



Research in general practice: bringing innovation
into patient care

Workshop report

The Academy of Medical Sciences

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Workshop report

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Dr Ralph Kohn FRS FMedSci is a Fellow of the Royal Society of Medicine, an honorary member of the European Academy of Sciences, and an Honorary Fellow of the British Pharmacological Society, Royal Society and the Academy of Medical Sciences. In 1991, he set up the Kohn Foundation to support work in scientific and medical research, in innovation, the arts, education and humanitarian aid. The Foundation has been generous in support of many scientific initiatives and institutions, including endowing substantial prizes in recognition of younger scientists and musicians.

For further information see <http://www.ralphkohn.com/foundation.php>

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1 Summary

On 12 December 2008 the Academy of Medical Sciences held a workshop, 'Research in general practice: bringing innovation into patient care', at the Royal College of Pathologists, Carlton House Terrace, London. The aims of the workshop included celebration of the leading international position of UK general practice research, and facilitation of discussion about the challenges and opportunities in this field. This report summarises themes and issues raised during the event. Key points include:

General practice and primary care:

- **General practice and primary care are fundamental to the success of a healthcare system.** There is strong evidence that healthcare systems led through primary care achieve better health outcomes at lower cost than other systems.
- **Health provision in general practice and primary care is first-contact, comprehensive, continuous and personalised.** The service acts at three key interfaces; between self care and NHS care, between primary care and secondary care, and between care tailored to individuals and populations. General practice adheres to core values of universal access, patient centred and population based care over time, and efficient organisation and advocacy.

Appreciation of the strengths of research in general practice:

- **The values of general practice underpin a challenging research agenda** spanning: preventive medicine, early diagnosis, acute and chronic disease management, personalised care, and the understanding of beliefs and behaviours relating to health and illness. These areas

of focus are of increasing importance to the UK's healthcare agenda which promotes healthy living and pro-active disease management.

- **UK expertise in research in general practice and primary care is exceptional, long-standing and internationally renowned.** Together with unique strategic resources, including the NHS registration system, well established general practice research networks and extensive general practice research databases, such expertise underpins the UK's capability to develop and provide future world-leadership in this field.
- **New knowledge of significant impact on practice has been acquired** through UK general practice and primary care research in many fields, including: epidemiology, psychology, sociology, early diagnosis, treatment, chronic disease management, health promotion, quality assessment, and research methodology.¹ The UK has an important strength in conducting clinical research, including large-scale randomised trials, in general practice.

Future research agenda:

- **Focus on research addressing the 'second translational gap'.** This is the gap between clinical research and healthcare delivery, as identified in the Cooksey report.² General practice research has a key role in bridging this gap, in evaluating new healthcare interventions in realistic clinical settings, and facilitating the implementation of new knowledge in clinical practice.
- **Further evaluate the 'gate-keeper' role of the general practitioner.** A key role of the general practitioner is to coordinate and integrate patient care. The stage at which

¹ See Table 2

² Her Majesty's Stationery Office (2006). *A review of UK health research funding*. http://www.hm-treasury.gov.uk/cooksey_review_index.htm

a diagnosis is made in primary care is often the key determinant of clinical outcome. There is a need for further research to strengthen the evidence base for decision-making in diagnosis, treatment and patient care pathways. The impact of the patient's context on their illness, especially in terms of other co-existent diseases and adverse or enabling social settings, requires more attention. There is also an important broader role for research evidence in developing effective systems of delivery in healthcare, and evaluating models of team care for both clinical and cost effectiveness.

- **Learn from other healthcare settings.** While UK primary healthcare has important strengths, there remain opportunities to learn from other European systems, including those of the Netherlands and Scandinavia. Innovative approaches originating in different settings, such as the changing roles and responsibilities in primary care in developing countries, should not be over-looked.
- **Bridge the gap between academic and service communities.** Greater interaction and understanding is required around general practice research, especially between academics and clinicians, those from primary and secondary care settings, and between research-active practitioners and the wider practicing community.
- **Enable funding.** The potential of UK funding for research in general practice should be maximised by: enhancing promotion of funding opportunities to the research community; encouraging interdisciplinary working (e.g. collaboration with molecular scientists and biomedical engineers around diagnosis and monitoring); ensuring that funding streams cover opportunities at the interface of medicine, public health and social care (e.g. patient experiences, infection-control in nursing homes); and by supporting emerging research groups, new models and methodologies to increase diversity and strengthen the discipline.
- **Build and sustain capacity.** UK capacity for general practice research needs to be expanded, with particular attention given to the development of the next generation of academic leaders. Only 1 in 225 general practitioners in the UK are clinical academics (compared to approximately 1 in 16 consultants in all hospital specialties) and the current number of academic general practice training posts is insufficient to sustain existing capacity. Greater emphasis on research in the general practice training curriculum, clear and well resourced career pathways, and an increased number of role models for aspiring academic researchers are vital. An increase in capacity could also be accelerated by creating flexible research opportunities in the field, such as lateral transfer, and secondment, from other disciplines.
- **Integrate educational pathways.** Effort should be made to develop closer alignment within the discipline, between groups including postgraduate medical deaneries, the National Institute for Health Research, and clinical academics in secondary care. Integration of undergraduate teaching and postgraduate training would be a major advance in promoting evidence-based care.
- **Maximise impact by developing interfaces with policy makers.** Closer alignment between policymakers, academics and clinicians, together with the promotion of the skills and knowledge needed to commission and to understand research evidence would be beneficial in developing a wider culture of evidence use in healthcare. UK general practice research merits greater recognition as a first-class research discipline from Government, and increased support from funders.

2 Background and introduction

General practice and primary care

General practice is the first point of medical contact for patients with the health care system, and is a central component of *primary care*, which encompasses all first point of access care provided in the community, including that given by health visitors, pharmacists, and specialist nurses. Healthcare provision in general practice and primary care is first-contact, comprehensive, continuous, coordinated and personalised.³ Evidence for the importance and cost-effectiveness of a primary care lead in health services is well documented.⁴ Within the UK, over 95% of NHS clinical contacts are made in general practice and around 80% of health problems are managed at this level. Over 300 million general practice consultations take place in the UK each year; these encompass health promotion, prevention and screening as well as acute and chronic care. This extensive, ongoing practitioner-patient contact, and the roles of general practice in coordinating patient care and governing access to both primary and secondary services, make it fundamental to the success of the healthcare system.⁵

Thirty years on from the World Health Organisation's (WHO) declaration on primary health care made in Alma-Ata, a recent review stated that 'Evidence at the macro level (e.g. policy, payment, regulations) is now overwhelming: countries with a strong service for primary care have better health outcomes at low cost.'⁶ The WHO's 2008 report 'Primary health care: Now More Than Ever' called for a return to a primary healthcare emphasis to strengthen health systems' performance, a view endorsed by the World Health

Assembly.^{7,8} Equally strong advocacy was given in describing the NHS on its 60th Anniversary: 'Reinvest in general practice and primary care – these, not hospital care, are the soul of a proper, community oriented, health preserving care system. General practice is the jewel in the crown of the NHS. Save it. Build it.'⁹

General practice research

Effective general practice is dependent on a solid understanding of epidemiology and accurate assessment of patient need, together with a collaborative culture. A strong, tangible evidence base is needed to underpin these factors. Research is crucial to develop effective high-quality clinical treatment, and is equally important in informing the organisation of the healthcare system, including general practice, to ensure optimal delivery of care.

