquisition of new knowledge unless existing knowledge is effectively disseminated and implemented'.

3.5.2 There is now a substantial international literature on the effectiveness of different strategies to disseminate the knowledge base and to increase its impact on health policy and health practice. Three strategies of particular relevance to primary care R&D are: a) publishing in journals which are likely to come to the attention of clinicians and policy makers; b) ensuring that evidence from primary care studies informs clinical guidelines and quality standards; c) ensuring that teaching and training only takes place in an R&D environment where there is a strong culture of having to justify decisions on the basis of research evidence.

3.5.3 International comparison suggests that one reason for the high quality of output and the service impact of primary care R&D in the Netherlands is the fact that undergraduate teaching and postgraduate training in primary care are university based and occur together. This increases critical mass in universities and facilitates dissemination of R&D through continuing medical education.

3.5.4 Professional Colleges have played an important role in championing R&D, establishing teaching and research in universities, setting professional standards, and leading the development of vocational training. They have also played important roles in organising national surveillance and morbidity recording. The ICGP, specifically, has made great efforts to increase its R&D expertise in recent years by setting up a research committee, appointing a director of research, and promoting evidence-based quality improvement through CME and vocational training. However, international experience suggests that professional bodies find it difficult to sustain R&D expertise outside a university environment and a clear agreement on the appropriate roles and responsibilities of professional bodies and universities is very important.

4. Proposed strategic objectives

4.1 To increase the capacity to conduct primary care R&D likely to impact on the quality of the clinical service in Ireland

Justification: There is a lack of evidence to inform health policy and planning of primary care services in Ireland. The evidence base to underpin clinical decision making in primary care derives almost entirely from overseas, leaving important questions about applicability to the national context. This evidence gap reflects the fact that Ireland lags behind the rest of Northern Europe in its output of primary care R&D.

4.2 To increase the output of primary care R&D likely to impact on the quality of the clinical service in Ireland

Justification: Only a small proportion of the research of Irish origin identified in this Report is about important clinical issues. The proportion of current primary care research activity that is likely to make a direct impact on service planning or clinical decision making is minimal. On average, only three papers each year achieve publication in a high-impact international journal and only one paper in the past two years was thought to be of sufficient clinical importance to have been selected for publication in either the Evidence Based Nursing or Evidence Based Medicine review journals.

4.3 To ensure the future of primary care R&D by recruiting the best young clinicians in primary care to an academic career

Justification: The most able clinicians are not opting for clinical academic careers in Ireland. This prejudices the future by impacting negatively on the quality of teaching and research. Universities are finding recruitment of high-calibre staff very difficult. Most departments and research groups conducting primary care research in Ireland have only one individual capable of providing high-level research leadership and training. Much of the existing leadership received their research training overseas.

4.4 To make Irish primary care a less hostile environment for applied clinical research

Justification: There is a particular dearth of applied clinical research in Irish primary care to inform clinical decision making. Research which requires the active involvement of service practitioners seems particularly rare – almost certainly because, unlike other countries with high research activity and output, the service costs of the research are neither recognised nor met.

4.5 To increase the likelihood that research findings are effectively disseminated and actually do impact on the clinical service

Justification: The main reason for government investment in primary care R&D is to improve the quality and cost-effectiveness of the clinical service in Ireland.

5. Recommendations

5.1 Objective 1: To increase the capacity to conduct primary care R&D likely to impact on the quality of the clinical service in Ireland

Recommendation 1: The few individuals in Ireland capable of leading high-quality international research in primary care should be identified and actively supported to increase their productivity. This could take the form of direct support for their research (e.g. appointing a research manager or deputy) or funding to allow them to increase the amount of time they might devote to research (by reducing competing demands such as teaching and clinical commitments).

Recommendation 2: The Health Service Executive and the Health Research Board together should consider establishing a National School for R&D in Primary Care in order to increase critical mass and to facilitate participation in international initiatives in primary care R&D. This School should be established with a federal structure, but should draw on the best primary care researchers from different institutions and clinical disciplines (including the therapy professions and nursing and midwifery). In order to ensure collaboration (rather than competition and fragmentation) each participating institution must have a precisely defined role and an independent budget. It would increase critical mass if the National School was developed as a cross-border initiative with Northern Ireland.

5.2 Objective 2: To increase the output of primary care R&D likely to impact on the quality of the clinical service in Ireland

Recommendation 3: The Health Research Board should commission a small number of clearly focused programmes of applied clinical research in primary care. These should address everyday clinical problems likely to be of enduring importance to the health service. The Board should explore with other potential funding agencies (i.e. industry, charity and higher education sectors) the possibility of joint funding. The criteria for funding should explicitly include collaboration with researchers with high-level research expertise from other disciplines and where appropriate from the hospital sector or the basic medical sciences.

Recommendation 4: The Health Research Board should consider creating a specific funding stream to encourage universities and postgraduate training bodies to collaborate with overseas centres of excellence in primary care research. This could include funding of specific linked posts (e.g. funding 10%–20% of the time of senior staff from overseas institutions that might see benefit from sustained collaboration in priority R&D areas for the Irish health service).

5.3 Objective 3: To ensure the future of primary care R&D by recruiting the best young clinicians in primary care to an academic career

Recommendation 5: The Health Service Executive and the Health Research Board should work together to plan and implement a well-defined clinical academic career structure for primary care from graduation to the end of clinical and academic training (a period of perhaps 8–10 years). It

should recognise and address current barriers to recruitment and retention of the best graduates from all clinical disciplines to academic primary care, including salary differentials and the difficulties of combining service and academic roles or moving between them.

Recommendation 6: In developing this career structure, the Health Service Executive and the Health Research Board should review, develop and co-ordinate a number of existing clinical training initiatives:

i) The existing ring-fenced Health Research Board clinical training programmes should be retained but reviewed to achieve better integration with the clinical academic career structure and clear career progression for the best students

ii) Integrated research training and academic career progression should be made available for the new grades of advanced practitioners and specialist practitioner in nursing, midwifery and the therapy professions. Future clinical academics in these professional groups will be drawn from these new grades and the best should be mentored and trained as research leaders.

iii) Opportunities for academic vocational training for general practitioners should be increased, building on the ICGP Senior Registrar/Academic General Practice Project. It should be advertised as a high-prestige national initiative, and linked to a Health Research Board research training post to allow completion of a doctoral degree. Joint clinical-academic vocational training should be provided in years 4 and 5 of the existing scheme, bringing Ireland in line with best practice in other countries (e.g. UK and the Netherlands).

iv) The extent to which the existing Health Research Board post-doctoral and research scientist schemes support clinical researchers in primary care should be reviewed. It is essential that there is clear next-step career progression for the best individuals exiting from the more junior clinical academic training schemes in primary care.

Recommendation 7: In order to increase capacity in the non-clinical disciplines which underpin primary care research, such as statistics, health economics and the social sciences, the Health Research Board should consider establishing non-clinical Young Researcher Awards in primary care at post-doctoral level It may be important to specify joint mentoring between primary care and the individual's own discipline.

5.4 Objective 4: To make Irish primary care a less hostile environment for applied clinical research.

Recommendation 8: The Health Service Executive should speed the implementation of the National Primary Care Strategy.

Recommendation 9: The service cost of involvement in research needs to be recognised and met by the Health Service Executive. This applies not only to general practitioners acting as independent contractors but also to the non-medical clinical professions in primary care, such as public health nurses and therapists. Unless R&D is an existing contractual requirement, or there are clear 'knock-for-knock' benefits to the service from R&D, the opportunity cost to service provision of clinicians engaging in R&D needs to be explicitly recognised and a re-imbursement

mechanism established. Applicants submitting proposals for research in primary care to the Health Research Board should be required to make explicit the service cost of the research as well as the research cost. This service cost, and the mechanism by which it should be met, can then be agreed with the Health Service Executive before final funding approval is given.

Recommendation 10: The proposed National School of Primary Care (recommendation 2) should establish the capacity for large-scale national research through networking of research-interested clinicians and clinical sites. It should work with professional colleges (such as the ICGP) and university-linked teaching practices. The key principles that should guide the establishment of this national network are that fixed costs should be kept to a minimum and money should follow research. Experience from other countries suggests that added value is most likely if: a) the network exploits the university-led network structure for teaching and training, and postgraduate resources such as the ICGP-led CME network; b) reimbursement is made dependent on meeting agreed targets for R&D activity.

5.5 Objective 5: To increase the likelihood that research findings are effectively disseminated and actually do impact on the clinical service

Recommendation 11: The specification for the proposed National School of Primary Care (recommendation 2) should include increasing primary care expertise in systematic review and secondary data analysis, particularly in the clinical professional groups outside medicine and dentistry. It should be tasked to promote involvement of these groups in international programmes on evidence-based practice (such as EBM Training Courses and the Cochrane Collaboration). The uptake of the Health Research Board Cochrane Training Fellowships by primary care clinical academics should be monitored.

Recommendation 12: The Health Service Executive should review its ongoing policy and service development needs in relation to primary care, recognising the substantial resources previously spent by regional health boards in commissioning ad hoc primary care projects. It should commission a single centre for policy research in primary care to provide the evidence to underpin its planning for the provision of primary care services in Ireland. This centre should be university based and form part of the proposed National School (recommendation 2).

Recommendation 13: In drawing up the specification for the proposed centre for policy research (recommendation 12), the Executive should require it:

i) To respond to the information needs of the Heath Information and Quality Authority (HIQA).

ii) To keep under review and report on the applicability to Ireland of the mechanisms for disseminating research evidence to primary care clinicians and policy makers used in other countries (e.g. in the UK, Clinical Evidence, Prodigy, the eBritish National Formulary, the Electronic Library for Health).

iii) To keep under review and report on the applicability to Ireland of the incentive schemes for rewarding evidence-based practice (e.g. in the UK, the Quality Framework Targets).

iv) To work in partnership with the universities and professional bodies responsible for postgraduate education.

The Health Service Executive may wish to give funding priority to mechanisms for disseminating research evidence to primary care clinicians and policy makers which have proved successful in other countries and clinical groups and could be implemented at low cost.

Recommendation 14: Vocational training for all primary care professions should be brought within a university environment so that research and training are co-terminus at postgraduate as well as undergraduate level. This must not conflict with the responsibility of the professional colleges for setting professional standards and minimum criteria for vocational training. For example, in general practice, the ICGP has, and should retain, responsibility for standard setting (in line with the Buttimer Report). However, it is very difficult to see how a robust evidence–based culture can be established in general practice in the longer term while most postgraduate teachers are not employed by universities and vocational trainees are not fully exposed to the critical rigour of an R&D-rich environment.

6. Implementation and costs

6.1 Priorities for funding

6.1.1 The first seven recommendations are listed in approximate order of priority for funding, both in terms of importance and timescale. Recommendation 1 is of particular importance, not simply because it offers an immediate solution to increasing research capacity but also because the critical mass of international quality researchers is so low. It was estimated earlier that only about 10 individuals in Ireland are capable of leading high-quality international research in primary care. There is a strong international market for these researchers, generated by funding incentives in countries that perceive economic benefit from strong academic primary care. Ireland cannot afford to lose any of its existing academic capacity.

6.1.2 Recommendations 3 and 4 (to fund a small number of research programmes in primary care focusing on issues of enduring importance to the health service and to drive up quality by sponsoring international collaboration) are placed ahead of recommendations 5–7 (to improve career structure) because training has to take place in research units actively undertaking important research.

6.1.3 Recommendations 8–14 are not in priority order, although recommendations 8 and 9 are arguably the most important of them. Implementation of the Primary Care Strategy would substantially improve the service environment for R&D. And applied clinical research involving service practitioners cannot take place until the service costs are recognised and met, either through direct reimbursement by government or industry (as in the UK) or by making research an explicitly funded activity within service contracts.

6.1.4 Recommendations 11-14 on implementation of research are particularly important for the Health Service Executive. Recommendation 14 (bringing together research and postgraduate training, thereby making the latter more evidence based) has the great benefit of high impact at minimal cost. However, implementation may be politically challenging and would need to be done with great care – for example in general practice, taking on board the reasonable concerns of the ICGP, building on existing university links, and carefully conserving the strengths of the current structure.

