Developing Microbiology and Infectious Diseases Research in the UK

Report of the UK Clinical Research Collaboration Strategic Planning Group on Microbiology and Infectious Diseases Research
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The UK Clinical Research Collaboration (UKCRC) is a partnership of the key UK stakeholder organisations in clinical research. One of the goals of the UKCRC is to develop a coordinated approach to funding health related research. A significant element of this work has been the creation of an evidence base, including the publication in 2006 of an analysis of the research portfolios of the eleven largest government and charity UK health research funders (the UK Health Research Analysis). The work also includes coordinating discussions between funders to facilitate a coherent approach to funding in specific areas, including microbiology and infectious diseases.

In response to concerns about the status of clinical microbiology research capacity and coordination between funders and researchers, the UKCRC Partners agreed to develop a joint approach to research in the field of microbiology and infectious diseases. In 2006 a UKCRC Strategic Planning Group (SPG) on Microbiology and Infectious Diseases Research (MIDR) was established, chaired by Sir John Lilleyman, to take this forward.

The group membership included the major UK funders of MIDR and consisted of senior representatives from 12 organisations and a patient representative. The aim of the group was to take strategic oversight of MIDR in the UK and to identify and implement appropriate actions that would create the optimum environment to facilitate and fund excellence in the field. The scope of the MIDR SPG included all research on pathogenic microbes relevant to human health.

The SPG carried out a formal review of the area. The sources of input included: a survey of the infection research activities funded by SPG member organisations; an examination of recent reports and initiatives; a detailed analysis of the infection research data collected for the UK Health Research Analysis; and a consultation with key professional organisations in the area.

A survey of SPG member organisations mapped organisational remits and strategic roles, current and proposed funding initiatives and training award schemes. It showed that there were a wide range of funding schemes and training initiatives open to MIDR researchers in open competition. There were also several important existing investments in infection related research centres based in the UK and abroad.

In the UKCRC analysis of health research, Infection was the third highest of the specific areas of health and disease analysed, representing approximately £87m (9.2% of the total) in peer reviewed research funding during 2004/2005. A more detailed analysis showed that the largest proportion of infection funding (68.8%) was in Aetiology, which includes studies of the cause, risk and development of infectious disease. The second highest proportion was in Prevention research (10.9%), which includes vaccination programmes and interventions to alter the risk of infection.

The targeted consultation of professional organisations was based on a questionnaire which asked respondents to identify which areas of research were lacking in the UK, to identify any barriers to progress, to list the issues around capacity building and then to provide proposals for action to alleviate any problems.

A number of generic issues emerged from the evidence-gathering process as a whole and are currently being addressed by the UKCRC Partners through other activities. The issues included reducing the regulatory and governance burden, enhanced infrastructure support for clinical research and building academic capacity.

The process also identified four issues specific to MIDR from the consultation and the examination of reports and reviews in the area, as follows: Clinical and Translational Research; Medical Intelligence; Communication and Collaborative Working; and Workforce, Training and Career Structure. The UKCRC SPG agreed to develop a jointly funded initiative to address these four issues.

The objectives of the jointly funded initiative were to: build on existing basic strengths and boost applied and translational research; to foster knowledge...
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sharing and collaboration involving multi-disciplinary groups; to promote training, career development and leadership; and to support infrastructure. The jointly funded initiative was intended to provide direct support for the conduct of high quality, internationally leading MIDR research targeted at national priority areas.

The UKCRC Translational Infection Research Initiative was consequently launched in June 2007. The following seven research funding organisations came together under the auspices of the UKCRC to provide funds of up to £16.5m for the initiative: Biotechnology and Biological Sciences Research Council; Medical Research Council; National Institute for Health Research / Department of Health; Health and Social Care Research and Development Office (Northern Ireland); Chief Scientist Office of the Scottish Government Health Directorates; Wales Office of Research and Development for Health and Social Care, Welsh Assembly Government; and Wellcome Trust.

Under the Initiative a number of Consortia will be established. These will be new research groups focused on high quality collaborative research addressing national research priorities. The Consortia will provide a direct boost to research capacity and infrastructure, establish new career development and training programmes and carry out multi-disciplinary research projects. Successful applicants for Consortium Grants will be awarded funds of between £3m and £5m over a period of five years. In December 2007, 17 outline applications for first round Consortium Grants were reviewed. Three full applications have been invited and awards are expected to be made in June 2008. A further set of second round Consortium awards will be made in late 2009.

The Initiative also includes the award of nine-month Strategy Development Grants (SDGs) of up to £60,000 which are designed to provide incentives and encouragement to develop improved research bids based on meaningful strategies and addressing real evidence gaps. They will lead to the development of partnerships and promising proposals which have the potential to compete for Consortium or other research grant funding. Four SDGs were awarded in January 2008.

In addition the SPG organised the UKCRC Challenge Workshop on Healthcare Associated Infections and Anti-Microbial Resistance. This took place in May 2007 and brought together more than 60 key participants in this important area. The aim of the workshop was to develop research strategies and build partnerships that would have a significant impact on important problems in the field. A secondary aim was to inform future similar activities which might be hosted by recipients of SDGs. The workshop was based around the following five wide-ranging themes introduced by key note speakers and followed by strategic discussions: priorities in public health observational and intervention research; integrating user concerns, and optimising existing resources and networks; research priorities for development evaluation and use of diagnostics; research priorities in the development evaluation and effective use of drugs and vaccines; and research priorities for understanding the basic biology of transmission and anti-microbial resistance.

The two actions arising from the SPG process are a major joint response from the funders to many of the issues highlighted in the evidence gathering. However, the funders are aware that additional actions to further strengthen this area may be necessary. In the immediate future, the funding partners will review the impact of the UKCRC Translational Infection Research Initiative as it progresses. They will also monitor the field and initiate other actions as necessary. Other wider issues identified are being addressed through the UKCRC Partners’ agenda of joint or coordinated activities designed to improve and streamline the landscape of clinical research in the UK.
1 BACKGROUND

1.1 The UK Clinical Research Collaboration

The UK Clinical Research Collaboration (UKCRC) was established in 2004 as a partnership of organisations with the shared agenda of establishing the UK as a world leader in health research. The aim of the collaboration is to re-engineer the UK health research environment and harness the research potential of the National Health Service (NHS) for the benefit of researchers, patients and the public. The strength of the partnership is that it involves the key stakeholders that influence the health research environment in the UK, namely the main UK health research funding bodies, health departments, academia, the NHS, regulatory bodies, the bioscience, healthcare and pharmaceutical industries and patients. By coming together, the UKCRC Partners are able to effect the changes that need to be put in place to create an environment that facilitates and supports high quality health research.

The UKCRC Partners have focused their efforts in five main interconnected areas: building up the infrastructure for research in the NHS, developing incentives for research in the NHS, streamlining the regulatory and governance research environment, building an expert research workforce and developing a coordinated approach to health research funding.

One of the activities within the area of health research coordination is the generation of an evidence base of research funding in the UK. In 2006, the first ever national analysis of health research activity was published, examining the research portfolios of the main government and charity funders of health-related research in the UK.

The UKCRC is also developing a coherent approach to research funding in specific highlighted areas. A major recent joint investment in public health (the UKCRC Public Health Research Centres of Excellence) was an outcome of the major funders of public health research in the UK coming together under the auspices of the UKCRC.

1.2 Microbiology and Infectious Diseases Research

In response to concerns about the status of clinical microbiology research capacity and coordination between funders and researchers in this field, the UKCRC Partners agreed to develop a joint approach to coordinating microbiology and infectious diseases research (MIDR). In 2006 a UKCRC Strategic Planning Group involving the major funders of MIDR in the UK was established to take this forward.