General practice covers the full spectrum of patients and disease, and general practice research is equally diverse. General practice research can be approached from different angles: the need for research 'in', 'by' and 'for' general practice has been highlighted.¹⁰ In brief, general practice research considers the overall health needs and problems of patients and the population, set in context of their everyday lives. Its key concerns are the causation, prevention and treatment of disease and illness, and the development of effective health policies and practices.¹¹ General practice research requires multi-method approaches including qualitative methods, epidemiology, cohort studies, randomised controlled trials and research synthesis.

3 Starfield B (1994). *Is primary care essential?* Lancet **344** (8930), 1129-33.

4 Starfield B, et al. (2005). *Contribution of Primary Care to Health Systems and Health*. Millbank Quarterly **83** (3), 457-502.

5 Wagner E, et al. (2002). *Care for chronic diseases*. BMJ **325**, 913-4.

6 Rawaf S, et al. (2008). *From Alma-Ata to Almaty: a new start for primary health care*. Lancet **372** (9647), 1365-7.

7 World Health Organisation (2008). *The world health report 2008: Primary health care - now more than ever*. <http://www.who.int/whr/2008/en/index.html>

8 World Health Assembly (2009). *Sixty-second World Health Assembly resolution WHA 62.12: primary health care, including health system strengthening*. http://apps.who.int/gb/ebwha/pdf_files/A62/A62_R12-en.pdf

9 Berwick D (2008). *A transatlantic review of the NHS at 60*. BMJ **337**, a838.

10 Mant D (1997). *R&D in primary care national working group report*. NHS Executive, Leeds.

11 A Report from the Heads of Departments of General Practice and Primary Care in the Medical Schools of the United Kingdom (2002). *New century, new challenges*. <http://www.sapc.ac.uk/docs/Mackenzie2.pdf>

Importantly however, much of the evidence needed to underpin effective general practice is best gathered through research in clinical settings involving practitioners and their patients.

The UK has a strong tradition in general practice research which is recognised internationally. This lead has been established through expert academic leadership, and supported by national strategic review and investment.¹² However, the ongoing success of UK general practice research depends on the continued development of expertise and resources, together with an agenda which anticipates and addresses key challenges.

To highlight the importance of research in general practice, the Academy of Medical Sciences held a one-day workshop 'Research in General Practice: bringing innovation into patient care' on 12 December 2008. The workshop aimed to:

- Celebrate the leading international position of UK general practice research.
- Describe the need for research addressing the 'second translational gap' identified in the Cooksey Report.¹³
- Promote relationships at the interface of primary and secondary care research.
- Enhance engagement among general practitioners, professional bodies, NHS, industry, Government, research funders and others.
- Facilitate discussion about the challenges and opportunities in general practice research.
- Identify recommendations and catalyse actions to prioritise and extend the general practice research agenda.

The event included keynote presentations, discussion, and 4 focused workshop groups. It was attended by around 70 delegates representing a range of key stakeholders including: GPs, GP-representative and professional bodies, research funders, government, NHS, industry and patient groups. The programme, speakers' biographies and delegate list are annexed to this report.

This report seeks to capture the themes and issues explored during the event, and does not necessarily represent the views of the Academy of Medical Sciences. The report will be of interest to researchers, policy makers, research funders and other stakeholders. We are extremely grateful to the speakers for their thoughtful presentations and review of this report, and to the attendees for their remarks and feedback.

The main areas covered by the workshop that are considered in this report are:

- Successes and challenges in UK general practice research.
- The second translational gap.
- Using research evidence to inform individual patient care.
- Using general practice research databases in epidemiological research.
- General practice research networks.
- Funding and infrastructure.
- Strengthening capacity.

12 Report of Topic Working Group (1999). *NHS R&D strategic review: primary care*.

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4082940

13 Her Majesty's Stationery Office (2006). *A review of UK health research funding*. http://www.hm-treasury.gov.uk/cooksey_review_index.htm

3 Successes and challenges in UK general practice research

The UK's reputation for excellence in general practice research is long-established, and originates in the achievements of renowned practitioners such as Edward Jenner, William Budd, and later William Pickles (see Table 1). The discipline is now supported by an extensive research community based in university departments and academic units of general practice and primary care, health science and health service research, as well as researchers in postgraduate medical deaneries, research networks and independent general practices. The success of academic general practice research is recognised through the achievement of the highest status in national research assessment exercises. UK general practice research is widely respected and heavily cited internationally.

In addition to academic expertise, the UK's global lead in general practice research has been facilitated by an indispensable supportive infrastructure including:

- The universal registration system provided in the NHS.
- The development of general practice research databases.
- The establishment of general practice and primary care research networks.
- Well respected specialty publications, including the *British Journal of General Practice*.¹⁴
- Active collaborations between academic units and the NHS.
- Coordinated national approaches to primary care research strategic development.

Research findings with significant impact have been achieved in the UK across many fields including: epidemiology, health behaviours, diagnosis, treatment, chronic disease management, health promotion, and quality assessment (see Table 2). The UK has particular strength in conducting randomised trials in

general practice. The influence of general practice research also extends beyond the direct outcomes of the research discipline - medical education and wider health service development have benefited significantly from the expertise established in academic general practice.

The continuing success of UK general practice research depends on a strategy which anticipates and addresses future needs. There are opportunities to:

- Provide evidence which informs UK healthcare, centred around promotion of healthy living and pro-active disease management.
- Fill gaps in the evidence: in particular, research is needed to bridge the second translational gap identified in the Cooksey Report – addressing the development and evaluation of new healthcare interventions in realistic clinical settings, and the implementation of new knowledge in clinical practice.¹⁵
- Examine the effect of the long-term practitioner-patient relationship on the integration of new findings and the quality of care in general practice.
- Encourage closer research links between primary and secondary care.
- Engage pharmaceutical and biotechnology companies in general practice research within the UK.
- Evaluate innovation in general practice care derived from other countries when introduced into the UK, and share UK knowledge and experience with others.

Notwithstanding the success of general practice research, additional steps must be taken to ensure that the UK's full potential in this field is realised. These include:

- Retaining and extending collaboration between academics and clinicians,

¹⁴ For further information see <http://www.rcgp.org.uk/publications/bjgp.aspx>

¹⁵ Her Majesty's Stationery Office (2006). *A review of UK health research funding*. http://www.hm-treasury.gov.uk/cooksey_review_index.htm

and between research-active general practitioners and the wider practicing community.

- Enhancing collegiality and coordination within the discipline to build on existing strengths.
- Maximising the use of available resources and building future capacity.
- Continuing to raise the profile of the discipline and those who support general practice both clinically and academically.