6.1.5 Recommendations 12 and 13 propose a national policy research centre linked to the National School to replace ad hoc initiatives in policy research in primary care. This centre could conduct high-quality policy research on behalf of policy makers and HIQA, and provide the HSE with the best evidence internationally on primary care service organisation. It has strong potential to help HSE achieve long-term cost savings by providing a better evidence base for re-organisation of primary care in order to increase the probability of effective management of demand for expensive hospital care. It may even be cost-neutral in the short term if account is taken of the alternative costs of commissioning ad hoc studies and consultancy reports and the reduced need for staff in government agencies.

6.2 Specific implementation issues

6.2.1 The most important implementation issue is the need for active involvement of the Health Service Executive. This is crucial in relation to the development of the academic career path, the funding of the service costs of research, and the implementation of research in clinical practice through evidence-based policy and evidence-based clinical decision making. This report is therefore written to be compatible with the HSE draft research strategy.

6.2.2 A key issue for both HSE and HRB is agreeing the proportion of primary care clinicians that need to be employed in academic posts in order to maintain the quality of primary care service provision (i.e. to train its workforce and provide its knowledge base). One option is to take the lead from the UK and agree an interim target of 1% but keep it under review over time.

6.2.3 If the proposal to establish a National School is accepted, it is important that creation of the School does not prejudice existing institutions. It should be established with a federal structure. Involvement of Northern Irish universities would obviously need to involve co-funding by NHSR&D in Northern Ireland. The high level of existing collaboration between institutions evident from the publication lists in Annex 4 will make it easier to achieve the benefits of scientific collaboration between the leading researchers and joint responsibility for training future research leaders without moving all researchers into a central institution. Experience from the UK and the Netherlands shows that to make a federal structure work it is essential that all participating institutions have well-defined individual responsibilities and independent budgets to prevent harmful competition and fragmentation.

6.2.4 There will be an obvious tension in commissioning a National School between distributing scarce resources efficiently (by rewarding proven excellence) and developing fledgling researchers, particularly in disciplines other than medicine. The National School should therefore be specifically commissioned to develop research in the therapy professions and nursing and midwifery. It may also be appropriate to exercise positive discrimination in relation to recommendation 1 – awarding support funding to allow the best potential researchers in these professional groups to minimise their teaching commitments and commit full-time to research.

6.2.5 In implementing arrangements for clinical academic careers, it is important to attract the most able applicants and to offer training only in centres of research excellence. In the UK, this has been achieved by conducting a high-profile national competition for a small number of training places in specified universities (identified by a separate commissioning exercise). For general practice trainees, the competition is carried out in parallel with national recruitment to service vocational training posts. Applicants can express a ranked preference for training location.

6.2.6 In funding the proposed new programmes of focused clinical research in areas of enduring importance to primary care clinical services (stroke, mental illness, heart failure, asthma, dementia etc), the HRB should consider opportunities for joint funding with industry and the charitable sector.

6.3 Cost estimates for recommendations

6.3.1 The estimated cost of implementing each recommendation is summarised in Table 6.1. The total estimated cost is €8 million. This is a small fraction of the cost of the national service budget for primary care and is likely to have a major ongoing impact on care quality (through better-informed policy, more evidence-based training, and better clinical decision making) at small marginal cost.

Table 6.1 Estimated cost of recommendations

Recommendation	Estimated annual cost	Comments
1	€900,000	Six awards at €150,000
2	€1,000,000	UK National School of PC annual budget is £3 million
3	€1,250,000	Five awards at €250,000
4	€250,000	Five awards at €50,000
5	–	No immediate cost
6	€2,000,000	This would fund 5 non-clinical PhDs (€250); 5 nursing or therapy PhDs (€300); 5 post-docs (€400); 5 GP training fellows (€550); and 3 clinical scientists, including 1 medic (€500).
7	€500,000	Five awards at €100,000
8	–	This is not an R&D cost.
9	€1,250,000	This is impossible to cost precisely but the estimate is based on the premise that service costs for HRB programmes are likely to be roughly equal to research costs.
10	€400,000	The costs of running a network are modest if the costs of practitioner activity are met directly from service support funds under recommendation 8 above.
11	–	No cost
12/13	€500,000	The UK Manchester Centre receives approximately £1 million pa. The cost of this recommendation would be offset by money saved on ad hoc commissions and consultancy costs.
14	–	No ongoing cost (possibly a saving) although merger would be facilitated by one-off payment to defray transitional costs.

6.3.2 Any partition of costs between the Health Research Board and the Health Service Executive will be decided by them in further discussion. However, by analogy with the division between the responsibilities of the MRC and DH in the UK, it seems likely that the Health Research Board will feel it has responsibility for Recommendations 3, 4 and 7 (€2,000,000), the Health Service Executive will feel it has responsibility for Recommendations 9, 10, 12–13 (€2,150,000), and they may wish to share the costs for Recommendation 6 on developing clinical academic careers and Recommendation 2 to establish a National School (€3,900,000).

Annex 1 Primary care R&D activity

A1.1 Where is primary care R&D taking place in Ireland?

A1.1.1 Most R&D in primary care in Ireland is led by the universities with medical schools: Trinity College Dublin (TCD), University College Dublin (UCD), University College Cork (UCC), the Royal College of Surgeons of Ireland (RCSI), and the National University of Ireland in Galway (NUIG).

A1.1.2 Dublin City University (DCU) and the University of Limerick (UL) are taking steps to increase their capacity to carry out primary care R&D but their published research output is as yet small (< 10 peer-reviewed papers in past five years). There is no evidence of significant research led by service practitioners without links to the universities.

A1.1.3 A substantial number of general practitioners (450+) have been involved in data collection for two public health programmes co-led by the Irish College of General Practitioners (ICGP): the Heartwatch project (carried out in conjunction with the Independent National Data Centre) and the Sentinel Practice surveillance project (carried out with the Health Protection Surveillance Centre).

A1.1.4 University College Cork has completed one industry-sponsored trial of a lipid-lowering agent in general practice but no current primary care R&D activity led by industry was identified.

A1.1.5 The number of service general practitioners participating in applied clinical research seems low given the level of clinical research output documented below. Involvement of other service clinicians working in the community (i.e. nurses, midwives, therapists, pharmacists, dentists) in applied clinical research must be even lower.

A1.2 What is the current level of academic output?

A1.2.1 Table A1.1 gives an estimate of the academic output of primary care R&D in Ireland by listing the original research papers dealing with primary care issues published in peer-reviewed journals between January 2001 and June 2006. The criteria for inclusion are listed in Section A1.9.

A1.2.2 Based on detailed analysis of 2005–6 output, most of the primary care R&D identified (89%) is either health services research or public health research. Only 7% is applied clinical research (i.e. research that informs the clinical management of patients in primary care).

A1.2.3 The most active clinical staff in primary care R&D are general practitioners (43% of lead-author output) and public health dentists (18% of lead-author output). Of the 16 papers identified in high-impact journals, six were from departments of general practice.

A1.2.4 The university schools of nursing and midwifery together contributed 15 papers (5% of papers identified) but only five papers were in journals with an impact factor >1. Seventeen papers were also identified from the therapy professions, with nine in journals with an impact factor >1.

Table A1.1 Estimated academic output of primary care research in Ireland, January 2001 to June 2006

Institution	Department/ Research Group	Number of original papers			ISI impact factor of papers	
		Total	As lead author	In non-Irish Journals	<1 or N/A	1–5
UCC	General Practice	7	6	6	6	1
	Epidemiology and Public Health	18	12	13	6	10
	Dentistry and Oral Health	42	28	38	26	14
	Applied Psychology	2	2	0	2	0
	Nursing and Midwifery	6	6	6	5	1
NUIG	General Practice	24	23	21	14	9
	Psychology	5	5	3	2	3
	Health Promotion	6	4	4	2	4
	Speech, Language and OT	2	2	1	2	0
DCU	School of Nursing	6	3	4	3	3
RCSI	General Practice	7	7	4	3	4
	Psychology	5	5	4	2	3
	Pharmacology	1	1	1	0	0
	Epidemiology	3	3	3	0	2
	Nursing	4	4	4	3	0
Trinity	Public Health and Primary Care	38	23	27	21	12
	Pharmacology and Therapeutics	28	27	19	9	18
	Dental School	6	3	3	6	0
	Nursing	1	1	1	1	0
	Social Work and Social Policy	6	6	5	5	1
	Medical Gerontology	1	1	0	1	0

UCD	Applied Social Science	1	1	1	1	0
	Public Health & Population Sci.	5	0	4	1	3
	General Practice	24	21	5	21	3
	Physiotherapy & Perf. Science	15	13	12	6	8
Other		23	N/A	13	20	3

Notes: 1. See text for inclusion criteria – numbers will be less than departmental publication lists for many reasons (e.g. only papers directly relevant to primary care practice are included; papers published by departmental staff on the basis of work done in employment outside Ireland are excluded.). 2. 'Other' category includes papers from service practitioners (5), ICGP (2) and other agencies (16). .3. Cochrane systematic reviews not separately published in journal format but of obvious major international importance have been included with the high impact (>5) papers. 4. University departments with zero returns are excluded from the table.

A1.2.5 The most productive groups are the Oral Health Research Group in Cork, the Department of General Practice in Galway, the Department of Public Health and Primary Care at Trinity, and of Pharmacology and Therapeutics at Trinity. The Department with the highest quality output as judged by publications in high-impact international journals is the Department of Public Health and Primary Care at Trinity.

A1.2.6 The papers identified described both research done by primary care researchers and research led by other researchers (public health practitioners, clinical psychologists, health policy analysts) on primary care. There was no evidence of research being done through primary care, presumably reflecting perceived difficulty with access and incomplete morbidity registration.

A1.2.7 In four out of the five medical schools, the department of primary care had the leading R&D role (i.e. produced the most primary care relevant outputs). However, in at least two universities this was in the context of strong support in epidemiology and health services research provided by public health research staff.

A1.2.8 The amount of primary care R&D led by clinicians outside universities is small (8%); only three papers from a non-university source were published in a journal with an impact factor >1.

A1.3 Staffing and primary care R&D productivity

A1.3.1 Table A1.2 reports comparative staffing levels for those departments or research groupings initially identified as having published more than five papers on primary care R&D. (The dental school at Trinity was unfortunately omitted from this analysis as in the initial literature review <5 papers were identified). It shows their relative size and provides an estimate of productivity (i.e. output in relation to size).

A1.3.2 The staffing levels reported in Table A1.2 over-estimate primary care R&D capacity and under-estimate productivity for three reasons: 1) even the departments of general practice do not focus solely on primary care (e.g. general practice in TCD is part of joint department with public health); 2) primary care is a minority interest of most other departments; 3) the time commitment of staff to research teaching and clinical service is difficult to establish; 4) there is a substantial amount of part-time working.

A1.3.3 Table A1.2 shows that the departments of general practice are small in relation to other university groups. They have a particularly small number of core academic staff, many of whom are part-time. However, most display good productivity ratios, with relatively high ratios of papers published /staff employed.

A1.3.4 The research productivity of the nursing departments is low.

A1.3.5 The department with the highest output index for both total and higher-impact papers is the Department of Public Health and Primary Care at Trinity.

Table A1.2 Comparative staffing levels and primary care research output

Institution	Department	Total staff	Papers[1]		Output ratios[2]	
			All	IF 1+	All	IF 1+
UCC	General Practice	5	7	1	14	2
	Epidemiology and Public Health	19	18	12	9.5	6.3
	Dental School and Oral Health	29	42	16	14	5.5
	Nursing and Midwifery	62	6	1	1	0.2
NUIG	General Practice	18	24	10	13	5.5
	Psychology	22	5	3	2	1.4
	Health Promotion	20	6	4	3	2
DCU	School of Nursing	76	6	3	0.8	0.04
RCSI	General Practice	10	7	4	7	4
Trinity	Public Health and Primary Care	20	38	17	19	8.5
	Pharmacology and Therapeutics	26	28	19	11	7.3
	Social Work and Social Policy	32	6	1	2	.3
UCD	General Practice	18	24	3	13	1.6
	Physiotherapy & Perf. Sci.	16	15	9	9	5.6

Notes: 1. Number of publications is taken from Table A1.1. 2. Total number of papers is the number of original peer-reviewed publications in past five years (taken from Table A1.1) divided by total number of staff x 10.

