

<p><b>Institution: University College London</b></p>
<p><b>Unit of Assessment: C25 Education</b></p>
<p><b>a. Overview</b></p> <p>UCL Medical School (UCLMS) is a division in the Faculty of Medical Sciences (FMS), the largest of four faculties in the School of Life and Medical Science (SLMS), itself the predominant research grouping at UCL. UCLMS provides the educational leadership and infrastructure for about 2,100 medical undergraduate and 85 postgraduate students (yearly income £50M) and employs 8.5 WTE category A academic staff. UCLMS works with 23 NHS hospitals and providers principally University College London Hospital, the Royal Free Hospital, the Whittington Foundation Trust; eight District General Hospitals, nine Mental Health providers and 317 primary care organisations and 457 GP tutors (total funding to NHS £65M per annum) to provide world-class, high-ranking medical education and training. We are a founder member of UCL Partners, an accredited Academic Health Science Network and in 2013 we formed a strategic alliance with the Institute of Education (IoE). We engage in a wide range of knowledge transfer activities, outreach, consultancy, and public engagement, nationally and internationally.</p> <p>The Academic Centre for Medical Education (ACME), established in 2002, is the research unit for UCLMS. ACME is interdisciplinary and provides leadership for those engaged in medical education research. This is our first submission to UoA 25, acknowledging the crucial contribution that pedagogic research makes to improve the quality of healthcare education. ACME has cross-cutting research themes as well as a portfolio of commissioned research projects. Our main research is in the broad area of assessment and has four key research themes: Fitness to Practise and the General Medical Council (GMC) project, selection assessment, assessment of competence and the Membership of the Royal College of Physicians (MRCP) assessment, and the social equality in assessment research groups.</p>
<p><b>b. Research strategy</b></p> <p>Our research strategy is to raise the profile and standards of medical education research by providing an evidence base, where it did not previously exist. <b>Assessment</b> is our main strategic theme and provides a cohesive framework for our substantial research themes. Assessment drives learning and raises standards. We use examination and selection data from the GMC and the Royal College of Physicians (RCP) to check the integrity of the educational interventions, validate measures of clinical performance, understand the influence of gender, social class and ethnicity on examination success and thereby ensure fairness as well as competence. This in turn contributes to the quality of patient care and therefore assessment research has a central role in health services research. The <b>Fitness to Practise and the GMC project</b>; (Dacre, Sturrock) is a research grouping funded by the GMC (£2.9M over 5 years). It funds a research fellow, a clinical training fellow, a PhD student, and 3 members of administrative staff. It has run 155 validation pilots involving 2,413 medical volunteers and 1,016 assessors and 383 tests of competence on doctors referred to the GMC.</p> <p>The <b>selection assessment research group</b>, funded by UK Clinical Aptitude Test (UKCAT (10K)) (McManus, Woolf) is a collaboration with Dewberry (Birkbeck), Wakeford (FRCGP), and Dowell and Nicholson (UKCAT). The <b>MRCP assessment research group</b> is a collaboration with the RCP UK and backfills Dacre and McManus £51.5K per annum. It has a UCL PhD Impact student (£63K) and an NIHR clinical fellow (£66K). It investigates tests of competence in the MRCP and Speciality Certificate Examinations (SCE), including linkage with the Royal College of Radiology, the Royal College of General Practice (RCGP) and GMC (PLAB-MRCGP-MRCP linkage project). Outputs include the development of validated assessment instruments, peer review publications, and policy documents at the GMC and RCP. This research feeds into the group's work redesigning the MRCP examination and co-ordinates inputs from 100 academic contributors who write questions, standard set and examine, supported by RCP's administrative staff of around 50 people. Other research groupings investigate how to: maximise fairness and <b>social equality in assessment</b> (Dacre, Woolf, Boynton) (Case study 1), widen participation to medicine (Case study 2) and the</p>