1.3 Strategic Planning Groups

The Strategic Planning Group (SPG) model was developed and successfully used by the National Cancer Research Institute (NCRI) Partners for joint strategic planning and has resulted in several jointly funded initiatives including the National Prevention Research Initiative.

SPGs are time-limited working groups aimed at developing a coherent approach to research funding within a specific area. The membership is drawn from public representatives and the major UK funders of research in the area of interest. The members are senior representatives from each organisation who are empowered to share information on current and future funding plans and to commit to action on behalf of their organisation.

The SPG is tasked with carrying out an evidence-based review to identify gaps and opportunities in the field and to agree and implement a programme of joint and individual actions to meet the needs identified.

The SPG method of working is to gather evidence from multiple sources, including published reports and commissioned papers, and to consult with key experts and stakeholders in the field. The SPG examines issues such as resources, infrastructure, training, workforce capacity, funding, industry collaboration and interdisciplinary working. The group uses the evidence gathered to identify key priority areas and barriers to progress. This evidence-based approach allows the group to work towards customised solutions based on the specific problems in the area under investigation (see Figure 1 for details of the SPG process).
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Figure 1 UKCRC Strategic Planning Group Process

**INPUT**

- **OTHER FUNDERS AND STAKEHOLDERS**
  - E.g.: Consumers, Professional Groups, Policy Makers

- **EXPERT SCIENTIFIC OPINION**
  - Consultation through:
    - Workshops
    - Questionnaires
    - Expert Groups

- **UKCRC SECRETARIAT**
  - E.g.: Database for UK Health Research Analysis
  - Mapping Research Activities

- **SPG MEMBER ORGANISATIONS**
  - E.g.: Ongoing Activities, Future Strategies and Plans

**PROCESS**

- **STRAIGHT PLANNING GROUP**
  - Evidence-based review work by senior representatives from UKCRC Partner organisations including:
    - Analysis of current activity and future needs
    - Identification of opportunities and barriers to progress
    - Sharing of information on current and proposed funding strategies
    - Reviews of the state of the research environment (infrastructure, training, career structure etc.)
    - Agreement and implementation of actions to remove barriers and realise opportunities

**OUTPUT**

- **A COHERENT NATIONAL APPROACH**

- **CREATION OF AN ENVIRONMENT THAT FACILITATES RESEARCH IN THE AREA**

- **INDEPENDENT ACTIVITIES BY MEMBER ORGANISATIONS**
  - Complementary and informed by activities of others
  - Part of a coordinated national approach

- **JOINT ACTIVITIES**
  - Joint approaches to infrastructure provision
  - Jointly funded initiatives
  - Joint negotiations with third party organisations
  - Joint policy development

- **EVALUATING INITIATIVES AND MONITORING ENVIRONMENT**
1.4 Membership
The UKCRC Strategic Planning Group on Microbiology and Infectious Diseases Research (MIDR) was chaired by Sir John Lilleyman, then Medical Director of the National Patient Safety Agency. The membership consisted of senior representatives from the Medical Research Council (MRC), the Department of Health for England, Wellcome Trust, Health Protection Agency, Welsh Assembly Government, Department of Health Social Services and Public Safety (Northern Ireland), Scottish Government, Biotechnology and Biological Sciences Research Council, Department for Environment, Food and Rural Affairs, Food Standards Agency, Association of the British Pharmaceutical Industry, the Defence Science and Technology Laboratory and a member of the public (see Appendix 1 for full details of membership).

1.5 Terms of Reference
The aim of the SPG was to take strategic oversight of MIDR in the UK and to identify and implement appropriate actions that would create the optimum environment to facilitate and fund excellence in the field.

The remit of the group was to:
- Examine the status of UK research into microbiology and infectious diseases
- Identify any barriers to progress in the field
- Identify future needs in MIDR
- Identify strengths and opportunities to focus research activity
- Develop a coherent approach to the provision of infrastructure and resources
- Develop a coordinated approach to funding by research funding bodies
- Make recommendations and initiate the implementation of agreed actions.

1.6 Scope
The scope of the MIDR SPG included all research on pathogenic microbes relevant to human health. In this context ‘microbe’ was defined broadly to include viruses, fungi, parasites such as worms and prions. The broad area of basic immunology was excluded from consideration, as were animal and plant infectious diseases. However the study of zoonotic diseases was included as being relevant to human health.

1.7 Process
The SPG met on four occasions over a period of ten months between February and December 2006. Subsequently the major recommendations of the SPG and the proposed joint actions were endorsed by the UKCRC Board.

1.8 Purpose of this Report
This report provides a record of the SPG activities. It summarises the actions agreed and the outcomes which are being taken forward.
2 EVIDENCE REVIEWED AND ISSUES IDENTIFIED

2.1 Sources of Input

The following sources of evidence were reviewed by the members of the MIDR SPG:

- Survey of the infection research activities funded by SPG member organisations
- Summary of the roles, history, membership and activities of 15 professional societies and organisations in this field
- Summaries of reports and reviews:
  - *Academic Medical Bacteriology in the 21st Century* (2001) Academy of Medical Sciences
  - Summary of Medically- and dentally-qualified academic staff: Recommendations for training the researchers and educators of the future (2005) UK Clinical Research Collaboration and Modernising Medical Careers
  - Summary of a research mapping exercise undertaken by the Infectious Disease Research Network (IDRN) assessing infectious disease research on the NHS National Research Register (2006)
  - Summary of the Infection and Immunology sub-panel ratings from the Research Assessment Exercise (RAE) (2001)
  - A detailed analysis of the infection research data collected for the UK Health Research Analysis
  - The results of a targeted consultation of professional organisations
  - Background information on a joint funders’ initiative on pandemic influenza research convened by the Department of Health (Pandemic Influenza Research Funders Coordination Group)
  - Report of a workshop meeting of the Clinical Academic Microbiology Stakeholder Action Group (sponsored by the Royal College of Pathologists) which focused on improving training at all levels in Clinical Microbiology.

2.2 Research Activities Funded by SPG Member Organisations

The sharing of information on the activities of research funders is an important aspect of the SPG process. A questionnaire mapping organisational remits and strategic roles, current and proposed funding initiatives and training award schemes was completed by the SPG member organisations.

Highlighted calls, initiatives and priority areas

The questionnaire revealed a large number of jointly or individually supported research activities, both current and historical, which collectively covered a broad range of infection related areas.

Training and career development

SPG funders supported a large number of training and career development award schemes available to MIDR researchers in open competition. Some of the funders highlighted aspects of MIDR as priority funding areas. Between 1994 and 2003 the Wellcome Trust funded
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the Medical Microbiology Initiative, a ten-year targeted career development programme (see section 2.3).

Major investments
Several of the larger SPG member organisations had major ongoing investments in infection related research centres based in the UK and abroad.

2.3 Recommendations from Relevant Reviews

A key part of the SPG process is an examination of existing evidence in the area, including consideration of major reviews and reports. Several reports were reviewed, four of which made general recommendations relating to MIDR in the UK:

► Academic Medical Bacteriology in the 21st Century (2001) Academy of Medical Sciences

This report was an enquiry into the state of academic bacteriology stemming from the perception that there is “a weak academic base overall”. The enquiry was based on a working group chaired by Professor Brian Spratt which took evidence from opinion leaders and clinical microbiologists in training. The main recommendations for action were:

► Undergraduate education should continue to include a major component of learning about bacteriology and infection

► Joint speciality training – this form of training in microbiology and infectious diseases should be strengthened

► Major funders should coordinate their efforts to support a resurgence in academic medical bacteriology

► Industry should provide more “research training opportunities”

► There should be an effort to establish a small number of ‘centres of excellence’ in microbiology and infection where multi-disciplinary, basic and clinical research teams can interact with wider related disciplines

► A better career structure for clinical scientists is required

► Where possible, public health laboratories should be within strong academic environments such as the ‘centres of excellence’

► Greater unity in the societies covering medical microbiology and infectious disease would be welcome.