A1.3.6 A comparison of the staffing levels and publication output of Irish departments of primary care/general practice with university departments of primary care/general practice in the UK and three other countries (Australia, Canada and the Netherlands) is reported in Annex 2.

A1.4 Primary care R&D expertise in community dentistry and oral health

A1.4.1 There are only two departments with a potential interest in community dentistry and oral health – one in Trinity and the other in Cork. The analysis of activity above shows that the group in Cork (the Oral Health Services Research Centre) has substantially more R&D capacity in primary care.

A1.4.2 The Oral Health Services Research Centre was established about 20 years ago and was built up by Dennis O'Mullane who retired in 2002, when leadership was assumed by the Deputy Director, Helen Whelton, with Professor O'Mullane providing a consultancy service in an emeritus role. The centre has minimal core funding and an obvious shortage of senior academic staff but it has an experienced and established research support team of 14 people (clinical trials co-ordinator, projects manager etc.). It is sustained by recurrent project grant funding from government and industry. In 2004 it was in receipt of seven HRB grants – one programme grant (benefits and risk of fluoride), three project grants (dental caries, service utilisation), and three training fellowships (including one Cochrane fellowship). It was also in receipt of funding from the Department of Health and Children for six epidemiological studies and from the EU for a study on contamination of dental unit water systems. It undertakes small-scale RCTs (20–250 subjects) for industry according to GCP standards. It is committed to post-graduate training (11 postgraduate students in 2004). It is designated as a WHO collaborating centre.

A1.4.3 The lack of senior staff in the Centre reflects two issues – lack of an adequate clinical academic career structure (e.g. there is not even a recognised service speciality of dental public health) and lack of university commitment to give core support (e.g. to create a second senior academic post.)

A1.5 Primary care R&D expertise in general practice

A1.5.1 The current research interests and expertise in the four departments of general practice are summarised in Table A1.3. Research dependent on the expertise of other collaborators is shown in italics.

A1.5.2 The Department of General Practice in Cork has only one staff member with substantial R&D expertise. The Department now focuses primarily on teaching. However, it has formed a close collaboration with the Department of Epidemiology and Public Health in Cork (led by Ivan Perry) which does have substantial research activity and expertise relevant to primary care, particularly in the fields of cardiovascular risk (Cork and Kerry Diabetes and Heart Disease Study; European HeartScore project, Cork 5C study) and suicide (with the National Suicide Research Foundation). The Department of Epidemiology and Public Health is also developing research capacity in systematic review, health services research, and health economics.

A1.5.3 The Department of General Practice in Galway is the most recently established. It has a small critical mass (only one senior clinical researcher with high-level R&D expertise) but it has been very successful in attracting external funding (€3 million in aggregate as lead department since its establishment) and it now employs seven other research staff. Its main area of clinical research interest is cardiovascular disease (SPHERE RCT, Co-Heart study) but it also has an interest in health services research (rural health, patients' perspectives) and on medical education. It has increased its R&D expertise by establishing links with cognate departments (health psychology, biostatistics, health economics, epidemiology and public health) and seeking international links with centres of research excellence (in Scotland, UK and Australia). Partly as a result of its sources of funding, it has also taken an interest in local and national health policy development.

A1.5.4 The Department of General Practice at RCSI is changing rapidly. Until about three years ago, primary care R&D at RCSI was at a very low level, but it is now a priority. It is now collaborating with Trinity in an RCT of type-2 diabetes care, has won two HRB research fellowships in the area of social deprivation and health, and has established a programme to develop research capacity in primary care (including establishing four research practices). It has just appointed a new chair from the UK (Tom Fahey) who has a strong track record in research – 68 original papers on Medline, including 17 in high-impact (IF 5+) journals.

Table A1.3 Current research interests and expertise in the four departments of general practice

Institution	Main areas of research interest
Cork	Prescribing in general practice
	Cardiovascular risk
	Mental Health and Suicide
Galway	Cardiovascular disease
	Health services research (rural health, patients' perspectives)
	Medical Education
RCSI	Type-2 diabetes
	Socio-economic deprivation and health
UCD	Delivery of health care in the community (including emergency care, interface with other health care services; physiotherapy and liaison nursing)
	Medical education
Trinity	Type-2 diabetes
	Primary care epidemiology
	Health inequalities and health needs assessment
	Health policy

A1.5.5 The Department of General Practice in UCD is now a sub-group within the School of Medicine but stills functions as a discrete entity. It is the only department that employs clinical staff with exclusive service responsibility. Its research focus is on the delivery of health care in general practice (e.g. GP co-operatives) and it has a strong track record of undertaking studies in emergency care and the interface with secondary care. It has strong links with the ICGP and has a good track record of service-relevant research reported in Irish journals. It reports a research

income of €1.6 million in 2006. It is currently conducting two RCTs in collaboration with other professional groups (liaison nursing and physiotherapy). It is developing research in a new field of study, emergency medical technology.

A1.5.6 The Department of General Practice in Trinity has the best track record of conducting research which is published in high-impact international journals. It is a joint department with Public Health and, as well as two research-active general practitioners, has in-house research skills in statistics (Alan Kelly), epidemiology (Shane Allwright), public health (Joe Barry) and health psychology (two HRB Research Fellows). It also has a unique methodological interest in geographical information systems (Conor Teljeur). It has the capacity to undertake large-scale clinical trials, to win substantial HRB grants in open competition, and to train researchers (12 PhDs since 1997, six of which were HRB-funded). The Head of Department (Tom O'Dowd) has a specific interest and expertise in health policy but the Department is not funded for this activity.

A1.5.7 The important role of the Irish College of General Practitioners (ICGP) in promoting research and collaborating with national agencies on surveillance was mentioned in paragraph A1.1.3 above. The Heartwatch project is a structured programme of secondary prevention that monitors risk factors and preventive treatment by annual review in general practice (13000 people have entered the programme and 4000 have completed two years of follow-up).The Sentinel Practice project is a computerised surveillance network for infectious disease (particularly influenza) involving 46 practices. The College has appointed a Director of R&D (on short-term funding) but has no other research infrastructure. It is well positioned to facilitate and champion research led by the universities.

A1.6 Primary care R&D expertise in nursing and midwifery

A1.6.1 It is estimated that there are more than 2,500 nurses and midwives delivering primary care in Ireland; most are community-based public health nurses but the estimate includes community-based general nurses and midwives. Three nursing schools offer training for public health nurse registration: UCD, Cork, and Galway. Practice nurse training (postgraduate or higher diploma) is offered at Galway and RCSI

A1.6.2 Table A1.1 shows that there is disappointingly little primary care R&D output from the nursing schools, with only five papers identified in journals with an impact factor >1. The most active institutions in primary care nursing and midwifery R&D appear to be Dublin City University and University College Cork.

A1.6.3 The low rate of publication by nurses and midwives identified is consistent with the 2006 *Report on the Baseline Survey of Research Activity in Irish Nursing and Midwifery.* This report cites an unpublished bibliometric analysis (McCarthy *et al.*) reporting publication of only 60 nursing research papers from Ireland in peer-reviewed journals between 1990 and 2005, including nursing research in hospitals.

A1.6.4 There was substantial enthusiasm to increase research activity in all the nursing and midwifery departments visited. The ring-fenced HRB Research Training Fellowship programme has been successful in increasing the number of doctoral students (17 PhDs and seven Masters in Science since 1999, at least two of whom have researched issues of relevance to primary care). However,

there is uncertainty about career progression and a shortage of senior staff role models who have the capacity to provide research training at a post-doctoral level (where the focus needs to be on the practical skills of funding, organisation and delivery of a research programme).

A1.6.5 Both the *Framework for the Establishment of Advanced Nurse Practitioner and Advanced Midwife Practitioner posts* (July 2004) and the *Framework for the establishment of Clinical Nurse/Midwife Specialist posts* (November 2004) anticipate that such practitioners will deliver primary care in a community setting and they explicitly specify research as one of the key competencies. These career programmes may well deliver primary care R&D capacity in the future.

A1.6.6 The 2005 National Council Report on the future of public health nursing, *Agenda for the Future Professional Development of Public Health Nursing*, reports a consultation in which all grades bemoaned a 'lack of leadership' and calls for the development of skills in 'leadership, research and audit'. However, this clearly hasn't happened yet.

A1.7 Primary care R&D expertise in pharmacy

A1.7.1 The only group with significant R&D output in community pharmacy is the Department of Pharmacology and Therapeutics at Trinity College Dublin. The literature search identified 28 original papers in peer-reviewed journals in the past five years.

A1.7.2 The papers identified by the search ranged from general analysis of community prescribing patterns to studies of the prescribing of specific drugs (e.g. asthma, oral corticosteroids, methadone). Health services research identified included changing patterns of employment of community pharmacists, mechanisms of ADR recording, medicine returns and non-dispensing fees.

A1.7.3 The two research groupings within the Department of Pharmacology and Therapeutics with a particular interest in prescribing in primary care are the pharmaco-epidemiology group (which has interests in both prescribing patterns and quality of prescribing in primary care) and the National Centre for Pharmacoeconomics.

A1.8 Primary care R&D expertise in speech and language therapy, occupational therapy and physiotherapy

A1.8.1 The level of primary care R&D activity in the therapy professions is quite low. The literature research revealed 17 published papers. However, two individuals interviewed have other peer-reviewed publications from research done while employed outside Ireland (which were excluded from Table A1.1.

A1.8.2 This finding is consistent with a survey by the Irish Society of Chartered Physiotherapists done in 2004 (Hurley *et al.* 2006) – the response rate was low but only nine out of 1,808 members reported having been involved in any experimental research.

A1.8.3 Despite the low level of research output, therapy training now takes place in a number of universities: physiotherapy in TCD, UCD, RCSI and Limerick; occupational therapy and speech and language therapy in TCD, Cork, Galway and Limerick.

A1.8.4 There are high hopes that the new, ring-fenced HRB Research Training Fellowship programme for therapists will impact on future capacity. However, the release of the few academic therapists with high-level research skills from other duties to allow them to focus on mentoring this new generation of researchers does not appear to be accepted as a priority by all universities.

A1.8.5 Concern was expressed that, although the HRB Fellowships might stimulate a taste for research, there is no next career step. There is no clinical academic career pathway and few role models, with many academic posts currently being filled by lecturers without clinical responsibility. As with nursing and midwifery, the establishment of 'clinical specialist' therapist posts is seen as an opportunity to establish a cadre of individuals committed to evidence-based practice, but research activity and research experience is still not a required entry criterion to this grade for all therapy groups (e.g. occupational therapy).

A1.8.6 It is particularly difficult to define 'primary care R&D' for the therapy professions in Ireland. Delivery of care may be hospital based even if the treatment and population served would be characterised in other countries as 'primary care'. In this situation it is important to recognise that labelling is not the central issue. The objective is to ensure that R&D is undertaken to provide an evidence base to decide how to provide effective primary care no matter where or by whom it is delivered. But optimal place of delivery (hospital or community) may be one of the important issues to address.

A1.9 Search criteria and method used to identify peer-reviewed journal papers

A1.9.1 The four criteria used to identify peer-reviewed journal papers on which the analysis in Section A1.2 is based were:

1. Year of publication (2001–2006)

2. Place of research (only research done in Ireland, or based on Irish involvement in a multi-centre study, was included, unless it met criterion 3)

3. Lead organisation (research done by individuals while working in or for Irish organisations was included, wherever the research was done)

4. Type of publication (original research and reviews were included; letters and brief communications not reporting original data were excluded)

A1.9.2 The electronic search was done through *Pub Med* using 'primary care', 'general practice' and related headings (Ireland, nursing, dentistry, oral health, occupational therapy, speech and language therapy, pharmacy, psychology) as key terms. Limitations were set at: previous five years, humans. In addition, the following journals were hand-searched: *Irish Medical Journal, Irish Journal of Medical Science*, *British Journal of General Practice*, *Family Practice*, *European Journal of General Practice*, *British Medical Journal*.