Table 1: Examples of UK visionaries and founder figures in general practice research

<p>William Withering (1741–1799)</p>  <p>Trained as a physician at the University of Edinburgh, William Withering became famous for recognising the value of digitalis in treating heart failure. His 'Account of the Foxglove and some of its Medical Uses' (1785) included early clinical trials reports and notes on digitalis effects and toxicity.</p>	<p>Edward Jenner (1749–1823)</p>  <p>Sometimes referred to as 'the father of immunology', Edward Jenner trained as a surgeon and anatomist, before returning to work in Gloucestershire as a general practitioner. He is celebrated for his work in developing a means of small-pox vaccination through inoculation with cow-pox.</p>
<p>William Budd (1811–1880)</p>  <p>As a general practitioner, William Budd's observations on typhoid fever had far-reaching consequences in informing understanding of the contagious nature of typhoid and cholera and the principle of disinfection.</p>	<p>James MacKenzie (1853–1925)</p>  <p>Working within general practice, both in Burnley and Scotland, James MacKenzie became a world clinical authority on heart disease. His key contributions included the discovery of extra systoles and development of the polygraph.</p>
<p>William Pickles (1885–1969)</p>  <p>Born in Leeds, William Pickles was a general practitioner and epidemiologist, and the first President of the Royal College of General Practitioners. His seminal text 'Epidemiology in Country Practice' (1937) advocated the study of disease in general practice and showed how a country practice could be a field laboratory with unique opportunities for epidemiologists.</p>	<p>Edgar Hope Simpson (1908–2003)</p>  <p>A self-taught researcher, Edgar Hope-Simpson made one of the key discoveries in 20th century general practice, when, studying the Shetland isles population, he established the link between chicken pox and shingles. The epidemiological research unit he founded around his practice became the model on which NHS R&D general practices are based.</p>
<p>John Fry (1922–1994)</p>  <p>Working as a general practitioner in Beckenham, Kent, John Fry built a international reputation for research and writing, and founded the popular medical magazine, <i>Update</i>. He developed the basis of natural history of disease recording and set an inspirational example of blending service work in general practice with academic research and writing.</p>	<p>Julian Tudor Hart (1927–)</p>  <p>Best known for the formulation of the 'inverse care law', Julian Tudor Hart worked within the Welsh mining community. An early advocate for systematic search strategies for asymptomatic patients, patient participation and recall, and planned clinical policies in general practice, his research was fundamental in establishing the value of preventative care.</p>
<p>David Morrell (1928–)</p>  <p>David Morrell worked as a general practitioner in Lambeth, and was the first general practitioner from an academic department of general practice to become President of the British Medical Association. His key areas of research influence were in illuminating medical care in the community and self care.</p>	<p>John Howie (1937–)</p>  <p>A general practitioner in Glasgow and later professor in Edinburgh, John Howie used research into general practitioners' use of antibiotics in respiratory illness to describe how decision making in general practice differs from that in hospital practice. His team's researches into measuring quality at consultations stressed the importance of sociological determinants of outcome.</p>

Table 2: Examples of UK research success in general practice and primary care¹⁶

Theme	Examples
Epidemiology	<ul style="list-style-type: none"> • The description of the epidemiology and natural history of common disorders in the community. • Demonstration of the 'Iceberg of Illness' (the proportion of symptomatic patients who do not seek medical treatment).
Health behaviours	<ul style="list-style-type: none"> • Understanding the reasons affecting patients' health care-seeking behaviour. • Emphasising the importance of exploring and negotiating patients' ideas, concerns and expectations in the consultation and in prescribing and referral decisions.
Diagnosis	<ul style="list-style-type: none"> • Provision of guidance on the early diagnosis of potentially serious disorders such as meningitis, coeliac disease and cancer. • Improving the accuracy of diagnosis in chronic conditions such as heart failure and depression.
Treatment	<ul style="list-style-type: none"> • Developing an understanding of the factors affecting patients' compliance with medication. • Developing new and effective community-based therapeutic approaches in anticoagulation, heart failure, gastrointestinal disorders and infectious diseases.
Chronic disease management	<ul style="list-style-type: none"> • Understanding the principles of effective management of chronic diseases. • Enhancing the quality of care of patients with diabetes, cardiovascular disease, asthma and neurological problems.
Screening, health promotion and disease prevention	<ul style="list-style-type: none"> • Establishing the place of cardiovascular risk detection and cardiovascular health promotion in community settings. • Devising effective community-based approaches to smoking cessation and alcohol reduction.
Quality of care	<ul style="list-style-type: none"> • Understanding the ingredients of high quality care in primary care. • Devising methods to identify quality criteria and to support practitioners in achieving them.
Primary care research methodology	<ul style="list-style-type: none"> • Recognising the value of disparate research methodologies in evaluating complex interventions in the delivery of primary care. • Using large databases (e.g. the General Practice Research Database) for important hypothesis-generating research in disease areas including cancer, gastrointestinal disorders and cardiovascular disease.

4 The second translational gap

Session co-chaired by Professors Ann-Louise Kinmonth CBE FMedSci and Martin Roland CBE FMedSci

Sir David Cooksey's 2006 review set out a vision for invigorating translational biomedical research in the UK, and identified two important 'gaps' in the translation of health research. The first was in the translation of ideas from basic and clinical research into new products and approaches to disease treatment, and the second was in the implementation of new interventions in clinical practice.¹⁷ Attention has subsequently been focused on establishing UK research programmes to address the first of the two gaps. Importantly however, there is continuing need to increase awareness of the second transitional stage and to accelerate the delivery of research which bridges this gap.

An essential aspect of the second translational stage is the identification and evaluation of new approaches to care in the context of realistic clinical settings. Research to develop new approaches to clinical care, which are effective in everyday NHS use, is greatly needed. Once a new treatment or procedure has been validated, a further important step is to ensure its uptake into routine clinical care, including that provided in general practice. Research is therefore necessary to evaluate the ways by which implementation of new knowledge is best achieved. In this respect, the UK's 'Clinical Effectiveness Research Agenda Group' (CERAG) has taken a lead in setting out an implementation research agenda.¹⁸

The main areas for consideration in addressing the second translational gap include:

- Determining how the attributes of new knowledge influence its take-up, and how research findings should be synthesised and presented to maximise their influence.
- Developing effective methodologies and the supporting infrastructure to facilitate knowledge transfer into clinical practice.
- Research into how behavioural change

occurs at individual and organisational levels, and how interventions and incentives can be used to promote and sustain change.

- Assessing the impact of culture on the implementation of new healthcare approaches.
- Defining the workforce attributes which enhance knowledge use and the means by which these can be developed and sustained.
- Identifying effective means of educating and training the healthcare workforce in research implementation, and ways of facilitating knowledge exchange with individual practitioners.
- Determining the relative merits of systems which place responsibility for effective use of research at an individual or organisational level.

The general practice research community is well placed to make major contributions in many of these areas. However, a long-term commitment to research addressing the second translational gap in healthcare is needed. Consideration should be given to establishing a national programme of implementation research, including a combination of project and programmatic funding and training programmes. Research funders are keen to maximise the clinical impact of research they support. However, funding initiatives and other incentives, which are specifically directed to the translation of research findings into practice, are needed to ensure this final translational stage is effectively realised.

Closer alignment between policymakers, academics and clinicians, together with the promotion of the skills and knowledge needed to commission and to understand research evidence would also be beneficial in developing a wider culture of evidence use in healthcare.