► Medical Microbiology Initiative Review 2003 (2004) Review of the Medical Microbiology Initiative fellowship programme by the Wellcome Trust Policy Unit

This report was an internal review of the Wellcome Trust’s Medical Microbiology Initiative, a ten-year fellowship programme designed to attract a cadre of high quality applicants to a career in medical microbiology research. The initiative was rated positively by fellows and other stakeholders. However the scheme attracted low numbers of applicants and made low numbers of awards. It was not judged to have significantly improved overall capacity in the field.

Recommendations were to:

► Improve the clinical career structure and clinical training in this area

► Initiate adequate mentorship and support systems

► Provide a culture of support for research in clinical laboratories

► Provide research funding support, in particular small grants for junior academics and research leave for clinical academics

► Improve teaching of microbiology to medical undergraduates

► Improve links between basic and clinical microbiologists, and between the NHS, Health Protection Agency (HPA) and the university environment.
Getting Ahead of the Curve: A strategy for combating infectious diseases (2002) A report by the Chief Medical Officer, Department of Health

This was a comprehensive 143-page report which set out an infectious diseases strategy for England. It aimed to describe the scope of the threat posed by infectious diseases, as well as establishing the priorities for action to combat the threat. The report stated that there is an ever changing and expanding range of challenges from infectious diseases. The country has a number of strong public services which should protect against these threats and there are some notable success stories. However there is a need to modernise and improve at several levels. There were 12 proposed actions of which two were relevant for research, as follows:

- Stronger professional education and training programmes – a review of education programmes in this area was recommended
- A research and innovation programme – the research effort was judged to be fragmented, and it was concluded that all relevant government research money should be reallocated to one research and innovation fund and deployed according to a strategic programme.

Fighting Infection (July 2003) 4th Report of the House of Lords Select Committee on Science and Technology

The report stated that infections cannot be conquered and there is a long list of emerging and re-emerging infections. Infectious disease services in England suffer from a number of problems, including being under-resourced and overstretched. Arrangements for collaboration between agencies are poor and there is a shortage of key personnel. A total of 24 recommendations were listed in the report. The three relevant recommendations for research were as follows:

- Providing well-trained staff – the report recommended a strengthening of undergraduate content related to infection and postgraduate content related to infection prevention and control
- Vaccines – there should be clear evidence-based priorities for vaccine development and financial incentives should be provided to facilitate research and development of new vaccines
- Initiating research and development – the Department of Health should ensure increased research into the effectiveness of infectious disease services and control programmes.

Two other major reviews were also considered: the BBSRC’s Microbial Science Review which was not yet finalised during the period of the SPG’s work; and the Foresight report on the Detection and Identification of Infectious Diseases which evaluated the threat of infectious diseases globally over a 10 to 25 year future perspective.

2.4 Analysis of Infection Research in the UK

The UK Health Research Analysis published in May 2006 was an analysis of the research portfolios of the eleven largest UK government and charity funders of health related research. The analysis focused exclusively on directly funded peer reviewed research awards taking place in the UK during the 2004/2005 financial year. It was based on a total of 9638 peer reviewed awards, representing a total spend of £950m on this type of research during this period.

The analysis covered all types of research activity across all areas of health and disease. Within the underlying classification system, the Infection health category covered studies of all types of infection and infectious agents which included AIDS and other sexually transmitted infections. Studies of prions and transmissible spongiform encephalopathies were classified in the Neurological category.

Of the total research funding analysed, infection research accounted for 9.2% (953 awards). This was the third highest of the specific areas of health and disease analysed and represented approximately £87m
in research funding during 2004/2005. This figure is relatively high when compared to the low UK burden of disease, although infectious diseases represent the highest global burden of disease.

For the purposes of informing the MIDR SPG a sub-analysis of the Infection health category was undertaken. The sub-analysis included the same 953 awards classified using the Infection health category in the main analysis. A breakdown of the total Infection spend in the eight major areas of research activity is shown in Figure 2.

This figure shows that the largest proportion of funding (68.8%) was in Aetiology, which includes studies of the cause, risk and development of infectious disease. This category includes all studies of the origin and development of infections and studies of both host responses and infectious agents. The second highest proportion is in Prevention research (10.9%), which includes vaccination programmes and interventions to alter the risk of infection. This is a relatively high figure in relation to the prevention funding in other disease areas. The spend in the remaining areas (Underpinning, Detection and Diagnosis, Treatment Development, Treatment Evaluation, Disease Management and Health Services) ranges from 1.4% to 5.5%.

A more detailed breakdown of the total Infection funds by type of research activity is included in Table 1. The table shows that more than a third (34.5%) of Aetiology spend is devoted to studies of infectious diseases and conditions (2.1 Biological and endogenous factors); whereas more than half (57.8%) is allocated to studies of pathogens and infectious agents (2.2 Factors relating to physical environment). Within the Prevention category the highest proportion (85.7%) is in 3.4 Vaccines which includes studies of mechanisms of action and evaluation of programmes of vaccination.

Figure 2 Proportion of Infection Total Spend by Research Activity
<table>
<thead>
<tr>
<th>Research Activity Sub-Code</th>
<th>% of Research Activity Sub-Code</th>
<th>% of Total Spend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 Underpinning Research 3.4%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Normal biological development and functioning</td>
<td>40.6</td>
<td>1.4</td>
</tr>
<tr>
<td>1.2 Psychological and socioeconomic processes</td>
<td>0.2</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>1.3 Chemical and physical sciences</td>
<td>39.6</td>
<td>1.3</td>
</tr>
<tr>
<td>1.4 Methodologies and measurements</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>1.5 Resources and infrastructure (underpinning)</td>
<td>19.6</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>2 Aetiology 68.8%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Biological and endogenous factors</td>
<td>34.5</td>
<td>23.7</td>
</tr>
<tr>
<td>2.2 Factors relating to physical environment</td>
<td>57.8</td>
<td>39.8</td>
</tr>
<tr>
<td>2.3 Psychological, social and economic factors</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>2.4 Surveillance and distribution</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>2.5 Research design and methodologies (aetiology)</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>2.6 Resources and infrastructure (aetiology)</td>
<td>4.3</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>3 Prevention of Disease and Conditions, and Promotion of Well-Being 10.9%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Primary prevention interventions to modify behaviours or promote well-being</td>
<td>2.0</td>
<td>0.2</td>
</tr>
<tr>
<td>3.2 Interventions to alter physical and biological environmental risks</td>
<td>7.9</td>
<td>0.9</td>
</tr>
<tr>
<td>3.3 Nutrition and chemoprevention</td>
<td>3.9</td>
<td>0.4</td>
</tr>
<tr>
<td>3.4 Vaccines</td>
<td>85.7</td>
<td>9.4</td>
</tr>
<tr>
<td>3.5 Resources and infrastructure (prevention)</td>
<td>0.5</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>4 Detection, Screening and Diagnosis 3.6%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Discovery and preclinical testing of markers and technologies</td>
<td>26.6</td>
<td>1.0</td>
</tr>
<tr>
<td>4.2 Evaluation of markers and technologies</td>
<td>49.7</td>
<td>1.8</td>
</tr>
<tr>
<td>4.3 Influences and impact</td>
<td>6.4</td>
<td>0.2</td>
</tr>
<tr>
<td>4.4 Population screening</td>
<td>14.1</td>
<td>0.5</td>
</tr>
<tr>
<td>4.5 Resources and infrastructure (detection)</td>
<td>3.2</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>5 Development of Treatments and Therapeutic Interventions 5.5%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Pharmaceuticals</td>
<td>79.8</td>
<td>4.3</td>
</tr>
<tr>
<td>5.2 Cellular and gene therapies</td>
<td>8.4</td>
<td>0.5</td>
</tr>
<tr>
<td>5.3 Medical devices</td>
<td>7.9</td>
<td>0.4</td>
</tr>
<tr>
<td>5.4 Surgery</td>
<td>2.5</td>
<td>0.1</td>
</tr>
<tr>
<td>5.5 Radiotherapy</td>
<td>0.1</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>5.6 Psychological and behavioural</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>5.7 Physical</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>5.8 Complementary</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>5.9 Resources and infrastructure (development of treatments)</td>
<td>1.3</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>6 Evaluation of Treatments and Therapeutic Interventions 4.0%</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 Pharmaceuticals</td>
<td>87.0</td>
<td>3.4</td>
</tr>
<tr>
<td>6.2 Cellular and gene therapies</td>
<td>2.9</td>
<td>0.1</td>
</tr>
<tr>
<td>6.3 Medical devices</td>
<td>5.2</td>
<td>0.2</td>
</tr>
<tr>
<td>6.4 Surgery</td>
<td>1.0</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>6.5 Radiotherapy</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6.6 Psychological and behavioural</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6.7 Physical</td>
<td>2.8</td>
<td>0.1</td>
</tr>
<tr>
<td>6.8 Complementary</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>6.9 Resources and infrastructure (evaluation of treatments)</td>
<td>1.2</td>
<td>&lt;0.1</td>
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<tr>
<td><strong>7 Management of Diseases and Conditions 1.4%</strong></td>
<td></td>
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</tr>
<tr>
<td>7.1 Individual care needs</td>
<td>21.3</td>
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<tr>
<td>7.2 End of life care</td>
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<td>0.0</td>
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<td>7.3 Management and decision making</td>
<td>71.8</td>
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<tr>
<td>7.4 Resources and infrastructure (disease management)</td>
<td>6.9</td>
<td>0.1</td>
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<tr>
<td><strong>8 Health and Social Care Services Research 2.5%</strong></td>
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<tr>
<td>8.1 Organisation and delivery of services</td>
<td>53.6</td>
<td>1.3</td>
</tr>
<tr>
<td>8.2 Health and welfare economics</td>
<td>19.9</td>
<td>0.5</td>
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<td>8.3 Policy, ethics and research governance</td>
<td>5.6</td>
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<td>8.4 Research design and methodologies</td>
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<td>0.5</td>
</tr>
<tr>
<td>8.5 Resources and infrastructure (health services)</td>
<td>1.0</td>
<td>&lt;0.1</td>
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2.5 Targeted Consultation