A1.9.3 The electronic search results were checked against the publications lists of departments in Irish universities with a primary care interest. In cases of doubt, the final decision on whether to include or exclude was made after review of the paper abstract by at least two people.

Annex 2 International comparative analysis

A2.1 Impact of research on clinical practice in primary care

A2.1.1 It is possible to make an indirect comparison of the potential of research conducted in each country to impact on clinical practice from the number of papers selected for publication in the two international review journals, Evidence Based Medicine (EBMJ) and Evidence Based Nursing (EBNJ). These two journals review the international peer-reviewed literature and identify those papers of greatest importance for clinical practice, publishing a one-page summary for clinicians and (in the case of EBMJ) providing a star rating of the importance of the paper to specific medical specialities, including primary care.

A2.1.2 Table A2.1 lists publications in these two journals from January 2004 to June 2006 that are relevant to primary care practice, by country of origin. For EBMJ, this includes all papers achieving a primary care impact score of 5* or above. For the EBNJ, this includes all papers originating from primary care or reporting a nursing procedure used in a community setting.

A2.1.3 To make a fair comparison, it is important to assess the research output from each country in the context of the size of that country. The countries are therefore listed according to the total number of papers selected for review per million population. According to this listing, Ireland is ranked 14th – substantially behind the UK, the Netherlands, New Zealand, Australia, Canada and the Scandinavian countries (all of which have strong primary care systems) but above Italy and Spain.

A2.1.4 The number of papers identified is not a measure of total international research output as it is limited by the capacity of the two journals (the EBMJ in particular has insufficient space to publish all the papers initially selected by its screening panels). It is therefore quite possible that one or more important research papers from Ireland have been missed. However, the selection of papers should not be biased except by language of publication (i.e. output from China may be under-estimated through selection bias but not output from Ireland). And the estimate that Ireland is producing less than one-fifth of the number of papers produced in the UK, even after adjusting for population size, is probably fair.

A2.1.5 The ranking for Ireland is estimated imprecisely, being based on a single publication. However it is unlikely to be a serious underestimate in the light of the very small number of primary care publications in high-impact clinical journals originating from Ireland found by the review reported in Annex 1 (i.e. approximately three per year).

A2.1.6 The number of papers relevant to primary care that originate from university departments of primary care (or general practice or family medicine) is included in Table A2.1 for two reasons: first, to make clear that much clinical research of importance to primary care is not done by primary care – the majority of the EBMJ papers relate to therapeutics and report multi-centre trials on drugs done mainly in a hospital setting; second, to show that the comparative ranking is similar whether based on total national output or output from departments of primary care only.

Table A2.1 Country of origin of research papers relevant to primary care practice* selected for publication in the *Evidence Based Medicine Journal or the Evidence Based Nursing Journal*, January 2004 – June 2006

Country of origin	Population of country of origin	Medicine research		Nursing research		Papers/million pop.	
		Total	Primary care origin **	Total	Primary care origin	Total	Primary care origin
New Zealand	4,076,140	7	2	2	2	2.2	1.0
UK	60,609,153	46	6	20	6	1.1	0.2
Australia	20,264,082	17	2	3	0	1.0	0.1
Netherlands	16,491,461	14	10	1	1	0.9	0.7
Sweden	9,016,596	7	0	0	0	0.8	0
Canada	33,098,932	18	2	6	1	0.7	0.09
Finland	5,231,372	2	0	1	0	0.6	0
Denmark	5,450,661	2	0	1	1	0.6	0.2
Norway	4,610,820	2	0	0	0	0.4	0
USA	298,444,215	86	4	12	2	0.3	0.02
Israel	6,352,117	2	0	0	0	0.3	0
Uruguay	3,431,932	1	0	0	0	0.3	0
Switzerland	7,532,934	2	2	0	0	0.3	0.3
Ireland	4,062,235	1	0	0	0	0.2	0
Belgium	10,379,067	1	1	1	0	0.2	0.1
Austria	8,192,880	1	0	0	0	0.1	0
France	60,876,136	3	0	1	0	0.07	0
Taiwan	23,036,087	1	0	0	0	0.04	0
Argentina	39,921,833	1	0	0	0	0.02	0
Spain	40,397,842	1	0	0	0	0.02	0
South Africa	44,187,637	0	0	1	0	0.02	0
Italy	58,133,509	1	0	0	0	0.02	0
Germany	82,422,299	2	1	0	0	0.02	0.01
Japan	127,463,611	2	0	0	0	0.02	0
Thailand	64,631,595	1	0	0	0	0.02	0
China	1,313,973,713	1	0	0	0	0.001	0

* Papers from the *EBMJ* were selected if rated five stars or more for clinical impact in primary care; papers from the *EBNJ* were selected if they were conducted in a community setting or described a nursing activity delivered outside hospitals.

** Papers where the lead author was employed in service primary care or by a university department of general practice, family medicine or primary care.

A2.1.7 There is insufficient space in Table A2.1 to include details of the research content. The majority of papers in each journal related to treatment (EBMJ 77% and EBNJ 51%). The second commonest subject in EBMJ papers was research on diagnosis (11%) and, unlike the treatment trials, these were often from departments of primary care. This reflects the fact that extrapolating from diagnostic research done in a hospital to a primary care setting is particularly difficult.

A2.1.8 A characteristic of the EBNJ but not the EBMJ was the high number of qualitative papers selected (37%). This could indicate a different perspective on the relative value of quantitative and qualitative research evidence in medicine and nursing, but may simply reflect the relative infrequency of important quantitative research in nursing.

A2.2 High-level research capacity in Ireland compared to UK

A2.2.1 The UK Research Assessment Exercise (RAE) demonstrates that it can be difficult and time-consuming to measure research capacity. However, one indicator which correlates well with research capacity as assessed by the RAE is the number of publications in high-impact international peer-reviewed journals.

A2.2.2 Figure A2.1 shows the UK and Irish departments in rank order based on the number of high-impact publications of the most productive member of staff. (The advantages of considering only the most productive staff member are that you do not have to correct for size of department, the electronic search can be easily validated, and the problem of multi-authorship is minimised.) The Irish departments are ranked 14, 17, 21, 24 and 29 out of 30. The median rank of the Irish departments is 21 compared to 12 for the Scottish, and 11 for the English and Welsh. The two departments from Northern Ireland are ranked 18 and 30.

A2.2.3 It is clear that, by this measure, the output from the best departments in Ireland is similar to the UK average. However, the Irish departments are much smaller than most of the UK departments (see below). Moreover, even the least productive department has one staff member who has published in a high-quality international journal – this is not the case for the non-medical clinical disciplines in Ireland.

A2.2.4 It is important to know how the data were derived to understand their limitations. A list was made of the senior staff in all departments of primary care in the UK (from SAPC listings). A Pub Med search was then made (without time limit) for original papers by these individuals in the four most prestigious international journals in which primary care papers are published – the New England Journal of Medicine, Lancet, JAMA and the British Medical Journal. Letters and editorials were excluded. To avoid double counting, only one researcher (the most productive) was included for each department. The lists of papers were hand checked to exclude those published by others with the same surname and initial; in three cases the surname was so common that hand-checking was impossible and these departments are excluded. So, the data are probably accurate but biased by the longevity of some departments and their senior staff. Moreover, the recruitment or loss of one staff member can make a major impact, particularly if there is only one senior staff member in a department.

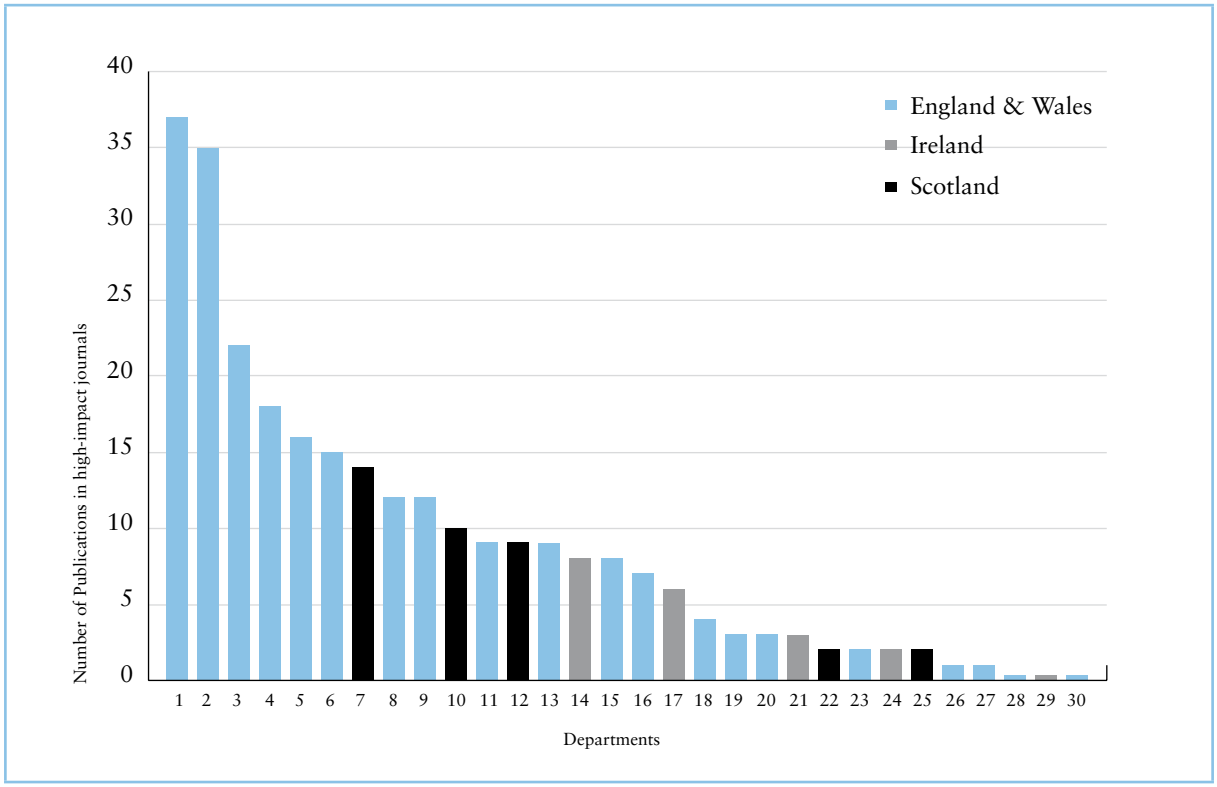

Figure A2.1 Number of publications in highest-impact general clinical journals by best performing member of staff in each department in UK and Ireland

A2.2.5 In this context, it should be noted that if the analysis were to be done in October 2007 after the new head of department at RCSI (Tom Fahey) had taken post, its ranking would rise from 29 to 5. This indicates a marked change in the capacity of RCSI to undertake research of international quality.

A2.3 Research capacity compared with Canada, Australia and the Netherlands

A2.3.1 The same exercise was conducted for three other countries where publication is mostly in English – Canada, Australia and the Netherlands. Analysis was restricted to 12 selected departments for which the names and initials under which senior staff publish could be confirmed from the Internet. This will bias the results against the Irish departments because excluded departments with limited websites are less likely to be research active.

A2.3.2 Figure A2.2 shows the results. As with the UK comparison, the best Irish researcher is publishing in high-impact journals at less than half the rate of the best primary care researcher in the top-ranking university (Maastricht).

