Institution: St George's University of London

Unit of Assessment: A1 Clinical Medicine

a. Context

St George's, as a single faculty university benefits from a combination of significant opportunities and some constraints in developing our impact. St George's has had a long and illustrious history in medical research with a very well established research base and a very close interaction with the NHS through our co-located Trust. At the same time it lacks the size and depth of resources available to multi-faculty universities for exploitation of research discoveries. As our impact case studies show, we do not believe this has been an impediment.

b. Approach to impact

As a dedicated healthcare university co-located with a large NHS Trust, it is inevitable that our research is developed with impact on disease and patient well-being pre-eminent in our strategy. Of particular relevance to this return in UoA1 is that there are multiple examples of nationally and internationally leading clinical excellence in the NHS Trust around which research strengths have been developed. Examples include Departments of Clinical Genetics, Lympohoedema, Infectious Disease and Stroke. Each of these has supported the development of substantial research in the University (as reflected in REF5). This advantageous working environment has fostered the translation of research back into patient benefit in a multitude of ways, at the heart of which is the three-way relationship between the patient, the clinician and the researcher. Thus the single most important influence of developing our impact is that arising from the physical proximities presented by the St George's environment.

Two other aspects of impact development are relevant. St George's has maintained an Enterprise and Innovation office for much of the period over which impact development is assessed. Being small, this office has been obliged to be selective, and works increasingly closely with the NHS Trust. This has resulted in the launching of a number of companies (e.g. Helperby Therapeutics), social enterprises (Birth Defects Foundation/Newlife) or charities (the Cancer Vaccine Institute) - either independently, or in conjunction with other academic or commercial organisations.

St George's has also maintained a small External Relations Office for several years, but has underplayed its hand in this forum. As described in the next section this will be changing with the intention of maximising our impact for the future.

For the purposes of REF and the case studies in this UoA we have focussed on the reach and significance of impact, considering impact cases in which the benefits extend nationally and internationally – both in the developed world with sophisticated healthcare standards, and in the less well-developed regions of the world in which our influence on global health delivery is substantial.

In preparation for the REF a database of potential impact cases was developed based on discussions with senior staff and examination of annual research reports dating back to the early 1990s. Applying the "reach and significance" criteria, a long list of case studies was developed. These were then refined further by their individual champion (a member of academic staff) and a further selection was made on the basis of the significance of the impact, the tangibility of the evidence of impact and the relevance to current institutional research strategy. Finally, they were submitted to a small pool of external advisers selected from the media and from medical research. The five case studies that passed this selection process are presented in REF3b.

c. Strategy and plans

In common with many other UK HEIs, it has not been our practice to date to collect evidence of the impact of our research in a routine manner. To address this deficiency we are now establishing a database of impact reports derived from research grants, which we intend to make widely available. In many cases these reports form part of the research funder's routine reporting process, but in other cases these will have to be sought specifically at the time of closure of

research accounts. We will ask researchers to update their "impact profile" on an annual basis as part of the embedded personal review (appraisal and performance management) process, and to include an optional section on "Research impact" on their personal institutional web page.

In the biomedical sciences "success" is traditionally measured in terms of peer-reviewed outputs, patents and research funding. The concept of impact – which normally accrues over a longer time period – is not currently embedded in researchers. To address this the institution is taking a number of measures. These include:

- **Education**:
  Addition of lectures or modules on the impact of science into our undergraduate and postgraduate degree courses, and in particular on our Postgraduate Certificate in Research Skills (described further in REF5). At a faculty level we will aim to include an impact theme amongst our external speakers at events such as our annual Research day and other meetings.

- **External Relations:**
  We have recently completed a major study of how St George's is perceived both externally and by our students and staff. This is leading to development and refinement of our brand, which relates closely to the impact of our research. In support of this we are developing our public engagement in science activities, notably with our highly successful "Spotlight on Science" series (examining scientific aspects of medicine), and more recently with our "Art of Medicine" series (examining ethical aspects of medicine), which are directed at our local community. We have also expanded our Press Office personnel primarily for the purpose of placing our research news in the media.

- **Alumni:**
  St George's alumni occupy some key positions in society both in the UK and abroad. We recognise that this is an underused body of loyal and influential supporters of the institution. Consequently our external relations team have taken on additional staff in order to develop and expand our alumni activities, and will be developing a range of new activities in order to maximise the voice of this body.

- **Impact and Innovation:**
  Continuation of our Impact and Innovation awards scheme (started in 2009) that provides small amounts of funding (£10,000 - £30,000) for researchers to develop the impact of their research. These have become highly competitive and we plan to showcase some of these in future Research Days. We have also trialled a smaller scheme to support impact and innovation amongst the student body, and are currently planning a further scheme specifically to support joint NHS-university partnerships.

- **Promotion:**
  Inclusion of impact as a measure of research achievement in academic promotion at the Reader and Chair level, as well as in external appointments at this level.

We will need to review these plans in the next few years in order to assess their effectiveness, and if necessary to refine and develop them.

d. Relationship to case studies

In the section (b) above, the point was made that the three-way linkage between clinical excellence, research and the patient lay behind most of the impact of research at St George's. The five case studies illustrate this in several widely differing scenarios.

- St George's has had a highly active clinical Infectious Disease Department for over forty years. This has fostered many aspects of research. For example, local concerns in St George's Hospital at the difficulties in diagnosing *C.difficile* infection led **Planche** and

colleagues to examine those tests in detail. Their conclusions resulted in changes to the way this frequent hospital-acquired infection is tested for which have been applied nationally, in North America and in Europe.

- Since much of our infectious disease research is at the global level, a second impact case study that we are presenting is that of the treatment for Cryptococcal meningitis in sub-Saharan Africa. A series of clinical trials led by **Harrison** at St George's has resulted in development of Infectious Disease Society of America, WHO and other guidelines for cost-effective treatment of Cryptococcal meningitis associated with HIV – a major cause of mortality in the HIV infected population.

- A third example of impact arising from patient-centred research at St George's is in the form of the work performed by McGregor and colleagues over many years to establish the adverse cardiovascular effects of salt. This has led to international changes in nutritional policy guidelines. This worked stemmed from a major body of work of both an epidemiological nature and in clinical studies at St George's.

- The final two case studies illustrate the way in which basic science laboratory work at St George's has been effectively translated into clinical benefit. The first of these is the example of the work from **Fisher** and his group in understanding the mode of action of the quinolone antibiotics. In an era of widespread and advancing antibiotic resistance it is clear that the detailed molecular understanding of the mode of action of this class of drugs is vital for future drug development. In this example the longstanding and very close working relationship between the investigator and industry has proved highly effective.

- A second example of the application of basic research is presented in the development of analogues of the drug thalidomide for immunomodulatory function. Dalgliesh's original ideas taken forward with a SME have led to the development of Revlomid and related drugs which offer life-extending treatments for myeloma and other neoplastic diseases, as well as significant commercial impact for the commercial partner, Celgene.