2.5.1 Process

An essential part of the SPG process is to seek the views of stakeholders in the field. A targeted consultation was carried out in order to canvass the opinions of experts and research leaders on the current barriers and potential opportunities in MIDR.

A questionnaire was sent to a selected list of 20 UK professional organisations and expert groups seeking comments on four key issues. Of those invited, eleven (55%) submitted responses. Four SPG member organisations also chose to submit a response. Further details are in Appendix 2.

2.5.2 Summary of Findings

A summary of the common issues identified in two or more responses to each of the four survey questions is presented below:

i In what areas is research into microbiology and infectious diseases lacking in the UK?

Many responses identified problems such as declining levels and low quality of research based in hospitals and clinical laboratories and a lack of critical mass and research expertise in the field. Other responses identified some notable areas of existing strong research, including several areas of world-class strength in infectious diseases research.

It was acknowledged that there was a need for more research relevant to patient needs and to national infection research priorities. Difficulty in exploiting basic research advances for clinical and commercial benefit was also a common theme.

Respondents highlighted a relative lack of new therapies in development and industrial/commercial partners participating in this process. With the exception of high profile areas such as HIV and influenza, research into the effectiveness of infection prevention and control measures and into service delivery and organisation was also seen to be lacking.

Other responses indicated that there was insufficient work on novel diagnostics and predictive biomarkers and on the effectiveness of existing detection and monitoring measures. Several respondents noted that there was insufficient exploitation, coordination and utilisation of existing public health surveillance data. A lack of evidence on the basic effectiveness and outcomes of existing treatments was also reported.

Common barriers

Several consultation responses identified barriers to the conduct of high quality research that also applied to many other fields of clinical research in the UK. It was suggested that these common barriers might have a disproportionate effect in an area with a weak research base such as MIDR.

A number of respondents commented that there was a lack of emphasis on clinical and applied research. In particular there was a dislocation between the research goals of those in academia and those in the clinical environment which were more oriented around NHS and patient need.

Several respondents highlighted the barriers to clinical research posed by health service pressures and a lack of support for research in the clinical academic career structure. Other problems which were highlighted included the Research Assessment Exercise which had placed a large emphasis on publications record; and
the administrative burden imposed by regulatory and governance requirements.

Specific barriers in MIDR
Many of the responses reported that there was a weak MIDR specific research pipeline translating basic knowledge to clinical application.

Several respondents also highlighted communication problems in MIDR, in particular a lack of collaborative research and multi-disciplinary links. Submissions raised this problem in several different contexts, including: a lack of communication between disciplines (for example microbiology, virology and infection); between clinicians and academics and across professional divides; and between animal and human research. A number of respondents suggested that the establishment of local MIDR research networks might improve research collaboration.

Many respondents felt that the field of MIDR was at a low ebb and had been downgraded in priority. In particular, most submissions noted the declining level of investment in new therapies and highlighted a generally low level of investment in infection-related research.

Some submissions commented that the UK’s organisational management of infectious disease was fragmented and that this may have a negative impact on research coordination.

iii What are the issues around capacity building in MIDR?

Many respondents noted that there is a general problem with supporting high quality research in clinical laboratory settings and a progressive downgrading of clinical research infrastructure. Others reported problems with low numbers of senior clinical academic posts and a consequent lack of leadership and motivation.

Most of the responses agreed that there were reduced numbers in training and gaining early research experience in MIDR. Some respondents reported that microbiology and infectious diseases were being neglected in medical undergraduate education. It was also noted there was insufficient engagement by nurses and allied health professionals in research.

iv What can be done by funding organisations to move the field forward in these areas (a) in the short to medium term and (b) in the long term?

Several respondents suggested that strategically targeted career development and research posts were required to build capacity – in particular to promote researchers based in clinical and laboratory settings. Others proposed that teaching about microbiology and infection should be given greater prominence in medical undergraduate education.

Several submissions suggested that improvements in strategic coordination and collaboration were required – such as the promotion of local research networks and the establishment of multi-disciplinary teams.

There were also several recommendations for increased MIDR funding. The suggestions included support for multi-site clinical trials and targeted initiatives promoting research in high priority areas. Several responses proposed ‘centres of excellence’, including suggestions for new research institutes and for the development of regional research clusters.
2.6 Issues Identified from the Evidence

Several of the issues highlighted during the evidence-gathering process are shared with other clinical fields. The following generic issues are currently being addressed by the UKCRC Partners:

- **Reducing the regulatory and governance burden**
  The UKCRC Partners have agreed a timetable for implementation of major changes aimed at delivering a new streamlined regulatory and governance environment, including streamlined permissions and approvals systems, a UK-wide advice network and a suite of model agreements.

- **Enhanced infrastructure support for clinical research**
  The UK Clinical Research Network (UKCRN), funded by the Health Departments of the four UK nations, has been established to provide support for clinical research using a network of professional and dedicated research staff working in the NHS.

- **Building academic capacity**
  To build up the clinical research workforce, the UKCRC Partners, working with a wide range of stakeholders, have implemented a new integrated academic training pathway for doctors and dentists. A similar process to develop a clinical academic pathway for nurses and allied health professionals is underway.