impact of increasing women in medicine. UCL Medical School Education Consultancy (MSEC) has taken on research commissions in professionalism, evaluation of appraisal and transitions in medical education because of our expertise in these areas (Griffin, Gill). We have an international reputation and a history of expertise in the design, delivery and evaluation and research into assessment instruments in use for doctors. Our first divisional research strategy, agreed in collaboration with the FMS, was written in 2009 and builds on our strengths. Our research objectives are reviewed and revised annually in a planning meeting with the Head of SLMS and the Faculty Dean. Our 2009 aim was to build a sustainable environment for medical education research, increase external recognition, and submit to REF 2014. We have done this by developing a culture of enterprise, because of the lack of significant funding for medical education research. All academic staff members are required to generate income from consultancy activity, over the assessment period £3M has been generated in this way and has been used to support research activity, build capacity and develop staff. In particular to continue to build on the evidence base for appropriate **assessment** methods in medicine and related disciplines, to explore **underperformance** – both in assessment and in terms of doctors **Fitness to Practise**, and to contribute to the developing literature on the use of assessment methods in the **selection** of medical students and doctors. **We have:**

1. Created assessment facilities, investing £420K to develop facilities that have been embedded into NHS and UCL space, to enhance efficiency of use. We use the space as a research laboratory and for income generation to support education research.
2. Extended our research programme looking at the evidence base for improving the quality of assessment instruments and the assessment process, and evaluating the characteristics of those referred to the GMC for performance issues. 80% of doctors sanctioned are male. After taking into account length of time registered, country of qualification, and specialty, women have about a third of the odds of being sanctioned compared to men (odds ratio 0.37  $p < .001$ ). The causes are unclear, and are being researched by our UCL PhD Impact Student (Unwin, £63K). The assessment research identified differential examination performances, women out perform men, and our 2011 meta-analysis showed for pass-fail exams BME candidates had a 2.92 x likelihood of failing (with a Cohen's d of -0.42).
3. Extended our collaborative research activities and in 2013 set up a strategic alliance with the IoE. Through collaborative research projects and the appointment of two new chairs we will double our supervision of doctoral students by REF 2019. We have already completed a £30K collaborative research project with NHS England London region.
4. MSEC, established in 2012, has already has been awarded a number of successful HEI consultancies, nationally with the Medical Schools Council (MSC) and internationally with Ningbo University and the University of Sharjah and Dubai Medical College, totalling £115K.
5. Developed a sustainable cohort of Clinical Teaching/Training Fellows (CTFs) who contribute to an increasing pool of clinicians interested and trained in medical education research. Over the census period we have had a 500% increase in CTFs, and in 2013 have a cohort totalling 18. Similarly we have supported student-led medical education research (60 peer assisted learning students PA, six MEDSoc students PA) who published six papers in peer reviewed journals and presentations at eight medical education conferences.
6. Following recent UCL ethics approval to publish data deemed to be in the public interest, we intend to use our database of the attributes of poorly performing doctors. This is probably the largest such resource with around 1000 doctors, who have been tested for poor performance via our tests of competence. The GMC Performance Procedures are internationally recognised and we have been assessing doctors for more than 10 years.
7. Developed our research collaboration with the MRCP (UK) and have access to all MRCP UK data – a total of 122,578 examinations in the period 2008 – 2013. We hold annual workshops with the National Board of Medical Examiners (NBME) and the American Board of Internal Medicine (ABIM).
8. Continued to research and build upon the six longitudinal cohort studies under the stewardship of McManus and Woolf. This includes 10,661 applicants to medical school and 5,963 entrants. All students are now linked to other databases such as the GMC's List of Registered Medical Practitioners and MRCP exam results (*BMC Medicine* 2013).
9. Statistical innovations include the use of Markov Chain Monte Carlo methods which assess

construct-level predictive validity of right-censored educational attainment measures (e.g. A-levels) in meta-regression and this is used in research in the academic backbone (*BMC Medicine* 2013).