¹⁷ Her Majesty's Stationery Office (2006). *A review of UK health research funding*. http://www.hm-treasury.gov.uk/cooksey_review_index.htm

¹⁸ Eccles M, et al. (2009). *An implementation research agenda*. *Implementation Science* 4, 18.

5 Using research evidence to inform individual patient care

Session co-chaired by Professor Paul Glasziou and Professor David Mant FMedSci¹⁹

General practitioners, in common with other clinicians, aspire to adapt medical care precisely to the needs of the patient. Their use of individual consultation, diagnosis and treatment is essential in the delivery of personalised care. Moreover, the need to coordinate the overall care of all the medical needs of an individual, and to address the resulting complexities, including co-morbidity and poly-pharmacy, largely rests in general practice. Personalised care is particularly important for patients who do not respond to known treatments, and for those with symptoms for which no diagnosis can be established, many of whom are managed in general practice.

In using research evidence to inform individual patient care, consideration should be given to:

- *Determining when personal evidence of treatment effect should be established.* In routine practice, clinical treatment is often refined using data acquired from an individual patient. For example, this approach is essential in circumstances where a large variation in treatment response between individuals is known (e.g. self-monitoring of warfarin). Alternation between treatments is also used to optimise care for chronic conditions on an individual basis (e.g. for chronic pain). Research is needed to identify opportunities, and to develop methodology, where the principles of optimisation of care can be established through the collection of individual patient data.
 - *Improving methods to extrapolate from research data to an individual patient.* Personal evidence of treatment effect cannot be established for acute conditions, conditions with a single opportunity for treatment, or preventative interventions. In these cases, data which guide treatment can only be obtained from large trials
- with broad patient populations, or meta-analyses. It is then necessary to extrapolate from large-scale study data to individual care. Further research is needed to develop better methods to achieve this individualisation, addressing issues such as baseline risk, stability of relative risk estimates, and spectrum effects.
- *Maximising the potential of new technologies in personalised medicine.* A goal of personalised care is to move from the unrefined diagnosis and treatment of disease, based on standardised treatment protocols, to the prediction, prevention and treatment of disease on an individual basis. Predictive factors may arise from environment, social, phenotypic or genotypic variations. New technologies, such as genome scanning may ultimately enable personal disease risk-factors to be identified, and allow disease to be anticipated and prevented. However, genotypic or phenotypic characterisation may only account for a fraction of the individual variation encountered in clinical practice, and it will be important to integrate novel methods into an overall approach for establishing personalised care.
 - *Understanding how continual patient-practitioner relationships influence care.* Further research is needed to examine how long-term general practitioner-patient relationships influence treatment outcomes. For example, how a general practitioner's long-term observation of a patient can influence clinical decision making. It is also important to consider how a general practitioner's previous experience in managing a disorder may influence subsequent use of research evidence in clinical management.

¹⁹ Further reading by these authors: *Applying results to treatment decisions in primary care.* In Rothwell P (2007). *Treating individuals. From randomised trials to personalised medicine.* Elsevier Ltd, Oxford.

Research is required to develop UK capability in personalised medicine. There is need to:

- Maintain a range of research approaches, from broad trials across wide patient groups, to smaller group and individual-level studies, and to support both statistical and social science based approaches.
- Assess the extent to which standardised recommendations in management (such as those put forward in government targets and medical guidelines) can be followed in routine community practice, and the manner in which they must be modified in the treatment of individual patients.

6 Using general practice research databases in epidemiological research

Session co-chaired by Professor Mike Pringle CBE FMedSci & Dr Richard Hubbard

The UK's general practice patient records are unique due to their wide population coverage and the level and continuity of contact between patients and general practitioners. The amalgamation of these records into large electronic datasets generates an invaluable research resource. Initiatives to develop general practice datasets are well established in the UK and recognised as a major strategic advantage. The four most extensive UK general practice databases (the General Practice Research Database (GPRD), QRESEARCH, The Health Improvement Network (THIN) and Doctors Independent Network (DIN)) together cover around 17% of UK general practices.²⁰ Smaller datasets also provide data with geographic or disease specificity. There is widespread and growing use of general practice research data in epidemiological research, and the effectiveness of this approach is well demonstrated. Data obtained in general practice can be used in a variety of study methodologies, and are particularly useful to study diseases in family members through record linkage, and in research at the interface of health and social care.

One of the challenges of research using data obtained in general practice is in establishing outcome validity. Potential bias in datasets can be overcome by dataset validation and effective randomisation. However, careful use of data based on an accurate understanding of the motivation for its recording is essential. Data security is a further challenge, since general practice records contain confidential personal medical history. The UK's general practice databases ensure security through various means. The creation of 'safe havens' to enable dataset linkage is of increasing importance, and

efforts to establish such services across the UK should be supported.

To realise the full potential of general practice research databases, there is a need to:

- Expand population and general practice coverage and increase linkage with other datasets (e.g. cancer registries, mortality data, national audit data, secondary care data).²¹
- Improve the methodology for data capture in general practice and its transfer into datasets. Research is needed to further understand the consultation process, and to develop methods enabling more accurate, time-efficient data recording in general practice. It is also needed to develop effective, consistent data coding methodologies, and to enable accurate capture of the free text recorded by general practitioners.
- Create stronger incentives for data recording in general practice.
- Develop innovative research methodologies and statistical approaches to maximise the potential use of general practice research data.
- Develop support technologies (e.g. informatics and computing) and ensure that university departments and research groups have the necessary infrastructure.
- Support training in epidemiology and in the specific skills needed to handle large datasets.
- Encourage interdisciplinary working between informatics experts and biomedical scientists.
- Develop and promote guidance for the use of patient records in research.^{22,23}

²⁰ For further information on the databases see <http://www.gprd.com/home/>, <http://www.qresearch.org/default.aspx>, <http://www.thin-uk.com/>, <http://www.dinweb.org/dinweb/about.asp>

²¹ The Research Capability Programme (RCP) aims to link up to 30 large datasets. For further information on RCP see <http://www.connectingforhealth.nhs.uk/systemsandservices/research>

²² Wellcome Trust (2009). *Towards consensus for best practice: use of patient records from general practice for research*. <http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Personal-information/GP-records/index.htm>

²³ Academy of Medical Sciences (2006). *Personal data for public good: using health information in medical research*. <http://www.acmedsci.ac.uk/p99puid62.html>

- Increase access for the pharmaceutical industry to general practice research databases for collaborative research purposes.

Studies using general practice research data are indispensable in establishing associations between medical interventions and patient outcomes within the particular setting of general practice. It is important that these studies are more widely integrated into multi-disciplinary research programmes to fully harness their great potential in advancing healthcare.

7 General practice research networks

Session co-chaired by Professor Paul Wallace & Professor Irwin Nazareth

Research networks play an essential role in establishing and maintaining research active general practices and in preparing them for research collaboration. Two of the UK's principal networks are the Medical Research Council's (MRC) General Practice Research Framework (GPRF) and the National Institute for Health Research's (NIHR) Primary Care Research Network (PCRN).²⁴ The Scottish Primary Care Research Network facilitates research in Scotland, and similar infrastructure is being established within the clinical research collaborations in Wales and Northern Ireland.^{25,26,27} The general practice research networks are a strategic asset to UK biomedical research and are highly regarded internationally.