Four further issues specific to microbiology and infectious disease research emerged from the consultation process, previous reports and the review of funding sources:

2.6.1 Clinical and Translational Research

The apparent weaknesses in MIDR are concentrated in applied research with a relative lack of research relevant to clinical settings. In contrast there are some notable areas of existing strong basic research and several areas of world-class strength in infection research. This disparity is a reflection of a more general weakness in translational research and many highlighted issues reflect a pipeline problem, where the translation of basic research into practice is not taking place.

2.6.2 Medical Intelligence

There is a relative lack of high quality research specifically targeted at national priority areas\(^8\).\(^{16-19}\). In particular there is a relative lack of evidence on the basic efficacy of existing diagnostics, prevention measures, treatments and services, together with insufficient work on novel diagnostics and under-exploitation of existing surveillance data.

2.6.3 Communication and Collaborative Working

The MIDR field is characterised by a number of divergent research communities suffering from dislocation, fragmentation and an absence of collaborative working. Notable examples include a lack of links between public sector researchers and industry and a perceived divide separating clinical and public health researchers from academia.

2.6.4 Workforce, Training and Career Structure

There is an apparent lack of capacity for high quality research in this field. Research funding opportunities at all levels are available in open competition and there have been previous targeted research funding opportunities, however they have not attracted sufficient numbers of high quality grant proposals. There are reports of problems with research skills, insufficient numbers in research training and a perceived lack of leadership at senior levels.
3 IMPLEMENTATION OF ACTIONS

3.1 Establishment of the UKCRC Translational Infection Research Initiative

3.1.1 Agreement on Objectives

It was clear from the evidence-gathering process that the main focus of action should be to address the four issues specific to MIDR that were identified from the evidence:

- Clinical and Translational Research
- Medical Intelligence
- Communication and Collaborative Working
- Workforce, Training and Career Structure

The UKCRC SPG therefore agreed to develop a jointly funded initiative designed to provide direct support for the conduct of high quality, internationally leading MIDR research targeted at national priority areas\(^8,16-19\). The major objectives of the initiative would be to:

- Build on existing basic strengths and boost applied and translational research;
- Foster knowledge sharing and collaboration involving multi-disciplinary groups, including health protection agencies, industry, and existing networking initiatives;
- Promote training and career development within the context of competitive state-of-the-art research groups in order to provide significant development of research leadership potential and to support infrastructure.

3.1.2 Framework for Joint Action

The following seven research funding organisations came together under the auspices of the UKCRC to provide funds of up to £16.5m for a major new joint UK-wide initiative in MIDR:

- Biotechnology and Biological Sciences Research Council
- Medical Research Council
- National Institute for Health Research / Department of Health
- Health and Social Care Research and Development Office (Northern Ireland)
- Chief Scientist Office of the Scottish Government Health Directorates
- Wales Office of Research and Development for Health and Social Care, Welsh Assembly Government
- Wellcome Trust.

The resulting UKCRC Translational Infection Research Initiative was established with the following three specific aims:

i) To boost capacity for translational research; and for applied research in the clinical and public health contexts

ii) To develop research leadership

iii) To encourage collaboration, communication and training; and to facilitate a strengthening of research activity across this field.

3.1.3 Components of the Initiative

There are two parts to the UKCRC Translational Infection Research Initiative, Consortia and Strategy Development Grants:

a) Consortia

A number of Consortia will be established which will meet the identified aims of the initiative through the creation of new groups focused on high quality collaborative research addressing national research priorities. The Consortia will comprise partners from academic, clinical and public health fields. They will provide a direct boost to research capacity and infrastructure, establish new career development and training programmes and carry out multi-disciplinary research projects. Successful applicants for Consortium Grants will be awarded funds of between £3m and £5m over a period of five years.
The specific objectives of Consortia are as follows:

- To increase excellent applied and translational research and link it to appropriate and strong basic aetiological research
- To establish critical mass by creating focused competitive groups supporting state-of-the-art research excellence
- To increase training, promote research career development and extend expertise in research design and methodology
- To promote and support research leadership and mentoring
- To promote the conduct of high quality, internationally leading research by increasing investment in essential infrastructure
- To provide support for additional research posts at all levels
- To promote knowledge sharing between investigators with complementary interests by establishing multi-disciplinary, multi-organisational collaborative partnerships
- To complement and work closely with health protection agencies, where appropriate, and with existing related initiatives, such as the Infectious Disease Research Network, Recognised Research Group (Northern Ireland) and the Scottish Infection Research Network.

Details of the structure and evaluation criteria of Consortium Grants are provided in Appendix 3.

b) Strategy Development Grants

A key message from the evidence gathering process was the need for improved communication, collaboration and strategy building across MIDR. Strategy Development Grants (SDGs) are designed to provide incentives and encouragement to develop improved research bids based on meaningful strategies and addressing real evidence gaps, while also encouraging competition between groups and collaboration within them.

SDGs will be nine-month grants of up to £60,000 which will support the development of partnerships and promising proposals which have the potential to compete for Consortium or other research grant funding.

SDGs will support the following kinds of activity and the resources needed to undertake them:

- Evidence gathering, strategic reviews and research needs/impact assessments
- Planning and hosting of themed “challenge workshops” and research meetings
- Building appropriate research strategies, plans and proposals
- Developing plans for programmes of research training and mentoring
- Bringing together working partnerships, collaborations and management mechanisms
- Developing leadership teams and management structures
- Negotiations with host institutions and outside funders
- Developing communication strategies.

Details of the objectives and evaluation criteria of SDGs are provided in Appendix 3.

3.1.4 Organisation and Administration

The UKCRC Translational Infection Research Initiative is organised as a call with two funding rounds separated by a period of 18 months. In the first funding round, applicants will be considered for Consortium or SDG funding. The second funding round (for Consortia only) will take place after the expiry of the SDGs, so that the work of the SDG holders can potentially form the basis for an application for full Consortium funding. Up to £16.5m funding will be made available to support the Initiative.

The Initiative has a two-tier management structure. A Scientific Advisory Panel, comprising experts
drawn from the UK and international academic and industrial communities, will review and judge the scientific merit of proposals. An Initiative Management Board, comprising nominated representatives from the contributing funders, will oversee the process, make the final funding decisions and ensure that the strategic objectives are met.

The MRC is taking the lead in the administration of this initiative on behalf of all the participating funders and the UKCRC.

The Initiative was launched on 28 June 2007, followed by an open meeting with the research community on 17 July 2007. The first round applications were reviewed in December 2007. A total of 23 applications for SDGs were received and four awards were made to commence in January 2008. At the same time 17 outline applications for Consortium Grants were received, of which three were invited to submit a full application. Decisions on the award of the first-round Consortia will take place in June 2008. Following the first round of Consortium award(s), it is anticipated that between two and three second-round Consortia will be awarded in late 2009.

Further details of the Initiative are provided in Appendix 3.

3.2 UKCRC Challenge Workshop on Healthcare Associated Infections and Anti-Microbial Resistance

One of the main types of supported activity proposed for SDGs was the hosting of strategic workshops involving a wide range of stakeholder participants. The UKCRC SPG decided that an event of this type should be held in advance of the competition for SDGs, in order to inform future activities which might be planned by grant recipients.

The field of healthcare-associated infections was chosen as the theme for the workshop because of its current strategic relevance. The resulting UKCRC Challenge Workshop on Healthcare Associated Infections and Anti-Microbial Resistance took place on 2 May 2007. It was sponsored by the UKCRC, supported by the MRC and Department of Health and organised by the Infectious Disease Research Network.

The aim of the workshop was to enable key stakeholders to share perspectives on the key issues and to start to build the research strategies and partnerships that could have a significant impact on important problems in the field. The workshop brought together more than 60 participants including academics, public health practitioners, clinicians and representatives from funding organisations, industry and the public. The programme was based around the following five wide-ranging themes introduced by keynote speakers and followed by strategic discussions:

- Priorities in public health observational and intervention research
- Integrating user concerns, and optimising existing resources and networks
- Research priorities for development evaluation and use of diagnostics
- Research priorities in the development evaluation and effective use of drugs and vaccines
- Research priorities for understanding the basic biology of transmission and anti-microbial resistance.