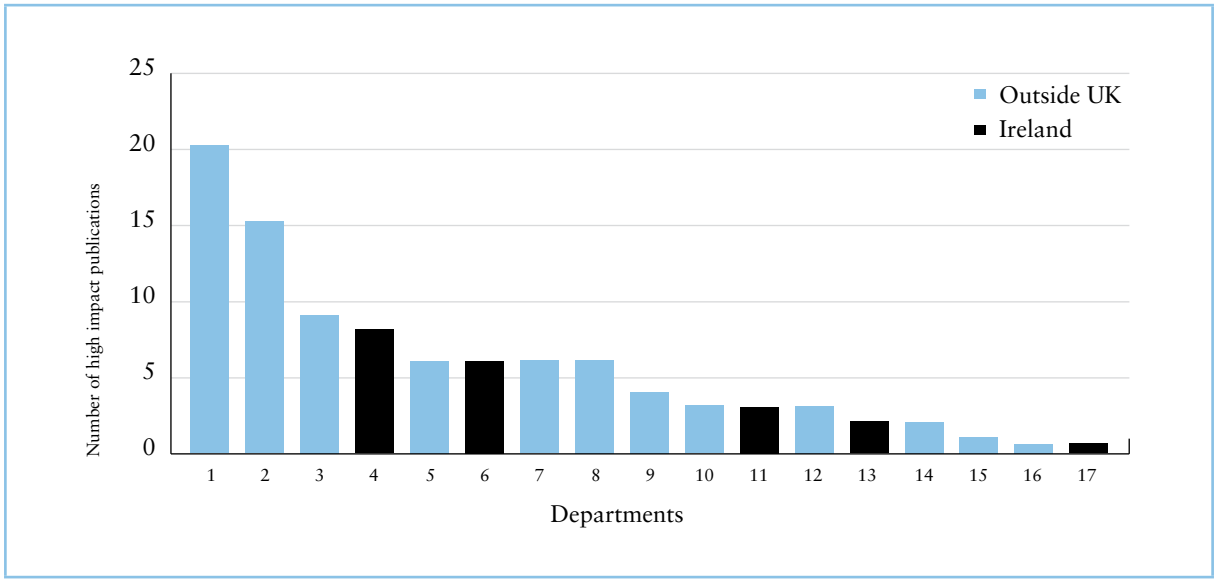

Figure A2.2 Number of publications in top four general clinical journals by best performing member of staff in each department in Ireland compared with departments in three other countries (Canada, Australia and the Netherlands)

A2.3.3 Nevertheless, the top two Irish universities are broadly competitive on a European scale. The worst-performing Irish institution has already taken steps to increase its capacity by making a senior staff appointment (as mentioned in paragraph A1.5.4), which would make it leap-frog into the top three universities by this measure.

A2.3.4 Despite the utility of this type of bench-marking for international comparison, it is important not to allow the benchmarks to devalue other activity. Some of the most influential R&D in primary care will be published in national journals only and therefore would not be included in the comparison. Similarly, important policy development work will often not be accepted for journal publication at all and will also be excluded.

A2.4 Comparison of senior staffing and staff leverage in primary care departments

A2.4.1 Figures.A2.3a and A2.3b show senior staffing levels for the Irish and UK departments of primary care. The data for the UK departments are based on a survey in 2002. There is no reason to suspect a major change in staffing levels since then, although the data are necessarily restricted to the 23 established medical schools and exclude the eight new medical schools.

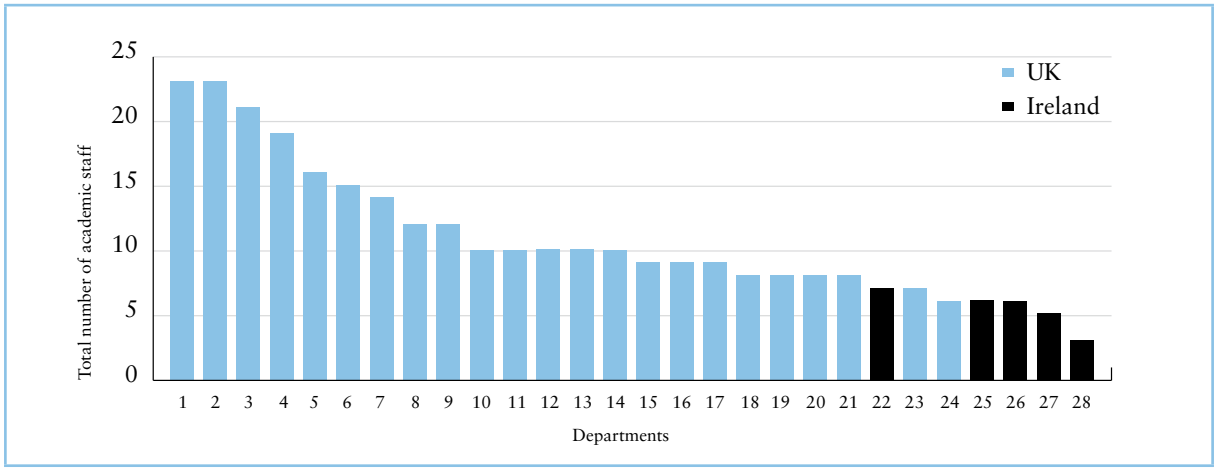

Figure A2.3a Core academic staffing levels in departments of primary care in UK and Ireland

A2.4.2 Figure A2.3a shows the wide disparity between the Irish and UK departments in academic staffing. The number of core academic staff in the UK departments ranges from 6 to 23 (median 10). The range in Ireland is 3–7 (median 6). This cannot be accounted for simply by teaching load. The mean academic staffing level in the four top (RAE 5*) rated departments of primary care in the UK is 12.

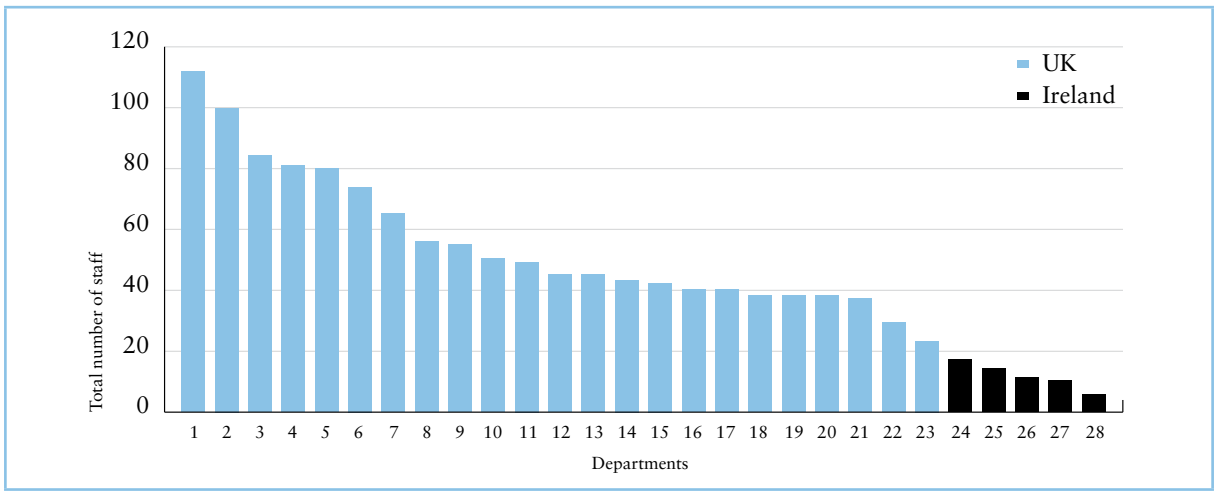

Figure A2.3b Total senior staffing levels in departments of primary care in UK and Ireland

A2.4.3 Figure A2.3b shows the total staffing levels. The disparity between the Irish and UK departments is even greater with no overlap. The number of staff in the UK departments ranges from 23 to 112 (median 45). The range in Ireland is 5–17 (median 11). The mean total staffing level in the four top (RAE 5*) rated departments of primary care in the UK is 52.

A2.4.4 The staff leverage ratio (ratio of total staff to core academic staff) is much lower in Ireland than in the UK. In Ireland the range is 1.7 to 2.8 (median 2.2). In the UK it is 4.0 to 10.5 (median 7.3). This consistent finding across all universities must mean that there are fewer research funding opportunities for primary care R&D in Ireland than in the UK.

Annex 3 Individuals and documents consulted

A3.1 Individuals consulted

Dr Ruth Barrington, Chief Executive, Health Research Board

Dr Michael Boland, Irish College of General Practitioners

Dr Jane Buttimer, Department of Health and Children (education and training)

Professor Colin P Bradley, UCC

Dr Claire Collins, Director of Research, Irish College of General Practitioners

Ms Sara Condell, Nursing Research Advisor, HRB, and Research Development Officer, National Council for the Professional Development of Nursing and Midwifery

Dr Walter Cullen, Irish College of General Practitioners

Dr Davida de la Harpe, Assistant Director, Population Health HSE

Professor Des Fitzgerald, Chairman, Health Research Board

Dr Fenton Howell, Director of Public Health, Population Health Directorate, HSE

Dr Deirdre Hurley, Department of Physiotherapy, UCD

Dr Elizabeth Keane, Director of Public Health, HSE

Professor Cecily Kelleher, Head of School of Public and Population Health, UCD

Dr Kevin Kelleher, Assistant Director of Population Health, HSE

Drs Rosemary Kelleher, Anne Kirby, Seamus Coffey, (Health Economics Research Group) UCC

Ms Rena Lyons, Head of Speech and Language Therapy, NUI Galway

Dr Teresa Maguire, Head of R&D for Health Division, Health Research Board

Professor Kathy Murphy, Head of Nursing, NUI Galway

Professor Hannah McGee, Royal College of Surgeons in Ireland

Dr Diarmuid O'Donovan, Director of Public Health, HSE Western Area

Professor Tom O'Dowd, Trinity College Dublin

Professor Eamonn O'Shea, Head of Economics, NUI Galway

Professor Andrew Murphy, NUI Galway

Mr Fionan Ó Cuinnegan, Director, Irish College of General Practitioners

Professor Ivan Perry, Head of Department of Epidemiology and Public Health, UCC

Professor Anne Scott, Deputy President, DCU

Dr Agnes Shiel, Head of Occupational Therapy, NUI Galway

Dr Lorraine Smith, Director of Research in Health Sciences, UCC

Dr Helen Whelton, Head of Oral Health Services Research, Cork University Hospital

A3.2 Key documentary evidence considered

Structure of General Practice in Ireland 1982–2005. O'Dowd T, O'Kelly M, O'Kelly F Trinity College Dublin/Irish College of General Practice. June 2006.

Nursing and Midwifery Research priorities for Ireland. National Council for the Professional Development of Nursing and Midwifery, June 2006.

Netherlands School of Primary Care research (CaRE) website (accessed 3 June 2006) http://www.researchschoolcare.nl/

Draft Health Service Executive Research Strategy 2006–9

Report on the Baseline Survey of Research Activity in Irish Nursing and Midwifery. National Council for the Professional Development of Nursing and Midwifery, February 2006.

National Primary Care Research and Development Centre Annual Report 2005. NPCRDC, Manchester 2006.

Agenda for the Future Professional Development of Public Health Nursing. National Council for the Professional Development of Nursing and Midwifery, June 2005.

Health Service Executive Corporate Plan 2005–8.

Framework for the establishment of clinical nurse/midwife specialist posts: Intermediate Pathway. National Council for the Professional Development of Nursing and Midwifery, November 2004.

Framework for the establishment of advanced nurse practitioner/advanced midwife practitioner posts. National Council for the Professional Development of Nursing and Midwifery, July 2004.

Agenda for the Future Development of Nursing and Midwifery. National Council for the Professional Development of Nursing and Midwifery, May 2003.

Strategy for Research 2003–8. Irish College of General Practice. March 2003.

Research Strategy for Nursing and Midwifery in Ireland: Final Report. National Council for the Professional Development of Nursing and Midwifery, January 2003.

Realising the Potential – A Report on the present position and future needs of Departments of General Practice in Irish Medical Schools. Howie JGR and Ó Cuinneagain F. AUDGPI, February 2002.

Making Knowledge Work for Health – A Strategy for Health Research. Department of Health and Children, June 2001.