The GPRF is a UK-wide network of around 919 general practices, with access to around 12% of the UK population including representation across the socio-economic spectrum. GPRF supports the conduct of clinical trials, epidemiological and health services research, and facilitates a wide range of research in general practice from local studies to national programmes. The network has a tiered structure of research nurses, supported by a national coordinating centre. GPRF provides guidance to researchers from early pre-protocol stages through to study publication. It also supports the general development of methodological and statistical approaches needed in general practice research, and collaborates in running the PRIMENT Clinical Trials Unit.²⁸

The PCRN is part of the wider NIHR Clinical Research Network (NIHR CRN). PCRN works

with practitioners in a range of general practice and primary care settings, with the principal aim of increasing patient recruitment and involvement in clinical trials and other studies in primary care. PCRN has proved very successful in this, and achieves around 30% of all accruals across NIHR CRN.²⁹ PCRN comprises eight local research networks across England, each working to establish partnerships between practices, academics and NHS Trusts in its region. PCRNs are supported by a Clinical lead, Network Manager, research nurses, recruitment and dedicated support staff. PCRN currently supports studies from a post-protocol development stage, which are adopted into the NIHR CRN Portfolio.³⁰

GPRF and PCRN are currently working together to establish closer collaboration and alignment, to enhance the existing strengths of the networks. Through regular joint meetings integrated schemes are being developed, including:

- A coordinated 'support menu' listing activities within the research process, and enabling researchers to identify the appropriate organisation for support. PCRN will lead on activities including the conduct of research, practice recruitment and retention, while GPRF will focus on methodological processes including study planning, training of researchers, and quality control.
- A system to expedite the process by which researchers can establish contact with relevant healthcare practices, particularly for studies in the development stage.

²⁴ For further information on the networks see <http://www.gprf.mrc.ac.uk/> and <http://www.ukcrn.org.uk/index/networks/primarycare.html>

²⁵ For further information on the Scottish Primary Care Research Network (SPCRN) see <http://www.sspc.ac.uk/spcrn/>

²⁶ For further information on Primary Care within the Clinical Research Collaboration Cymru see

<http://www.wales.nhs.uk/sites3/page.cfm?orgid=580&pid=38710>

²⁷ For further information on the Northern Ireland Clinical Research Network (NICRN) see <http://www.nicrn.hscni.net/themednetworks.aspx>

²⁸ For further details of PRIMENT see <http://www.priment.mrc.ac.uk/>

²⁹ For further information on the development of clinical research infrastructure across the UK see

http://www.ukcrn.org.uk/index/networks/uk_wide.html

³⁰ For information on the NIHR Clinical Research Network Portfolio see http://www.ukcrn.org.uk/index/clinical/portfolio_new.html

Future challenges to be jointly addressed by the networks include:

- Increasing pharmaceutical and biotechnology industry collaboration in general practice research. Smaller companies often seek to test new technologies and appliances in primary care, however as the studies may not be traditional randomised controlled trials (RCTs), they may not fulfill criteria for inclusion in the NIHR Portfolio. Avenues to facilitate the adoption of such studies are under consideration.
- Developing new methods to measure and report participant accruals into clinical trials and other studies, which capture a sense of the complexity as well as extent of recruitment. These methods are important as accruals are a key indicator of network success.
- Developing means to increase support to researchers at the early stages of study development, to maximise researchers' use of network managers' knowledge and expertise.
- Expanding 'research on research', including work to investigate methods for recruitment and retention of participants, and effectiveness of participant feedback.
- Ensuring that the increasingly complex, time-consuming and resource-intensive approval processes for conducting research in the NHS are streamlined. Continued advocacy to reduce duplication of effort and minimise workload is crucial.

8 Funding and infrastructure

General practice research is supported within the UK through a variety of funding streams which provide for specific programmes of research, research related infrastructure, and academic research posts. The NIHR is a key funder of UK general practice research, together with the MRC, higher education funding bodies, universities, charities, and private/commercial funders. Within the devolved administrations general practice research is supported by the Scottish Government's Health Directorate, NHS Scotland and the Scottish Funding Council through the Scottish School of Primary Care, the Wales Office of Research and Development for Health and Social Care (WORD), and the Research and Development Office within the Public Health Agency for Northern Ireland.^{31,32,33}

NIHR research programme funding is awarded through a competitive, NHS-wide, bidding process.³⁴ Funding for general practice-led projects has recently been secured through substantial NIHR Programme Grants, schemes including the Health Technology Assessment programme (e.g. randomised controlled trials), and the research for Patient Benefit (RfPB) Programme. General practice research is supported by NIHR infrastructure, including both the Comprehensive- and the Primary Care Research Networks under the umbrella of the NIHR CRN (see section 7). General practice research is embedded in recent initiatives including the NIHR Centres for Leadership in Applied Health Research and Care. These research partnerships between universities and surrounding NHS organisations undertake applied health research focused on patient need.

The NIHR School for Primary Care Research is a further key strand of NIHR support for general practice research. The School comprises England's leading academic centres for primary care research, and is supported by an annual fund of over £3 million.³⁵ The School is well represented within the wider NIHR College and Faculty; 12 of the current 163 NIHR Senior Investigators are members of the School.

Besides funding and facilities financed through NIHR, and its equivalents in the devolved administrations, general practice research is supported by UK-based organisations including:

- The *National Primary Care Research and Development Centre*, a collaboration between Manchester and York universities which undertakes policy-related research in primary care.³⁶
- The *Scottish School of Primary Care*, a collaborative, virtual school jointly funded by the Scottish Research and Higher Education Sectors.³⁷
- The *Wales School for Primary Care Research*, a virtual School and partnership between the Universities of Cardiff, Swansea, Glamorgan and Bangor.³⁸
- The *Royal College of General Practitioners Research* group, a long-standing group which has recently provided a key lead in developing the 'Research Ready' system of general practice self-accreditation for research capability.^{39,40}
- The *Society for Academic Primary Care (SAPC)* which promotes excellence in research, education and policy development in general practice and primary health care.⁴¹

31 For further information see Royal College of General Practitioners (Scotland) (2009). *Academic general practice in Scotland: securing the future*. http://www.rcgp.org.uk/pdf/scot_Academic_General_Practice_in_Scotland_Final_Full_Master.pdf

32 For further information on WORD see <http://wales.gov.uk/topics/health/research/word/?lang=en>

33 For further information on the Public Health Agency for Northern Ireland see <http://www.publichealth.hscni.net/>

34 Workshop discussion focused on funding provided by NIHR, following Professor Davies' presentation. For further information on NIHR see <http://www.nihr.ac.uk/Pages/default.aspx>

35 For further information on the School for Primary Care Research see <http://www.nspcr.ac.uk/index.cfm>

36 For further information on the National Primary Care Research and Development Centre see <http://www.npcrdc.ac.uk/>

37 For further information on the Scottish School for Primary Care Research see <http://www.sspc.ac.uk>

38 For further information on the Wales School for Primary Care Research see <http://www.cardiff.ac.uk/wspcr/index.html>

39 For information on the Royal College of General Practitioners Research group see

http://www.rcgp.org.uk/clinical_and_research/circ/research.aspx

40 For information on Research Ready see

http://www.rcgp.org.uk/clinical_and_research/circ/research/primary_care_research_team_ass/research_ready.aspx

- *The UK Federation of Primary Care Research Organisations (UKFPCRO)*, which promotes cross network collaboration and learning and provides a collective voice for primary care research networks.⁴²
- The MRC's *General Practice Research Framework* (see section 7).
- Support systems including research databases (see section 6), and wider initiatives including the Research Capability Programme within the NHS Connecting for Health.⁴³
- Health behaviours in the community.
- The evolution of serious illness before hospital admission.
- Effective health care delivery at the primary-secondary care interface.
- Complex interventions at the interface of medicine, public health and social care, such as prison health and drug-seeking behaviour.