A summary of the workshop is included in Appendix 4.

3.3 Next Steps

The UKCRC Translational Infection Research Initiative and the Healthcare Associated Infection/ Anti-Microbial Resistance Challenge Workshop are the direct outcomes of the SPG’s deliberations. The Initiative is intended as an immediate and major response from the funders which will address many of the recommendations highlighted in expert reviews and the stakeholder consultation. However the funders are aware that the Initiative will not resolve all of...
the barriers and issues affecting the MIDR field and additional actions to further strengthen the area in the future will be necessary.

In the immediate future, the UKCRC Translational Infection Research Initiative Management Board will act as a forum in which the funding partners will be able to evaluate and review the impact of the Initiative as it progresses and respond to other opportunities as they arise. The UKCRC Partners will also monitor the field and may initiate other joint or individual actions to tackle further challenges in the future.

Other wider issues relevant to MIDR and many other clinical disciplines were identified by the SPG. Many of these are being addressed through the UKCRC Partners’ agenda of joint or coordinated activities designed to improve and streamline the landscape of clinical research in the UK.
REFERENCES

1 UK Health Research Analysis (2006) UK Clinical Research Collaboration

2 UKCRC Public Health Research Strategic Planning Group

3 Supportive and Palliative Care Research in the UK: Report of the NCRI Strategic Planning Group on Supportive and Palliative Care (2004) National Cancer Research Institute


5 National Prevention Research Initiative
   http://www.mrc.ac.uk/OurResearch/ResearchFocus/NationalPreventionResearchInitiative/index.htm

6 Academic Medical Bacteriology in the 21st Century (2001) Academy of Medical Sciences
   http://www.acmedsci.ac.uk/p99puid27.html


8 Getting ahead of the curve: A strategy for combating infectious diseases (2002) Chief Medical Officer, Department of Health


    http://www.bbsrc.ac.uk/oa/organisation/policies/reviews/scientific_areas/0609_microbial_science.html


12 Medically- and dentally-qualified academic staff: Recommendations for training the researchers and educators of the future (2005) UK Clinical Research Collaboration and Modernising Medical Careers
   http://www.ukcrc.org/pdf/Medically_and_Dentally-qualified_Academic_Staff_Report.pdf

   http://www.idrn.org/mappingexercise.php

14 Research Assessment Exercise (2001)
   http://www.hero.ac.uk/rae

   http://www.rcpath.org/resources/pdf/ClinAcMicrobiologySAGrpMeeting021106.pdf

16 Winning Ways: Working together to reduce healthcare associated infection in England (2003) Chief Medical Officer, Department of Health

   http://www.dhsspsni.gov.uk/hcai_action_plan.pdf

18 Healthcare Associated Infection Task Force Delivery Plan (2006) Scottish Executive Health Department
   http://www.scotland.gov.uk/Topics/Health/NHS-Scotland/19529/Plan/Plan

19 A Framework for the Control of Communicable Disease in Wales (2001) Chief Medical Officer, National Assembly for Wales
## ACRONYMS and ABBREVIATIONS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Abbreviation</th>
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<tr>
<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
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<td>BBSRC</td>
<td>Biotechnology and Biological Sciences Research Council</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>HPA</td>
<td>Health Protection Agency</td>
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<td>Medical Research Council</td>
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<td>National Cancer Research Institute</td>
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MEMBERSHIP OF THE STRATEGIC PLANNING GROUP

Chair:
Sir John Lilleyman National Patient Safety Agency

Members:
Dr Russell Hamilton Department of Health
Dr Peter Dukes Medical Research Council
Dr Pat Goodwin Wellcome Trust
Prof Peter Borriello Health Protection Agency
Dr Peter Christie Scottish Government
Prof Nigel Brown Biotechnology and Biological Sciences Research Council
Dr Peter Stevenson Department for Environment, Food and Rural Affairs
Mr Stephen Pugh Food Standards Agency
Dr Richard Tiner Association of the British Pharmaceutical Industry
Prof Rick Titball Defence Science and Technology Laboratory
Mr Don Espie Public representative
Dr Michael Simmons Welsh Assembly Government
Dr Elizabeth Mitchell Department of Health Social Services and Public Safety (Northern Ireland)
Dr Liam O’Toole UKCRC

Secretariat:
Dr Andrew Speakman UKCRC
Representatives from 20 organisations were sent a letter inviting them to participate in the consultation exercise. The eleven organisations that responded are listed below:

- Academy of Medical Sciences
- Association of Clinical Academic Bacteriologists and Virologists
- Association of Medical Microbiologists
- British Infection Society
- British Society for Anti-microbial Chemotherapy
- Clinical Virology Network
- Infection Control Nurses Association
- Infectious Disease Research Network
- Royal College of Paediatrics and Child Health
- Royal College of Pathologists
- Royal College of Physicians.

In addition, four SPG member organisations chose to submit a written response to the consultation questions, as follows: Biotechnology and Biological Sciences Research Council (BBSRC) (based on views received from the BBSRC Microbial Science Review Panel); Department of Health (England); Health Protection Agency; and Department of Health Social Services and Public Safety (taking into account the views of key stakeholders in Northern Ireland).

The organisations were asked to reply to four questions within six weeks and to limit their replies to three A4 pages. The text of the consultation letter was as follows:
UKCRC Microbiology and Infectious Diseases Research Consultation

I am writing to you to seek the views of your organisation on microbiology and infectious diseases research as part of a joint planning exercise by the major funders of such research in the UK.

The UK Clinical Research Collaboration (UKCRC) brings together the major stakeholders that influence clinical research in the UK with the aim of creating a research environment that will benefit patients and the public by improving national health, increasing national wealth, and enriching world knowledge (http://www.ukcrc.org). The UKCRC Partners have agreed to develop a coordinated approach to improving microbiology and infectious diseases research in the UK and have established a Strategic Planning Group (SPG) composed of the major microbiology and infectious diseases research funding organisations in the UK. The SPG will examine issues such as resources and infrastructure, training and workforce capacity, research funding and portfolio balance, and collaboration and interdisciplinary working within the research community. The SPG model has been successfully used by the National Cancer Research Institute and has resulted in several jointly funded initiatives including the National Prevention Research Initiative.

A key element of the SPG process is consultation with stakeholders and experts in the field. As Chair of the UKCRC Microbiology and Infectious Diseases Research SPG, I invite your organisation to have formal input into this consultation. We are seeking your organisation's views on the following four questions in particular:

1. In what areas is research into microbiology and infectious diseases lacking in the UK?
2. What do you see as the barriers to progress in the disadvantaged areas of research into microbiology and infectious diseases?
3. What are the issues around capacity building in microbiology and infectious diseases research?
4. What can be done by funding organisations to move the field forward in these areas (a) in the short to medium term and (b) in the longer term?

As we wish to obtain a single submission from your organisation as a whole, you may find it helpful to convene a representative group to address these questions. Please limit your response to no more than three A4 pages.

The closing date for the consultation is Friday 5th May 2006 - your response should be sent to Hannah Brown at the UKCRC, 20 Park Crescent, London W1B 1AL. If you require further information please contact Dr Andrew Speakman at the UKCRC Secretariat on 020 7670 5427 or andrew.speakman@ukcrc.org.

We believe that this exercise is an exciting opportunity to make a major impact in microbiology and infectious diseases research in the UK for the benefit of the general public, patients, microbiology and infectious diseases practitioners, the research community and research funding organisations.

I look forward to hearing from you.