Q*uality and Fairness – A Health System for You*. Department of Health and Children, 2001.

Primary care – A New Direction. Department of Health and Children, 2001. ISBN 0-7557-1179-3.

New Century, New Challenges. UK Society for Academic Primary Care, September 2002.

General practice research in Australia, 1980–1999. Ward A, Lopez D, Kamien M. *MJA* 2000;173:608–11.

R&D in Primary Care – National Working Group Report. UK Department of Health, Leeds, November 1997. Catalogue no. 97CC0138.

Annex 4 Primary care R&D publications in 2005–6

A4.1 Explanation and commentary

A4.1.1 Section A4.2 lists primary care research publications from Irish universities published between January 2005 and June 2006 to show in more detail what research has been done. The criteria for inclusion are given in Section A1.9 of Annex 1. Attribution of papers to an institution is by place of employment of first author. Publications in press are not included.

A4.1.2 For comparison, Section A4.3 lists the primary care research from other countries published in the *BMJ* or *Lancet* in the same time period. This list was generated by a Pub Med search using 'primary care' as the key word and then hand-searching the list generated for original research papers. It is important to note that these two journals publish research of importance to primary care practice irrespective of the professional staff group delivering the intervention or conducting the research (a number of the interventions assessed are delivered by nurses or therapists).

A4.1.3 The most striking difference between the Irish publications and the publications in the *BMJ* and *Lancet* is that the majority of the latter (29/51) report applied clinical research – contrasting with 3/45 in Ireland.

A4.1.4 For completeness, Section A4.4 lists a number of reports involving academic primary care staff in Ireland that have not resulted in peer-reviewed publications. This short list is neither inclusive nor representative but is given to indicate the extent of engagement of the academic primary care community in service development and public health policy at a local and national level. The extent of this engagement is substantially more than is feasible with the RAE-driven central funding system in the UK, perhaps reflecting the fact that a number of Irish departments appear to be heavily dependent on funding streams from local health service sources.

A4.2 Primary care research publications from Irish universities, January 2005–June 2006

A4.2.1 Dublin City University

Nursing

Kiernan G and Walsh T (2005) When two are one: The changing nature of early childhood care and education in Ireland. *Irish Educational Studies*, 23(2).

Kiernan G, Guerin S and MacLachlan M (2005) Children's voices: Qualitative data from the Barretstown Studies. *Journal Of Advanced Nursing*, 42(7): 733–741.

Kiernan G, Gormley M and MacLachlan M (2005) Factor analysis of the Perceived Illness Experience Scale: Data from the Barretstown Studies. *Behavioral Medicine*, 30(1): 23–31.

A4.2.2 National University of Ireland Galway

Department of General Practice

Buckley B (2006) It's the way you ask that matters: Comparison of data relating to prevalence of incontinence aid use from two surveys of people with multiple sclerosis. *Journal of Wound, Ostomy and Continence Nursing*, 33(1): 26–29.

Glynn LG, MacFarlane A, Kelly M, Cantillon P and Murphy AW (2006) Helping each other to learn. A process evaluation of peer assisted learning: Case Report. *BMC Medical Education*, 6: 18. *http://www.biomedcentral.com/1472-6920/6/18/abstract*

Harrison R., MacFarlane A, Murray E and Wallace P (2006) Patients' perceptions of joint teleconferenced consultations: a qualitative evaluation. *Health Expectations*, 9: 81–90.

MacFarlane A, Clerkin P and Murphy A (2006) Telehealthcare in the Republic of Ireland: An evolving policy context. *Health Policy*, 76: 245–258.

Murphy AW, Byrne M, Walsh J and Kelleher CC (2006) A cross sectional study of secondary cardiac care in general practice: Impact of personal and practice characteristics. *Family Practice*, 23(3): 295–302. Epub 2006 Apr 3.

Ononeze V, Murphy AW, Byrne M, Bradley C and MacFarlane A (2006) Patients' and health professionals' perspectives on the sociocultural influences on secondary cardiac behaviour: a qualitative study of the implications in policy and practice. *Family Practice*, 23(5): 587–96. Epub 2006 May 30.

Buckley B (2005) There's a will … but is there a way? Patient perspectives in health care research, development and decision making. *Journal of Wound, Ostomy and Continence Nursing*,32: 53–6.

Byrne M, Cupples ME, Smith SM, Leathem C, Corrigan M, Byrne MC and Murphy AW (2005) Development of a complex intervention for secondary prevention of coronary heart disease in primary care using the Medical Research Council framework. *American Journal of Managed Care,* 12(5): 261–6.

Byrne M, Corrigan M, Cupples ME, Smith SM, Leathem C and Murphy AW (2005) The SPHERE study: Using psychological theory to inform the development of behaviour change training for primary care staff to increase secondary prevention of coronary heart disease. *Irish Journal of Psychology*, 26(1–2): 53–64.

Byrne MC, Houlihan A, Leathem C, O'Malley M, Murphy AW, Cupples MC, Smith SS and Byrne M (2005) Recruiting general practices to participate in research: experiences from the SPHERE study. *Family Practice*, Volume 22, Supplement 1.

MacFarlane A, Clerkin P and Murphy AW (2005) Role flexibility among telehealthcare service providers in the North West and West of Ireland. *Journal of Telemedicine and Telecare*, 11 S1: 62–64.

Mc Loughlin M, Armstrong P, Byrne M, Heaney D , O'Brien N and Murphy AW (2005) A comparative study on attitudes, mental health and job stress amongst general practitioners participating, or not, in a rural out of hours co-operative. *Family Practice*, 22: 275–9.

Murphy AW, Cupples ME, Smith SM, Byrne M, Leathem C and Byrne MC (2005) The SPHERE Study. Secondary prevention of heart disease in general practice: protocol of a randomised controlled trial of tailored practice and patient care plans with parallel qualitative, economic and policy analyses. *Current Controlled Trials in Cardiovascular Medicine*, 6(1): 11.

O'Brien N, Armstrong P, Mc Loughlin M, Byrne M and Murphy AW (2005) A comparative study on attitudes, towards the provision of out of hours care, of the spouses of general practitioners participating, or not, in a rural out of hours co-operative. *Irish Medical Journal*, 98(9): 267–269.

Department of Health Promotion

Chulain MN, Murray AM, Corbett-Feeney G and Cormican M (2005) Antimicrobial resistance in E.coli associated with urinary tract infection in the west of Ireland. *Irish Journal of Medical Science*, 174(4): 6–9.

Department of Psychology

O'Sullivan B, Keane AM and Murphy AW (2005) Job stressors and coping strategies as predictors of mental health and job satisfaction among Irish general practitioners. *Irish Medical Journal*, 98(7): 199–200, 202.

Byrne M, Walsh J and Murphy AW (2005) Secondary prevention of coronary heart disease: patient beliefs and health-related behaviour. *Journal of Psychosomatic Research*, 58(5): 403–15.

A4.2.3 Trinity College Dublin

Department of Public Health and Primary Care

O'Dowd T, McNamara K, Kelly A and O'Kelly F (2006) Out of hours co-operatives: general practitioner satisfaction with governance and working arrangements. *European Journal of General Practice*, 12(1): 15–18.

Allwright S, Paul G, Greiner B, Mullally B, Pursell L, Kelly A, Bonner B, D'Eath M, McConnell B, McLaughlin J, O'Donovan D, O'Kane E and Perry I (2005) Legislation for smoke-free workplaces and health of bar workers in Ireland: before and after study. *British Medical Journal*, 332(7534): 151.

Deady J and Thornton L (2005) Parents' knowledge of and attitude towards the primary childhood immunisations. *Irish Medical Journal*, 98(1): 7–9.

Dillon B and Allwright S (2005) Prison officers' concerns about blood borne viral infections. *The Howard Journal,* 44(1): 29–40.

O'Loughlin R, Allwright S, Barry J, Kelly A and Teljeur C (2005) Using HIPE data as a research and planning tool: limitations and opportunities. *Irish Journal of Medical Science*, 174(2): 40–45.

Smith S, Long J, Deady J, O'Keeffe F, Handy D and O'Dowd T (2005) Adapting developing country epidemiological assessment techniques to improve the quality of health needs assessments in developed countries. *BMC Health Services Research*. http://www.biomedcentral.com/1472-6963/5/32

Smith SM, Allwright S, Byrne M, Brazier H, O'Dowd T and Murphy AW (2005) International variations in the generation of the evidence base for primary care. *European Journal of General Practice,* 11(1): 33–4.

White P, Smith SM and O'Dowd T (2005) The role of the family in adult chronic illness: A review of the literature on type-2 diabetes. *Irish Journal of Psychology*, 26(1–2): 9–15.

Department of Pharmacology and Therapeutics

Bennett K, Kabir Z, Unal B, Shelley E, Critchley J, Perry IJ, Feely J and Capwell S (2006) Explaining the recent decrease in coronary heart disease mortality rates in Ireland, 1985–2000. *Journal of Epidemiology and Community Health*, 60(4): 322–7.

Bennett K, Teeling M and Feely J (2005) Overprescribing antidepressants to children: pharmacoepidemiological study in primary care. *British Medical Journal,* 17;331(7530):1451–2.

Bennett K, Johnson H, Dack P, Shelley E and Feely J (2005) Changes in prevalence of and prescribing for ischaemic heart disease in Ireland, 1990–2002. *Irish Journal of Medical Science*, 174(3): 4–8.

Teeling M, Bennett K and Feely J (2005) The influence of guidelines on the use of statins: analysis of prescribing trends 1998–2002. *British Journal of Clinical Pharmacology*, 59(2): 227–32.

Usher C, Teeling M, Bennett K, McGowan B and Feely J (2005) Usage of paracetamol-containing combination analgesics remains high in primary care. *British Journal of Clinical Pharmacology*, 60(6): 648–52.

Usher C, Bennett K and Feely J (2005) Regional variation in the prescribing for diabetes and use of secondary preventative therapies in Ireland. *Pharmacoepidemiology and Drug Safety*, 14(8): 537–44.

Williams D, Bennett K and Feely J (2005) The application of prescribing indicators to a primary care prescription database in Ireland. *European Journal of Clinical Pharmacology*, 61(2): 127–33. Epub 2005 Feb 12.

Department of Nursing and Midwifery

Kelly, AM and Byrne G (2006) Role of the continence nurse in health promotion. *British Journal of Nursing*, 15(4): 198–204.

Oral Health Services

Fleming PS and Dowling PA (2005) A survey of undergraduate orthodontic training and orthodontic practices by general dental practitioners. *Journal of the Irish Dental Association*, 51(2): 68–72.

School of Social Work and Social Policy

Timonen V, Convery J and Cahill S (2006) Care revolutions in the making? A comparison of cash-for-care programmes in four European countries. *Ageing and Society*, 26 (3): 455–474.

Curry P and O'Brien M (2006) The male heart and the female mind: a study in the gendering of antidepressants and cardiovascular drugs. *Social Science & Medicine*, 62(8): 1970–1977.

Mayock P (2005) Scripting risk: young people and the construction of drug journeys, *Drugs: education, prevention and policy,* 12(5): 349–368.

A4.2.4 University College Cork

Department of General Practice

Di Blasi Z, Crawford F, Bradley C and Kleijnen J (2005) Reactions to treatment debriefing among the participants of a placebo controlled trial. *BMC Health Services Research*, 5(1): 30.

Kelly M, Moran J and Byrne S (2005) Formation of rectus sheath hematoma with antibiotic use and warfarin therapy: a case report. *American Journal of Geriatric Pharmacotherapy*, 3(4): 266–269.

Kelly M and Moran J (2005) Macroglossia and carpal tunnel syndrome associated with multiple myeloma: a case report. *Irish Journal of Medical Science*, 174(3): 95–96.

Department of Epidemiology and Public Health

O'Reilly M, Cahill MR and Perry IJ (2006) Writing to patients: a randomised controlled trial. *Clinical Medicine*, 6(2): 178–182.

Perry IJ, Villegas R, Salim A and Flynn,A (2005) Clustering of protective factors for glucose intolerance and insulin resistance: a cross-sectional study. *Diabetic Medicine*, 22(8): 1091–1097.