To increase diversity and continually energise the field, funding must clearly support emerging research groups, new models and methodologies. There is also a need for funding schemes to promote interdisciplinary working, such as the collaboration between medical scientists and informatics experts around research databases and electronic records. Opportunities to attract and support pharmaceutical and biotechnology companies in conducting UK-based research in general practice should also be expanded.

The UK's research base is further strengthened by close links with European and international organisations such as the Research Committee at the World Organisation of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA) and the European General Practice Research Network (EGPRN).^{44, 45} (For further consideration of international knowledge sharing in general practice research see Box 1)

In all, UK provision of funding and infrastructure provides a strong platform and excellent opportunities for general practice research, enviable to those from other countries. However, many of the leading university departments of primary care lack the critical mass of senior staff to provide long-term academic and financial stability (see section 9). Attention is also needed both to maximise the potential of current funding and to secure future investment in UK general practice research.

Although some areas of general practice research, particularly clinical trials, are already very successful in securing funding, there is a need to ensure that the UK's competitive funding model and portfolio of programmes continues to support a full range of research approaches and subjects. Important areas for consideration are programmes addressing:

41 For further information on SAPC see <http://www.sapc.ac.uk/default.asp>

42 For information on the UKFPCRO see <http://www.ukf-pcro.org/conferences.htm>

43 For further information on Connecting for Health see <http://www.connectingforhealth.nhs.uk/>

44 For further information on WONCA see <http://www.globalfamilydoctor.com/aboutWonca/aboutwonca.asp?refurl=aw#what>

45 For further information on EGPRN see <http://www.egprn.org/index.html>

Box 1 International learning in general practice research

The need for ongoing improvement in the quality of the care provided in general practice and primary care is universal, and there are important opportunities for the reciprocal exchange of research knowledge between countries of comparable, and differing, socio-economic status. UK general practice can contribute to the advancement of primary care internationally both because of its long-established role within the NHS and because of the development of academic excellence in both teaching and research.

The need for improvement in primary care is particularly acute in low and middle income countries, and in areas including child health, where advances in the delivery and uptake of existing interventions of known effectiveness would have a significant impact on outcomes. However, global health policy has recently taken a largely disease-focused approach. A future priority should therefore be to encourage a primary care orientation in global health and global health policy.

Research issues to be considered include:

- The need to emphasise the value of embedding research and development within the health service (e.g. the UK's NIHR), and to encourage comparable approaches to be established in other countries.
- The UK has key strengths in general practice research, however there remain opportunities to learn from other European systems, in particular those of France, Netherlands, Scandinavian countries and Spain. There are also some successful models of primary care in middle income countries such as Cuba and Brazil.
- The focus of healthcare is increasingly on chronic disease - much of the western world already has a considerable burden of chronic disease, and many low and middle income countries are currently in a 'transition stage' with a high burden of acute and chronic communicable disease (e.g. malaria, TB, HIV) and a growing burden of non-communicable diseases. This increasing emphasis on chronic disease necessitates changes in healthcare delivery in primary care. For example, chronic disease epidemics call for 'task shifting', an approach in which tasks are redistributed to make efficient use of the resources available by enabling less medically qualified staff to undertake some procedures. There is a need for research to define how task-shifting can best be implemented in a range of healthcare settings of varying socio-economic status.⁴⁶ There is also a need to evaluate approaches to quality improvement in low and middle income settings including guideline implementation strategies, audit and feedback, outreach education and supportive supervision and low cost electronic record systems.
- There is a particular need for concerted action to build primary care research capacity in low and middle income countries to train a critical mass of academic primary care practitioners, epidemiologists, statisticians, health economists and other social scientists to work in primary care settings addressing priority research questions.

⁴⁶ Academy of Medical Sciences (2008). *Challenges and priorities for global mental health research in low- and middle-income countries*. <http://www.acmedsci.ac.uk/p101puid138.html>

9 Strengthening capacity

In establishing its current global position, academic general practice in the UK has overcome unique historical challenges in capacity development. The foundation of the NHS preceded the formal development of academic general practice in the UK, including both the establishment of senior academic posts in general practice and the Royal College of General Practitioners. This timing had a long-term consequence; the initial NHS general practitioner contract was research-free, resulting in a lack of dedicated time and financial incentive for general practitioners to undertake research, and a cultural emphasis on service-delivery. The ratio of UK senior clinical academic staff to service general practitioners remains a small fraction of that in other major clinical disciplines. For example, the ratio of academic to NHS consultants is 1 in 8 for medicine or public health, 1 in 15 for child health, 1 in 18 for psychiatry and 1 in 225 for general practice.⁴⁷

Despite these difficulties, growing recognition of academic general practice, and a progressive increase in research skills have succeeded in expanding critical mass, and creating academic expertise and leadership unique to the UK. However, the future success of UK general practice research depends on continued growth and capacity building.

The issues that must now be considered by the universities, deaneries, NIHR, and professional bodies include:

- The need to increase the numbers of general practice researchers in UK universities, and to increase retention of clinician scientists with research skills (both masters and doctorate) in general practice. There is particular need to increase capacity at senior academic level to provide future leadership and supervision. An emerging gap between lecturer and senior lecturer grades is a matter of concern.
- The need to ensure maximum uptake of funding opportunities into academic general practice (e.g. NIHR Post-doctoral Fellowships, Clinical Lectureships, Academic Clinical Fellowships, and Senior Fellowships) and to create posts which attract new talent, rather than redistributing the existing pool of researchers.
- The risks to multi-disciplinary research if non-clinical academic capacity in higher education is not adequately supported.⁴⁸ To strengthen capacity, opportunities to encourage lateral movement of skilled scientists into general practice from other disciplines should be developed. Secondment schemes and supportive ad hoc training schemes should be considered to enhance recruitment.
- The expansion of research capacity by a more inclusive approach. For example, opportunities to increase the contributions of non-clinical research staff should be pursued. There is also a need to expand capacity in clinical disciplines other than medicine. For instance, research nurses also play a fundamental role in supporting general practice research studies and limited capacity in this area needs to be increased.
- The need for greater clarity in career structures for researchers in primary care in order to encourage retention. Career pathways should recognise the need for flexibility around academic development.
- An increased number of expert research active general practices within the UK should be supported to increase opportunities for registrars to work alongside established general practitioner clinical scientists. Practices should also be

⁴⁷ Medical Schools Council, London (2008). *Staffing levels of medical clinical academics in UK medical schools as at 31 July 2008*. Medical Schools Council, London. The Academy is grateful to Professor Philip Hannaford for contributing these data.