Yours sincerely

Professor Sir John Lilleyman
Chair of UKCRC SPG on Microbiology and Infectious Diseases Research
Medical Director National Patient Safety Agency
Details of the objectives, structure and evaluation criteria of Consortium Grants and Strategy Development Grants offered under the UKCRC Translational Infection Research Initiative:

**Consortium Grants**

**Objectives**

Consortium Grants will be expected to add value by increasing infrastructure, building academic capacity and encouraging multi-disciplinary collaborative working in Translational Infection Research in the UK.

The specific objectives of Consortia will be:

- To increase the evidence base in Translational Infection Research by stimulating excellent applied and translational research and linking it to appropriate and strong basic aetiological research.
- To establish critical mass by creating focused competitive groups supporting state-of-the-art research excellence.
- To increase training, promote research career development and extend expertise in research design and methodology.
- To promote and support research leadership and mentoring.
- To promote the conduct of high quality internationally leading research by increasing investment in essential infrastructure.
- To provide support for additional research posts at all levels.
- To promote knowledge sharing between investigators with complementary interests by establishing multi-disciplinary, multi-organisational collaborative partnerships.
- To complement and work closely with health protection agencies, where appropriate, and with existing related initiatives - such as the Infectious Disease Research Network, Recognised Research Group (Northern Ireland) and the Scottish Infection Research Network.

**Structure**

- A Consortium will be a research partnership or grouping of leading experts formed around the articulation and pursuit of a specific research goal (or goals) addressing national research priorities. Each Consortium will have a specific designated research leader (or leadership team) and will be able to demonstrate a track record in this area.

- Flexible structure. A number of different partnership structures will be acceptable if they meet the stated objectives of the programme. Possible models include:
  - Intra-institutional multi-disciplinary groupings.
  - Strategic partnerships between organisations with established capabilities.
  - More distributed large scale partnerships covering several institutions, e.g. ‘hub and spokes’ models where a lead organisation works in close collaboration with other expert groups.

- Range of participants. There is an expectation that Consortia will focus on translational or applied research and that they will bring together teams of multi-disciplinary experts from multiple sectors, working in partnership. Thus, it is likely that successful Consortia will include participants from academia, health protection / public health laboratories and clinical settings. Where appropriate Consortia will also involve commercial and industrial partners (participating as subcontractors to a main partner or directly as self-funding partners).

- Training and methodology. Consortia will support an active career development, mentoring and training programme aimed at building research capacity. It is anticipated that Consortia will also make a significant contribution to developing basic research skills and advanced expertise in methodology and experimental design.

- Outreach. Consortia will be expected to forge links to the wider community (including practitioners, policy makers and service users) and to coordinate...
with existing initiatives in the field. There will be a requirement to participate fully in any future networking initiatives.

**Resources**

Each Consortium can request funding for new research posts, training activities (including studentships), administrative and technical support, necessary infrastructure and relevant activities.

Consortium funds will also be available to support research projects linked to the training and capacity building activity of the Consortium. All funded research projects will be those which are difficult to support under existing schemes and cross the remits of several funding organisations. They might be multi-disciplinary projects bringing together expertise from different groups. Specific pilot and proof of principle research projects may also be included. The proposed research activities should form a coherent package based on the Consortium’s scientific focus with specific and relevant deliverables.

**Evaluation Criteria**

Applications will be evaluated on four overarching criteria:

1. **Strategic impact**
2. **Scientific merit**
3. **Potential for capacity building**
4. **Management of the partnership**

Applicants must demonstrate the added value that would be achieved by bringing together a critical mass of expertise through collaboration and provision of additional resources. Added value will include capacity building programmes, multi-disciplinary working, development of resources and facilities, significant advancement in and contribution to Infection Research in specific topics or methodological issues, particularly focused on translational and applied research.

Each successful application for Consortium Grant funding will be expected to include:

- **Strategic vision.** A clear strategic vision, a strong proposal for a programme of activities with milestones and a specific set of expected outcomes.
- **Programme of research.** A coherent and convincing programme of research around a specific goal addressing national research priorities with a particular emphasis on applied and translational activity - including evidence of existing capacity for research excellence and support for high quality research.
- **Research leadership.** Involvement of recognised research leaders and a clear idea of how to set research leadership standards in the field.
- **Training.** A strong proposal for a mentoring, training, career development and capacity building programme focused on encouraging new researchers and providing increased opportunities for established investigators.
- **Management.** A robust management structure with a single point of strong leadership and clear arrangements for coordination and management of the strategic direction of the Consortium.
- **Institutional support.** A clear organisational commitment, including evidence that activity will be sustainable in the longer term and that institutional plans include support for further work in this area.
- **Partnership.** Evidence of existing collaborative links between partners and a clear process to develop wider stakeholder involvement – including specific proposals to sustain multi-disciplinary, multi-organisational, multi-sector working and to develop partnership with external commercial and non-commercial organisations.
- **Measurement criteria.** Proposals should specify clear objectives and a plan with milestones against which they may be judged.
**Strategy Development Grants**

**Objectives**

Strategy Development Grants are aimed at enabling researchers to develop realistic and relevant research strategies with the potential for significant national impact. These grants will allow researchers to build partnerships and to develop proposals. Strategy Development Grants are not intended to support research projects or research activity.

Strategy Development Grants will last up to nine months. At the end of this period of funding, applicants will submit a report which will be evaluated and feedback will be given. Possible outcomes of a Strategy Development Grant might be an application for the second round of Consortium funding, or applications for other research grant funding.

**Structure**

Strategy Development Grants will support the following kinds of activity and the resources needed to undertake them:

- Evidence gathering, strategic reviews and research needs/impact assessments
- Planning and hosting of themed “challenge workshops” and research meetings
- Building appropriate research strategies, plans and proposals
- Developing plans for programmes of research training and mentoring
- Bringing together working partnerships, collaborations and management mechanisms
- Developing leadership teams and management structures
- Negotiations with host institutions and outside funders
- Developing communication strategies.

**Evaluation Criteria**

Applications will be evaluated on two main criteria:

1. Potential for impact
2. Potential for delivery

Each successful application for Strategy Development Grant funding will be expected to include:

- An outline of the research questions and their strategic potential
- A timetabled plan of the proposed activities and expenditure
- A development path which could potentially lead to a second round application for Consortium Grant funding, or for applications through existing mechanisms.

The full call specification for the UKCRC Translational Infection Research Initiative including procedural and administrative details is available from the MRC website at: [http://www.mrc.ac.uk/ApplyingforaGrant/CallsForProposals/TranslationalInfectionResearch](http://www.mrc.ac.uk/ApplyingforaGrant/CallsForProposals/TranslationalInfectionResearch)
1. Introduction

The Medical Research Council (MRC) and Department of Health proposed a workshop sponsored by the UK Clinical Research Collaboration (UKCRC) to engage key research communities in the field of healthcare-associated infections and anti-microbial resistance. The primary aim was to enable key stakeholders to share perspectives on the key issues and begin to develop research ideas and collaborations that could strengthen research and its impact on important problems in the field.

2. Purpose

The purpose of the Challenge Workshop was to:

- Identify the major research issues and discuss responses which could make a significant clinical and public health impact
- Raise awareness of the funding initiatives in this field and stimulate better quality, competitive research proposals
- Promote communication and collaboration involving academia, public health practitioners, clinicians and industry.

Speakers and delegates were asked to consider research priorities and debate what research is lacking and how effective research can be enabled. In particular:

- How should research questions in this field be prioritised, taking into account the national, global and public interest context, whilst ensuring engagement with the public?
- What research is lacking both in terms of what would bring the greatest benefit and what would be the most effective use of resources?
- How could the identified research issues be tackled most effectively, including suggestions for specific research strategies, enabling processes, collaborations and partnerships with commercial and public organisations?