O'Reilly M, Cahill, M and Perry IJ (2005) Writing to Patients: Putting the patient in the picture. *Irish Medical Journal*, 9(2): 58–60.

Sheehan J, Kearney PM, O'Sullivan S, Mongan C, Kelly E and Perry IJ (2005) Acute coronary

syndrome and chronic infection in the Cork 5C Study. *Heart*, 91(1): 19–22.

Oral Health Services Research

Whelton H, Crowley E, O'Mullane D, Donaldson M, Cronin M and Kelleher V (2006) Dental caries and enamel fluorosis among the fluoridated population in the Republic of Ireland and non fluoridated population in Northern Ireland in 2002. *Community Dental Health*, 23(1): 37–43.

Beirne P, Forgie A, Clarkson J and Worthington HV (2005) Recall intervals for oral health in primary care patients. *Cochrane Database of Systematic Reviews*, (2): CD004346.

Beirne P, Forgie A, Worthington HV and Clarkson JE (2005) Routine scale and polish for periodontal health in adults. *Cochrane Database of Systematic Reviews*, (1) CD004625.

Browne, D, Whelton H and O'Mullane D (2005) Fluoride metabolism and fluorosis. *Journal of Dentistry*, 33(3): 177–186. Epub 2004 Dec 9. Review.

Crowley E, Whelton H, O'Mullane D, Cronin M, Kelleher V and Flannery E (2005) Parents' preference as to whether they would like to accompany their child when receiving dental treatment: results from a national survey. *Journal of the Irish Dental Association*, 51(1): 23–4.

Harding MA, Whelton H, O'Mullane DM, Cronin M and Warren JJ (2005) Primary tooth fluorosis in 5-year-old schoolchildren in Ireland. *European Journal of Paediatric Dentistry*, 6(3): 155–161.

Whelton H, O'Mullane D, Burke FM, Woods N and Cronin M (2005) Use of dental service data to inform research and policy. *Advances in Dental Research*, 18(3): 42–5.

Dental School and Hospital

Lynch CD, McConnell RJ and Wilson NH (2006) Teaching of posterior composite resin restorations in undergraduate dental schools in Ireland and the United Kingdom. *European Journal of Dental Education,* 10(1): 38–43.

Lynch CD and Allen PF (2006) Why do dentists struggle with removable partial denture design? An assessment of financial and educational issues. *British Dental Journal*, 200(5): 277–281; discussion 267.

Burke FM and O'Mullane D (2005) Oral research in primary care. *Advances in Dental Research*, 18(3): 37–8.

Burke FM, O'Mullane D and O'Sullivan M (2005) Attitudes of Irish and European dentists to water quality of dental unit water systems. *Journal of the Irish Dental Association*, 51(3): 119–125.

Forde A, O'Reilly P, Fitzgerald G, O'Mullane D, Burke FM and O'Sullivan M (2005) Microbial contamination of dental unit water systems. *Journal of the Irish Dental Association*, 51(3): 115–118.

Lynch CD and Allen PF (2005) Quality of communication between dental practitioners and dental technicians for fixed prosthodontics in Ireland. *Journal of Oral Rehabilitaiton*, 32(12): 901–905.

Lynch CD, McConnell RJ and Allen PF (2005) Trends in indirect dentistry: 7. Communicating design features for fixed and removable prostheses. *Dental Update*, 32(9): 502–504, 506, 508–510.

School of Nursing and Midwifery

Leahy Warren P (2005) First time mothers: social support and confidence in infant care. *Journal of Advanced Nursing*, 50(5): 479–489.

A4.2.5 University College Dublin

Department of General Practice

Bury G, Egan M and Reddy L (2006) GPs and EMTs: what do we think of each other? *Emergency Medicine Journal*, 23: 534–536.

Bury G, Dowling J and Janes D (2006) General practice out-of-hours co-operatives – population contact rates. *Irish Medical Journal*, 99(3): 73–5.

Bury G (2005) Pre-hospital emergency care in Ireland. *Emergency Medicine Journal*, 22(12): 893.

Bury G, Janes D and Dowling J (2005) General practice out-of-hours co-operatives in Ireland – emergency service or not? *Irish Journal of Medical Science*, 174(3): 47–52.

Cullen W, Kelly Y, Stanley J, Langton D and Bury G (2005) Experience of hepatitis C among current or former heroin users attending general practice. *Irish Medical Journal*, 98(3): 73–74.

Cullen W, Barry J *et al.* (Dublin Area Hepatitis C Initiative Group) (2005) Hepatitis C among drug users: consensus guidelines on management in general practice. *Irish Journal of Medical Science*, 173(3): 1–6.

Cullen W, O'Leary M, Langton D, Stanley J, Kelly Y and Bury G (2005) Guidelines for the management of hepatitis C in general practice: a semi-qualitative interview survey of GPs' views regarding content and implementation. *Irish Journal of Medical Science*, 174(3): 32–7.

Gavin B, Cullen W, O'Donoghue B, Ascencio-Lane JC, Bury G and O'Callaghan E (2005) Schizophrenia in general practice: a national survey of general practitioners in Ireland. *Irish Journal of Medical Science*, 174(3): 38–42.

School of Economics

Madden D, Nolan A and Nolan B (2005) GP reimbursement and visiting behaviour in Ireland. *Health Economics,* 14(10): 1047–1060.

School of Physiotherapy and Performance Science

Fullen B, Hurley DA, Power C, Canavan D and O'Keefe D (2006) The need for a National Strategy for Chronic Pain Management in Ireland. *Irish Journal of Medical Science*, 175(2): 68–73.

Smart K and Doody C (2006) The clinical reasoning of pain by experienced musculoskeletal physiotherapists. *Manual Therapy*, 2006 Jun 13; [Epub ahead of print] PMID: 16781185.

Byrne K, Doody C and Hurley DA (2006) Exercise therapy for low back pain: a descriptive survey of current practice by chartered physiotherapists in the Republic of Ireland. *Manual Therapy*, 11(4): 272–278. Epub 2005 Aug 8.

Hurley DA, McDonough SM, Dempster M, Moore AP and Baxter GD (2005) A descriptive study of the usage of spinal manipulative therapy techniques within a randomised clinical trial in acute low back pain. *Manual Therapy*, 10(1): 61–67.

A4.2.6 Royal College of Surgeons in Ireland

Department of General Practice

Copty M and Whitford DL (2005) Mental health in general practice: assessment of current state and future needs. *Irish Journal of Psychological Medicine*, 22(3): 83–86.

Whitford DL and Copty M (2005) General practice in Ireland: are we equipped to manage mental health problems? (Editorial) *Irish Journal of Psychological Medicine*, 2 (2): 40–41.

Dowling S, Leary AC and Broomfield D (2005) Palliative care education: Delphi survey of Irish general practitioners. *Education for Primary Care*, 16(4): 458–466(9).

Department of Clinical Pharmacology

Maree AO, Curtin RJ, Dooley M *et al.* (2005) Platelet response to low-dose enteric-coated aspirin in patients with stable cardiovascular disease. *Journal of the American College of Cardiology*, 46(7): 1258–1263.

Department of Psychology

Montgomery AJ, McGee HM, Shannon W and Donohoe J (2006) Factors influencing general practitioner referral of patients developing end-stage renal failure: A standardised case-analysis study. *BMC Health Services Research*, 6: 114.

Corapi KM, McGee HM and Barker M (2006) Screening for frailty among older people in clinical practice. *Nature: Clinical Practice Rheumatology*, 2: 476–480.

Doyle F, McGee HM, De La Harpe D, Shelley E and Conroy R (2006) The Hospital Anxiety and Depression Scale depression subscale, but not the Beck Depression Inventory-Fast Scale, identifies patients with acute coronary syndrome at elevated risk of 1-year mortality. *Journal of Psychosomatic Research*, 60(5): 461–467.

McGee H, Doyle F, De La Harpe D, Shelley E and Conroy R (2006) Impact of briefly-assessed depression on secondary prevention outcomes after acute coronary syndrome: a one-year longitudinal survey. *BMC Health Services Research*, 6: 9.

Lavin D, Hevey D, McGee HM, De La Harpe D, Kiernan M and Shelley E (2005) Cardiac rehabilitation services in Ireland: the impact of a coordinated national development strategy. *Irish Journal of Medical Science*, 174(4): 33–38.

Hickey A, Barker M, McGee H and O'Boyle C (2005) Measuring health-related quality of life in older patient populations: a review of current approaches. *PharmacoEconomics*, 23: 971–993.

School of Nursing and Midwifery

Gethin G and Cowman S (2005) Case series of use of Manuka honey in leg ulceration. *International Wound Journal*, 2(1): 10–15.

Cowman S (2005) Commentary on Glacken M and Chaney D (2004) Perceived barriers to implementing research findings in the Irish practice setting. *Journal of Clinical Nursing*, 15(2): 242–243.

A4.3 Primary care research from other countries published in *Lancet* and *BMJ* in 2005–6

These papers published in the BMJ *or* Lancet *from January 2005 to June 2006 are reported here for comparison with output from Ireland and to show the scope of primary care research.*

A4.3.1 Treatment of acute illness

Hahne SJ, Charlett A, Purcell B, Samuelsson S, Camaroni I, Ehrhard I, Heuberger S, Santamaria M and Stuart JM (2006) Effectiveness of antibiotics given before admission in reducing mortality from meningococcal disease: systematic review. *BMJ*, 332: 1299–1303.

Harnden A, Ninis N, Thompson M, Perera R, Levin M, Mant D and Mayon-White R (2006) Parenteral penicillin for children with meningococcal disease before hospital admission: case-control study. *BMJ*, 332: 1295–1298.

Heal C, Buettner P, Raasch B, Browning S, Graham D, Bidgood R, Campbell M and Cruikshank R (2006) Can sutures get wet? Prospective randomised controlled trial of wound management in general practice. *BMJ*, 332: 1053–1056.

Sharland M, Kendall H, Yeates D, Randall A, Hughes G, Glasziou P and Mant D (2005) Antibiotic prescribing in general practice and hospital admissions for peritonsillar abscess, mastoiditis, and rheumatic fever in children: time trend analysis. *BMJ*, 331(7512): 328–329.

Richards D, Toop L, Chambers S and Fletcher L (2005) Response to antibiotics of women with symptoms of urinary tract infection but negative dipstick urine test results: double blind randomised controlled trial. *BMJ*, 331(7509): 143.

Main CJ (2005) Early psychosocial interventions for low back pain in primary care. *BMJ*, 331: 88.

Rothwell PM, Coull AJ, Silver LE, Fairhead JF, Giles MF, Lovelock CE *et al.* (2005) Oxford Vascular Study. Population-based study of event-rate, incidence, case fatality, and mortality for all acute vascular events in all arterial territories. *Lancet* 366: 1773–1783.

Rose PW, Harnden A, Brueggemann AB, Perera R, Sheikh A, Crook D and Mant D (2005) Chloramphenicol treatment for acute infective conjunctivitis in children in primary care: a randomised double-blind placebo-controlled trial. *Lancet*, 366(9479: 37–43.

A4.3.2 Clinical diagnosis and monitoring

Coulton S, Drummond C, James D, Godfrey C, Bland JM, Parrott S, Peters T (Stepwice Research Team) (2006) Opportunistic screening for alcohol use disorders in primary care: comparative study. *BMJ*, 332(7540): 511–517.

Thompson MJ, Ninis N, Perera R, Mayon-White R, Phillips C, Bailey L, Harnden A, Mant D and Levin M (2006) Clinical recognition of meningococcal disease in children and adolescents. *Lancet*, 367: 397–403.

Rutten FH, Moons KG, Cramer MJ, Grobbee DE, Zuithoff NP, Lammers JW and Hoes AW (2005) Recognising heart failure in elderly patients with stable chronic obstructive pulmonary disease in primary care: cross sectional diagnostic study. *BMJ,* 331(7529): 1379.