⁴⁸ Society for Academic Primary Care (2005). *Non-medical staff in academic departments of Primary Care*. http://www.sapc.ac.uk/docs/Item_6ii_Non-clinical_staff_position_paper.doc

encouraged to foster clinical scientists and develop research champions within the general practice community.

- Significant increases in clinical research capacity across medical specialties are being implemented through UK-wide programmes led by the NIHR, MRC, and their equivalents in Scotland, Wales and Northern Ireland within the oversight of the Office for the Strategic Coordination of Health Research (OSCHR).⁴⁹ It is important to ensure that general practice is fully represented in this strategic decision making, and is able to participate fully in the schemes.

Long-term capacity strengthening in academic general practice is also largely dependent on inspiring and engaging future generations of academic general practitioners. In this respect, it is important that research opportunities are promoted through the medical education and training curricula including research within general practice. This includes:

- Time for the teaching about general practice research, its interest and value, within undergraduate and postgraduate general practice training. A revised, longer (e.g. 5-year) period of training for general practitioners, including a research module should also be considered.⁵⁰
- Reinforcing a research culture within general practice training through opportunities in specialist training rotations.
- Increasing the number of Clinical Academic Training Fellowships in general practice and primary care.
- Increasing trainee exposure and access to research-active general practitioners and senior clinical academics. Research experience amongst general practice trainers and course organisers is sparse, and a high proportion of postgraduate general practitioners have little or no contact with research-active general practitioners.

- Increasing the visibility of research-active general practitioners to act as role models and mentors, and to attract younger doctors to the pathway.
- Strengthening relationships between medical schools and postgraduate deaneries to promote general practice research.

There is a scarcity of academics relative to service-oriented general practitioners and an increasing concentration of general practice research skills in the university community, but a sense of division between academic general practitioners and the wider profession must be resisted. Closer interaction between consultants and academic colleagues of the kind seen in other medical specialties should be supported.

Capacity strengthening may also be supported by an increased awareness of research throughout the general practice community as a whole. Although research-active general practitioners are likely to remain a minority, there is a need for all general practitioners to appreciate the value of research and to incorporate evidence from it into their everyday practice. Many will also support the conduct of research within their practices, even though they may not wish to lead it.

49 For further information see Academy of Medical Sciences (2009) *Building clinical academic capacity and the allocation of resources across academic specialties*. <http://www.acmedsci.ac.uk/index.php?pid=99&puid=150>

50 MMC Inquiry (2008). *Aspiring to excellence. Findings and final recommendations of the independent inquiry into modernising medical careers*. Lead by Professor Sir John Tooke. Aldridge Press, Chiswick, London.

Annex I: Workshop programme

Research in general practice: bringing innovation into patient care

Welcome and introduction

Professor Robert Souhami CBE FMedSci, Foreign Secretary, Academy of Medical Sciences

Research in general practice: context and key contributions

Professor Roger Jones FMedSci, Wolfson Professor of General Practice, King's College London

Outlook from NHS Research & Development

Professor Dame Sally Davies FMedSci, Director of Research and Development, Department of Health

International perspective

Professor Frede Olesen, The Research Unit for General Practice, Aarhus Universitet, Denmark

Panel Discussion

Chair: Professor Robert Souhami CBE FMedSci. Participants: Morning speakers joined by Professor Sir Andrew Haines FMedSci, Director, London School of Hygiene and Tropical Medicine

Parallel workshop sessions

1. Mind the gap – filling the second translational gap

Co-chairs: Professor Martin Roland CBE FMedSci, Director, National Primary Care Research & Development Centre, NIHR School for Primary Care Research; Professor Ann-Louise Kinmonth CBE FMedSci, Foundation Professor of General Practice, University of Cambridge

2. How to use research evidence to inform individual patient care

Co-chairs: Professor David Mant FMedSci, Professor of General Practice, University of Oxford; Professor Paul Glasziou, Director, Centre for Evidence-Based Medicine, Oxford

3. Can general practice databases be used for epidemiological research?

Co-chairs: Professor Michael Pringle FMedSci, Professor of General Practice, University of Nottingham; Dr Richard Hubbard, Division of Epidemiology and Public Health, University of Nottingham

4. How can networks support quality research in general practice?

Co-chairs: Professor Paul Wallace, Director, The Primary Care Research Network for England; Professor Irwin Nazareth, Director, Medical Research Council General Practice Research Framework

Review of workshop sessions and recommendations

Chair: Professor Amanda Howe, Professor of Primary Care, University of East Anglia
Participants: Workshop session chairs

Panel discussion

Chair: Sir John Bell FRS PMedSci
Participants: Workshop session chairs

Conclusion

Professor Robert Souhami CBE FMedSci

Annex II: Speaker biographies

Professor Sir John Bell FRS PMedSci is the President of the Academy of Medical Sciences, and Regius Professor of Medicine at Oxford University. He is also the Chairman of the Office for the Strategic Coordination of Health Research (OSCHR). In 2008 he received a knighthood for his services to medical science and was elected a Fellow of the Royal Society.

Professor Dame Sally Davies FMedSci is the Director General of Research and Development and Chief Scientific Adviser for the Department of Health and NHS. As Director General she developed the new government research strategy, Best Research for Best Health, and is now responsible for implementation of the NIHR. She was a member of the Biotechnology Innovation and Growth Team steering groups and the Health Care Industry Task Force, and currently Chairs the UK Clinical Research Collaboration (UKCRC).

Professor Paul Glasziou is Professor of Evidence Based Medicine at Oxford University and Director of the Centre for Evidence Based Monitoring. His main research interest is in clinical decision making in medicine, particularly clinical diagnosis and monitoring. He is co-editor of the Evidence Based Medicine Journal and he also has a strong research interest in the effectiveness of methods of getting scientific research into clinical practice. He works as a service general practitioner at the Beaumont Street practice in Oxford.

Professor Sir Andrew Haines FMedSci is currently Director of the London School of Hygiene and Tropical Medicine and Professor of Public Health and Primary Care. He was formerly an academic GP and Professor of Primary Health Care at University College London Medical School. His research interests include randomised trials of complex interventions including those to reduce heavy alcohol consumption, to promote self-management and to influence prescribing as well as to evaluate the impact of information and

communication technologies. He was a member of the WHO Advisory Committee on Health Research and is currently Chair of the MRC Global Health Group, a member of the MRC Strategy Group and of the Advisory Board of the NIHR.

Professor Amanda Howe is Professor of Primary Care & MB/BS Course Director within the School of Medicine, Health Policy & Practice at the University of East Anglia. From 2001, she has also held the posts of Consultant in Primary Care at the Norwich Primary Care Trust and Non-principal in General Practice at Bowthorpe Health Centre, Norwich. Her key research interests include: education for clinical practice, professional development and primary care mental health.

Dr Richard Hubbard is currently the British Lung Foundation Professor of Respiratory Medicine, based in the division of epidemiology and public health, in the University of Nottingham. He is an epidemiologist and a chest physician and has used general practice databases for research for over 10 years. His research interests include the epidemiology of lung diseases, particularly interstitial lung disease, asthma and chronic obstructive pulmonary disease, and drug safety.