3. Workshop Format and Participants

The event was sponsored by the UKCRC. It was supported by the MRC and Department of Health and organised by the Infectious Disease Research Network (IDRN).

The one day workshop was chaired by Professor Anne Johnson of the Infectious Disease Research Network and attended by 65 participants including leading clinicians and academics from the UK and abroad. The participants also included two patient representatives, seven representatives from funding organisations, ten from health protection agencies, a representative from the Association of the British Pharmaceutical Industry and members of the UKCRC and IDRN.

The programme was based around five themes. Each theme was addressed by a morning keynote speaker presentation which provided a brief analysis in response to the research priority agenda. In the afternoon participants were divided into five breakout groups where the same issues were debated further. The meeting closed with a final discussion and a summary.

The full workshop programme is included as Annex 1.

4. Presentations and Breakout Sessions

Priorities in public health observational and intervention research

During his presentation Professor Stephan Harbarth (University of Geneva Hospitals) reviewed epidemiological methodologies related to research on infection control. He noted that many of our infection control practices are not based on strong evidence and remain controversial. More advanced epidemiological and statistical techniques are available but are not being applied in this field. He noted the need for methodological innovation and reviewed a number of areas to assess the benefits which might be gained.

Professor Sarah O’Brien (University of Manchester) chaired the breakout session. The group identified several areas of importance, one of which was the...
need to boost high quality translational research addressing appropriate clinical questions. The group also identified the need to increase the quality, design and number of observational, surveillance, and risk factor studies. They noted that there was a need to develop methods to determine socio-economic impact, as well as the cost-effectiveness of therapies and interventions. Furthermore they recognised the need for more behavioural research in order to influence organisation change. The group also discussed the need to give patients and advocates a greater role in setting research priorities and the need to improve multi-disciplinary working.

Integrating user concerns, and optimising existing resources and networks
Professor Peter Davey (University of Dundee) was the keynote speaker for this theme. He began by describing the broad movement representing patient and user concerns in health services and research. He then looked at multi-disciplinary initiatives and research networks aimed at improving communication and coordination. It was suggested that priority research questions should be those that align the information needs of patients, carers and families with the needs of practitioners and managers. It was also proposed that the research that was most needed was inter-disciplinary clinical and translational research that links interventional studies to information systems and that can evaluate long term impact.

In the breakout session, chaired by Professor Robert Pratt (Thames Valley University), the delegates discussed the benefits of involving users in the development of research strategies. They also discussed the problems raised by user involvement, enabling strategies to achieve more involvement and examples of good practice. Discussions ended with a brief consideration of how existing resources and networks can be optimised.

Research priorities for development evaluation and use of diagnostics
Professor Peter Hawkey (Heart of England NHS Foundation Trust) presented a review of molecular diagnostic methods and the advantages they offer over traditional bacteriology. He reviewed innovative technologies which might offer better diagnostics in the future. He also examined the factors which might facilitate further development, and effective use of, diagnostics. It was proposed that the future lay with simple, bedside, disposable, single-use tests which give immediate results.

The breakout session was chaired by Professor Patrick Bossuyt (University of Amsterdam). The group highlighted several important factors related to the evaluation of new diagnostic tests. This included the need to assess the full economic benefits from a public and national perspective. They also cited the need to ascertain the real clinical effectiveness of new techniques together with the steps needed to bring them into effective clinical practice. Additionally, the group recommended encouragement of multi-disciplinary work and partnerships with industry to encourage further innovations.

Research priorities in the development evaluation and effective use of drugs and vaccines
A keynote presentation by Professor Herman Goossens (University of Antwerp) outlined the problems which restrict commercial development of new antibiotics and vaccines. He identified other factors which restrict the effective use of antibiotics including a lack of trial data and the need for better diagnostic techniques, such as point of care testing, to enable rapid and targeted prescribing.

During the breakout session, chaired by Dr Flic Gabbay (TranScrip), the group discussed the factors that could improve effective use of drugs and vaccines for the treatment of hospital-associated infections. Examples included the need to improve the economic attractiveness of this area for industry, and to provide better information on prescribing and best use of antibiotics.

Research priorities for understanding the basic biology of transmission and anti-microbial resistance
Dr Adam Fraise (University of Birmingham) spoke about the significant gaps in our understanding of healthcare associated infections. Key areas that
need investment in time and money include: the epidemiology of MRSA transmission; the transmission of extended spectrum Beta-lactamase-producing Gram negative organisms in the community; control of Norovirus outbreaks; and the transmission and treatment of Clostridium difficile infection. He argued that research effort would best be concentrated on the epidemiology and effectiveness of control measures, coupled with gaining a better understanding of the role of immunity and the potential for immunisation.

Breakout session Chair Professor Del Ala’Aldeen (University of Nottingham) led the group discussion on the key priorities in this area and mechanisms for how they might be implemented. The group recognised the need to ensure that the basic research being undertaken was informed by clinical priorities. They also identified the following priority areas: pathogen host interactions; bacterial fitness and evolution; and multi-disciplinary research across disciplines.

5. Summary and Conclusions

The group leaders from breakout sessions gave a short summary of the discussions to all workshop participants. Following discussion, Professor Johnson thanked speakers and delegates for their contributions to the workshop and its discussions. She summarised the key issues that had emerged as follows:

- The need to link basic and applied research in the area of healthcare-associated infections in order to deliver improvements in clinical care
- The importance of complex intervention studies as a methodological assessment of clinical interventions
- The need to promote and support multi-disciplinary research
- The need to develop and deliver improvements in health system research
- The need to develop new diagnostic tools for use at point of care. This would result in changes in diagnosis and treatment
- Better assessment of the impact of behaviour of both patients and practitioners on the incidence and control of healthcare associated infections and anti-microbial resistance
- Improved public engagement at all levels from local issues to development of national research priorities.

6. Follow Up

A feedback form was circulated after the workshop to capture any ideas and issues that participants wished to raise. Responses were obtained from 24 participants. The majority rated the presentations, organisation and venue favourably.

Suggestions from some respondents indicated that the one-day workshop format did not provide sufficient time to fully cover the issues raised or to facilitate further discussion. Some others were concerned that the agenda was too focused on the five selected themes and neglected wider consideration of other areas, such as research priority issues at the basic science end.

Annexes
Annex 1 Workshop Programme

The full report of the workshop and copies of the presentations are available from the Infectious Disease Research Network website at: http://www.idrn.org/challenge_workshop.php
UKCRC Challenge Workshop on Healthcare Associated Infections and Anti-Microbial Resistance

Wednesday 2nd May 2007
Congress Centre
28 Great Russell Street
London WC1B 3LS

Programme

Chair: Professor Anne Johnson

09:15 Registration – pre-meeting tea and coffee
09:45 Welcome (Dr Liam O’Toole, UKCRC)
09:55 Introduction (Professor Anne Johnson, IDRN)
10:10 Priorities in public health observational and intervention research (Professor Stephan Harbarth, University of Geneva Hospitals)
10:40 Integrating user concerns, and optimising existing resources and networks (Professor Peter Davey, University of Dundee)
11:10 Coffee
11:30 Research priorities for development, evaluation and use of diagnostics (Professor Peter Hawkey, Heart of England NHS Foundation Trust)
12:00 Research priorities in the development, evaluation and effective use of drugs and vaccines (Professor Herman Goossens, University of Antwerp)
12:30 Research priorities for understanding the basic biology of transmission and anti-microbial resistance (Dr Adam Fraise, University of Birmingham)
13:00 Lunch
14:00 Break-out groups focussing on specific areas from morning session.
15:00 Reconvene in main auditorium. Feedback from all break-out groups. General discussion.
16:00 Future funding initiatives (Professor Brian Duerden, Department of Health)
16:20 Conclusion & event summary (Professor Anne Johnson, IDRN)
16.30 Close and post-event drinks