Fairall LR, Zwarenstein M, Bateman ED, Bachmann M, Lombard C, Majara BP *et al.* (2005) Effect of educational outreach to nurses on tuberculosis case detection and primary care of respiratory illness: pragmatic cluster randomised controlled trial. *BMJ*, 331(7525): 1120.

McManus RJ, Mant J, Roalfe A, Oakes RA, Bryan S, Pattison HM, and Hobbs FD (2005) Targets and self monitoring in hypertension: randomised controlled trial and cost effectiveness analysis. *BMJ*, 331(7515): 493.

Glasziou P, Irwig L and Mant D (2005) Monitoring in chronic disease: a rational approach. *BMJ*, 330(7492): 644–648.

A4.3.3 Treatment of chronic illness

Downs M, Turner S, Bryans M, Wilcock J, Keady J, Levin E, O'Carroll R, Howie K and Iliffe S (2006) Effectiveness of educational interventions in improving detection and management of dementia in primary care: cluster randomised controlled study. *BMJ*, 332(7543): 692–696.

Mant J, McManus RJ and Hare R (2006) Applicability to primary care of national clinical guidelines on blood pressure lowering for people with stroke: cross sectional study. *BMJ*, 332: 635–637.

Hunkeler EM, Katon W, Tang L, Williams JW Jr, Kroenke K, Lin EH *et al.* (2006) Long term outcomes from the IMPACT randomised trial for depressed elderly patients in primary care. *BMJ*, 332: 259–263.

Lane JA, Murray LJ, Noble S, Egger M, Harvey IM, Donovan JL, Nair P and Harvey RF (2006) Impact of Helicobacter pylori eradication on dyspepsia, health resource use, and quality of life in the Bristol helicobacter project: randomised controlled trial. *BMJ*, 332: 199–204.

Bennett K, Teeling M and Feely J (2005) Overprescribing antidepressants to children: pharmaco-epidemiological study in primary care. *BMJ*, 331: 1451–1452.

Kennedy T, Jones R, Darnley S, Seed P, Wessely S and Chalder T (2005) Cognitive behaviour therapy in addition to antispasmodic treatment for irritable bowel syndrome in primary care: randomised controlled trial. *BMJ*, 331: 435.

Avenell A, Campbell MK, Cook JA, Hannaford PC, Kilonzo MM, McNeill G *et al.* (2005) Effect of multivitamin and multimineral supplements on morbidity from infections in older people (MAVIS trial): pragmatic, randomised, double blind, placebo controlled trial. *BMJ*, 331: 324–329.

Hippisley-Cox J and Coupland C (2005) Risk of myocardial infarction in patients taking cyclo-oxygenase-2 inhibitors or conventional non-steroidal anti-inflammatory drugs: population based nested case-control analysis. *BMJ*, 330: 1366.

Lawton J, Ahmad N, Hallowell N, Hanna L and Douglas M (2005) Perceptions and experiences of taking oral hypoglycaemic agents among people of Pakistani and Indian origin: qualitative study. *BMJ*, 330: 1247.

Porthouse J, Cockayne S, King C, Saxon L, Steele E, Aspray T *et al.* (2005) Randomised controlled trial of calcium and supplementation with cholecalciferol (vitamin D3) for prevention of fractures in primary care. *BMJ*, 330(7498): 1003.

Lester H, Tritter JQ and Sorohan H (2005) Patients' and health professionals' views on primary care for people with serious mental illness: focus group study. *BMJ*, 330: 1122.

Bower P and Gilbody S (2005) Managing common mental health disorders in primary care: conceptual models and evidence base. *BMJ*, 330: 839–842.

Wei L, Ebrahim S, Bartlett C, Davey PD, Sullivan FM and MacDonald TM (2005) Statin use in the secondary prevention of coronary heart disease in primary care: cohort study and comparison of inclusion and outcome with patients in randomised trials. *BMJ,* 330: 821.

Martinez C, Rietbrock S, Wise L, Ashby D, Chick J, Moseley J, Evans S and Gunnell D (2005) Antidepressant treatment and the risk of fatal and non-fatal self harm in first episode depression: nested case-control study. *BMJ*, 330: 389.

Raftery JP, Yao GL, Murchie P, Campbell NC and Ritchie LD (2005) Cost effectiveness of nurse-led secondary prevention clinics for coronary heart disease in primary care: follow up of a randomised controlled trial. *BMJ*, 330: 707.

Szegedi A, Kohnen R, Dienel A and Kieser M (2005) Acute treatment of moderate to severe depression with hypericum extract WS 5570 (St John's wort): randomised controlled double blind non-inferiority trial versus paroxetine. *BMJ*, 330: 503.

A4.3.4 Health services research on primary care organisation and delivery

Thomas RE, Croal BL, Ramsay C, Eccles M and Grimshaw J (2005) Effect of enhanced feedback and brief educational reminder messages on laboratory test requesting in primary care: a cluster randomised trial. *Lancet*, 367: 1990–1996.

Billings J, Dixon J, Mijanovich T and Wennberg D (2006) Case finding for patients at risk of readmission to hospital: development of algorithm to identify high risk patients. *BMJ*, 333(7563):327. Epub 2006 Jun 30.

Rao M, Clarke A, Sanderson C and Hammersley R (2006) Patients' own assessments of quality of primary care compared with objective records based measures of technical quality of care: cross sectional study. *BMJ*, 333: 19.

Mackay D, Sutton M, and Watt G (2005) Deprivation and volunteering by general practices: cross sectional analysis of a national primary care system. *BMJ*, 331: 1449–1451.

Adam T, Lim SS, Mehta S, Bhutta ZA, Fogstad H, Mathai M, Zupan J and Darmstadt GL (2005) Cost effectiveness analysis of strategies for maternal and neonatal health in developing countries. *BMJ*, 331: 1107.

Tamblyn R, Abrahamowicz M, Dauphinee D, Girard N, Bartlett G, Grand'Maison P and Brailovsky C (2005) Effect of a community oriented problem based learning curriculum on quality of primary care delivered by graduates: historical cohort comparison study. *BMJ*, 331: 1002.

Coast J, Noble S, Noble A, Horrocks S, Asim O, Peters TJ and Salisbury C (2005) Economic evaluation of a general practitioner with special interests led dermatology service in primary care. *BMJ*, 331(7530): 1444–1449.

Lakhani A, Coles J, Eayres D, Spence C and Sanderson C (2005) Creative use of existing clinical and health outcomes data to assess NHS performance in England: part 2: more challenging aspects of monitoring. *BMJ*, 330: 1486–1492.

Garrido T, Jamieson L, Zhou Y, Wiesenthal A and Liang L (2005) Effect of electronic health records in ambulatory care: retrospective, serial, cross sectional study. *BMJ*, 330: 581.

Walsh B, Steiner A, Pickering RM and Ward-Basu J (2005) Economic evaluation of nurse led intermediate care versus standard care for post-acute medical patients: cost minimisation analysis of data from a randomised controlled trial. *BMJ*, 330: 699.

A4.3.5 Epidemiology and risk management

Toit JD, Hamilton W and Barraclough K (2006) Risk in primary care of colorectal cancer from new onset rectal bleeding: 10 year prospective study. *BMJ*, 2006, Jun 21. [Epub ahead of print].

Cassell JA, Mercer CH, Sutcliffe L, Petersen I, Islam A, Brook MG, Ross JD, Kinghorn GR, Simms I, Hughes G, Majeed A, Stephenson JM, Johnson AM and Hayward AC (2006) Trends in sexually transmitted infections in general practice 1990-2000: population based study using data from the UK general practice research database. *BMJ*, 332: 332–334.

Low N, McCarthy A, Roberts TE, Huengsberg M, Sanford E, Sterne JA *et al.* (2006) Partner notification of chlamydia infection in primary care: randomized controlled trial and analysis of resource use. *BMJ*, 332: 14–19.

Dennis CL (2005) Psychosocial and psychological interventions for prevention of postnatal depression: systematic review. *BMJ*. 331: 15.

Netuveli G, Hurwitz B, Levy M, Fletcher M, Barnes G, Durham SR and Sheikh A (2005) Ethnic variations in UK asthma frequency, morbidity, and health-service use: a systematic review and meta-analysis. *Lancet*, 365: 312–317.

Watson M, Kendrick D, Coupland C, Woods A, Futers D and Robinson J (2005) Providing child safety equipment to prevent injuries: randomised controlled trial. *BMJ*, 330: 178.

A4.3.6 Other research

Spinewine A, Swine C, Dhillon S, Franklin BD, Tulkens PM, Wilmotte L and Lorant V (2005) Appropriateness of use of medicines in elderly inpatients: qualitative study. *BMJ*, 331: 935.

Goossens H, Ferech M, Vander Stichele R and Elseviers M (ESAC Project Group) (2005) Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. *Lancet*, 365: 579–587.

A4.4 Selected reports on public health and service development issues not published in peer-reviewed journals

These are exemplars to demonstrate the importance and scope of academic staff engagement in activities not leading to peer-reviewed publications. It is not a representative sample of outputs from all institutions.

A4.4.1 Examples of national reports prepared by primary care academic staff on behalf of government agencies

O'Dowd T, O'Kelly M and O'Kelly F (2006) *Structure of general practice in Ireland 1982–2005*. Dublin: Department of Public Health and Primary Care, Trinity College Dublin and Irish College of General Practitioners, 2006.

Allwright S, McLaughlin J, Murphy D, Pratt I, Ryan M and Smith A (2002) *Report on the health effects of environmental tobacco smoke (ETS) in the workplace*. Report prepared for the Health and Safety Authority and the Office of Tobacco Control. Dublin: Health and Safety Authority.

Barry J, Sinclair H, Kelly A, O'Loughlin R, Handy D and O'Dowd T (2001) Inequalities in health in Ireland – hard facts. Dublin: Department of Community Health & General Practice, Trinity College Dublin.

McGee H, O'Hanlon A, Barker M, Hickey A, Garavan R, Conroy R, Layte R, Shelley E, Horgan F, Crawford V, Stout R and O'Neill D (2005) *One Island – Two Systems. A comparison of health status and health and social service use by community-dwelling older people in the Republic of Ireland and Northern Ireland*. Report No. 5, 2005. Dublin: Institute for Public Health in Ireland.

O'Hanlon A. McGee HM, Barker M, Garavan R, Hickey A, Conroy R and O'Neill D (2005) *Health and Social Services for older people: changing profiles from 2000 to 2004*. Report No. 96, 2005. Dublin: National Council on Ageing and Older People.

McGee H, Hickey A, Brady M and Gavin K (2005) *Second review of health services for persons who contracted hepatitis c through the administration within the state of blood and blood products: implementation of recommendations*. Dublin: Department of Health and Children.

McGee HM, Garavan R, deBarra M, Byrne J and Conroy R (2002) *The SAVI Report. Sexual Abuse and Violence in Ireland*. Dublin: Liffey Press and Dublin Rape Crisis Centre.(Co-funders – Department of Health and Children and Department of Justice, Equality and Law Reform.)

A4.4.2 Examples of national reports to which primary care academic staff have made a major contribution

Reducing the risk: a strategic approach (2006) Report of the Task Force on Sudden Cardiac Death. Department of Health and Children.

Preparing Ireland's doctors to meet the health needs of the 21st century (2006) Report of the Postgraduate Medical Education and Training Group (the 'Buttimer Report'). Department of Health and Children.

Medical education in Ireland: a new direction (2006) Report of the Working Group on Undergraduate

Medical Education and Training (the 'Fottrell Report'). Department of Health and Children.

A4.4.3 Examples of academic contributions to local service development

Dempsey M, Bradley C and Heslin J (2000) The experience of teenage pregnancy in the South East of Ireland. South Eastern Health Board.

Ononeze V and Woods S (2003) The management of 1,164 patients presenting with chest pain to Portiuncla Hospital Ballinasloe. Western Health Board.

O'Connell A (2005) Little but large: A study of the prevalence of childhood obesity within the catchment area of the Mid-Western Health Board and an analysis of potential contributory factors.

Kelleher K, McGinley A and Healy C (2003) Traveller health: a research project to develop an action plan for the Mid-Western Health Board.