Professor Roger Jones FMedSci is Wolfson Professor of General Practice at King's College London where he has also been Dean for Teaching and for External Affairs. He has conducted research in gastrointestinal disorders in primary care for over 20 years and currently works on gastro-oesophageal reflux disease, irritable bowel syndrome, inflammatory bowel disease, coeliac disease, abnormal liver function tests and colorectal cancer screening. He edited Family Practice from 1990-2004 and is Editor in Chief of the Oxford Textbook of Primary Medical Care.

Professor Ann-Louise Kinmonth CBE FMedSci is Foundation Professor of General Practice in the University of Cambridge and Fellow of St. John's College, Cambridge. Her research interests include the prevention of diabetes and cardiovascular disease and the development and trial evaluation of complex behavioural interventions. She works as a general practitioner in the York Street Practice in Cambridge and is a Foreign Associate of the Institute of Medicine.

Professor David Mant FMedSci is Professor of General Practice at Oxford University and Head of the Department of Primary Health Care. His personal research interests focus on the diagnosis and clinical management of common diseases in general practice, particularly cardiovascular disease and childhood infection. He has worked as a service general practitioner at South Oxford Health Centre since 1987 and believes that the main purpose of research in general practice should be to inform clinical care.

Professor Irwin Nazareth is Director of the Medical Research Council General Practice Research Framework and Professor & Head of Department of Primary Care & Population Health and Vice Dean of Primary Care at University College London. He leads the PRIMENT Clinical Trials Unit. His research interests include primary care mental health, the design, conduct and evaluation of complex interventions in primary care and the development of the scientific infrastructure for the design and conduct of randomised trials and other well designed studies in primary care.

Professor Frede Olesen is Director of the Research Unit for General Practice and Professor in Aarhus University, Denmark. He was the founding President of the European Society of General Practice/Family Medicine, Vice-President of the World Organization of General Practitioners/Family Physicians (WONCA) and a member of the European working party on quality in family practice. An honorary Fellow of the RCGP, honorary life member of WONCA, and recipient of the Danish Medical Association's

most prestigious award, he now chairs the Danish Cancer Society.

Professor Mike Pringle FMedSci is Professor of General Practice in the University of Nottingham. He is revalidation lead for the RCGP, medical director of the Revalidation Support Team and a board member of UKBiobank. He was Chairman of the RCGP from 1998-2001. Mike helps to run the Collingham Healthcare Education Centre, an innovative primary care development project. In 2007 he completed a secondment as part-time National Clinical Lead for General Practice in NHS Connecting for Health and is now Strategic Director of PRIMIS+.

Professor Martin Roland CBE FMedSci is Chair of Health Services Research in the University of Cambridge. He has been the Director of the NIHR School for Primary Care Research since 2006 and is a Special Advisor to RAND Europe, and an Associate Director of the National Primary Care Research and Development Centre. He has contributed to understanding how quality can be measured in primary care, and to evaluations of ways of improving quality in routine clinical practice.

Professor Robert Souhami CBE FMedSci (Chair) is the Academy's Foreign Secretary and was Kathleen Ferrier Professor of Cancer Medicine at University College London and Principal of the Royal Free and University College London Medical School. Subsequently he was Director of Clinical Research at Cancer Research UK.

Professor Paul Wallace was appointed as the UK Clinical Research Network Deputy Director for Primary Care, and Director of the Primary Care Research Network for England, in 2006. He is also Professor of Primary Care at University College London, and a part time general practitioner in the Hampstead Group Practice, London. He has extensive experience in developing research capacity in primary care throughout the UK and Europe, and in conducting large scale clinical studies.

Annex III: Workshop delegates

Dr Ann Adams
Principal Research Fellow, Health Sciences
Research Institute, Warwick Medical School

Dr Yvonne Arthurs
Deputy Regional Director of Public Health,
South East Regional Public Health Group

Dr Ramesh Bhatt
General Practitioner, The Grove Medical
Practice, Northolt

Dr Laura Boothman
Policy Officer, Academy of Medical Sciences

Dr Peter Brindle
R&D Strategy Lead, Bristol, North Somerset
and South Gloucestershire Primary Care Trusts

Professor Nicky Britten
Professor of Applied Healthcare Research,
Peninsula Medical School

Professor Ros Bryar
Professor of Community and Primary Care
Nursing, City University, London

Dr Susan Burningham
Executive Assistant, Academy of Medical
Sciences

Jo Burns
Network Manager, Primary Care Research
Network-Greater London

Dr Marta Buszewicz
Department of Primary Care and Population
Health, University College, London

Dr Suzanne Candy
Director, Biomedical Grants and Policy,
Academy of Medical Sciences

Ms Kathryn Charles
Business Manager, The Grove Medical Practice,
Northolt

Dr Margaret Cupples
Reader, General Practice, Queen's University
Belfast

Dr Khaled Darawil
Consultant Physician, Care of the Elderly &
Stroke, Newham University Hospital NHS Trust

Professor Celia Davies
Director, Research for Patient Benefit Programme

Safia Debar
ST4 in Academic Medicine and General Practice,
St. Georges' University of London

Professor Brendan Delaney
Professor of Primary Care, The University of
Birmingham

Dr Sue Denman
Head, Wales Office of Research & Development,
Welsh Assembly Government

Jill Dhell
Innovation and Industry R&D Relations
Manager, R&D Directorate, Department of
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Dr Patricia Ellis
Primary Care Manager, UK Clinical
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Dr Simon Fraser
General Practitioner and Clinical Advisor,
National Coordinating Centre for Health
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Dr Mark Gabbay
Clinical Director, Primary Care Research
Network, North West

Sir Charles George FMedSci
Chair, Board of Science and Education,
British Medical Association

Professor Claire Goodman
Professor of Health Care Research,
University of Hertfordshire

Emma Greenwood
Science Policy Researcher, Cancer Research UK

Professor Ian Harvey
Dean, University of East Anglia Medical School

Mrs Joanna Heywood
Fundraising Manager, Academy of Medical
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Professor Dame Joan Higgins
Chair, Patient Information Advisory Group,
Professor Emerita of Health Policy, University of
Manchester

Nick Hillier
Communications Manager,
Academy of Medical Sciences

Dr David Jewell
Editor, British Journal of General Practice

Peter Knight
Group Programme Director, Research Capability
Programme

Dr Ralph Kohn FRS FMedSci
The Kohn Foundation

Dr Georgie MacArthur
Policy Officer, Academy of Medical Sciences

Professor Domnhall MacAuley
Editor (Primary Care), British Medical Journal
Editorial

Professor Nigel Mathers
Chair of Research, Royal College of General
Practitioners

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Lecturer in General practice, Kings College,
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Joanne Morris
Research & Development Lead, Newham
University Hospital NHS Trust

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Executive Director, Academy of Medical Sciences

Mr Dan Nicholls
Grants Officer, Academy of Medical Sciences

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General Practitioner, The Irish College of
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Dr Andrew Otley
General Practitioner, Cricket Green Medical
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Dr Liam O'Toole
Head of Office, Office for Strategic Coordination
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Dr Shazia Ovaisi
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Dr John Parkinson
Director, General Practice Research Database

Sir Denis Pereira Gray OBE FMedSci
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Dr Beverly Peter
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Dr Liz Philpots
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