Building on our substantial progress our strategy is to further develop the research capacity of all the assessment research groupings, ensuring sustainability and making even better use of the extensive portfolio of data held by UCL, RCP and the GMC. We will extend our expertise in longitudinal cohort studies and analysing large, complex databases (McManus), social network analysis of the psychological impact of stereotypes on assessment (Woolf), and assessment research on selection into medicine and other professional degrees. We will create, implement and evaluate interventions to reduce inequalities in assessment outcomes. We will further develop our **NHS research collaborations with UCLP/RCP**, investigating healthcare education at national and international levels. We will set up a research committee to provide strategic guidance and direction for future research and funding opportunities. We will build upon our UCL Beacon funded (£6K) public engagement work, and research on our widening participation scheme which mentors around 500 year 11 students and establish public engagement forums to debate medical education research, supported by a new CTF post. We will build upon **external collaborations** in particular with our strategic alliance partners the IoE and UCLP as well as Cambridge University (Patterson). These plans are based on our approach to **build capacity**. We will recruit **two new chairs in medical education**, one will be a cross-institutional appointment part funded by the IoE. These chairs will focus on embedding our research strategy and on income generation via enterprise using MSEC as a vehicle. **MSEC** is currently negotiating medical education consultancies with 11 international partners including the Apollo Group and Raffles Education Consultancy (estimated income £7M). We will use the **MSEC** consultancy income to expand our employment of junior doctors as CTFs. These CTFs, like all staff, are expected to become involved in research. Furthermore we will continue to build a cohort of student researchers through continuing with our current initiatives and being involved with the INSPIRE programme funded by the Academy of Medical Sciences (£10K and match funded by UCL).

We have two PGR **students recruited** through UCL's Impact PhD scheme and aim to double our doctoral supervision by working with IoE. We will increase PhD recruitment from our very popular MSc in Medical Education which has approx. 85 students PA. We will continue to work with NHS service users and **respond to national and international priorities**. Two illustrations of this include: the rising number of complaints that the GMC receives about doctors will lead to the increased need for validated tests of competence and we will continue researching our curricular compliance against the GMCs Tomorrow's Doctors 2009 guidance with Goldacre and Colquhoun.

### c. People

**Staffing strategy:** We have recruited and developed staff with expertise and a reputation in the field of medical education. Staff recruitment has been supported at the highest levels within SLMS to help to achieve our strategy for enhancing research and scholarship. In 2010, acknowledging the strength of our research, HEFCE funds (£137K per annum) were redirected by SLMS to provide two new academic posts in medical education. One post was used to appoint a research lead. Our career development strategy aims to develop a critical mass of medical educators, by ensuring a pipeline of young doctors who are equipped to follow an academic career pathway in medical education research alongside working in the NHS. This is made possible by an entrepreneurial approach to education consultancy where income is used to develop a cadre of **Clinical Teaching/Training Fellows (CTFs)**, junior doctors who have secondments in medical education through an Out of Programme Experience. Over the census period £682K has been spent on salaries and total funding for these posts has increased by 398% over the same period. CTFs are recruited to specific research groups alongside their educational roles and are supported by senior academics to research/publish/present. Five CTFs have already gone on to academic medical education posts in other UK medical schools (St Georges, Newcastle, Imperial, Brighton and Sussex) and taken on educational leadership roles in the NHS. Our NIHR fellow and two impact PhD students were recruited to work in the MRCP assessment research group.

**Staff support:** We are committed to developing academic and research staff at all career stages

and use UCLs extensive range of professional development courses and central funding. We also support the professional development of its staff internally, for example over this assessment period the CTFs alone have received a total of £32K in financial assistance towards research training and postgraduate qualifications and £25K towards attendance at conferences and academic events.

**Demographic profile of the Unit:** We have 24 academic/teaching staff in UCLMS: 12 category A with an average WTE of 8.5 (2M: 8F), two category C with an average of 0.4 WTE (2M) 2.6 Non A/C staff (all F), one research associate 1 WTE (F), nine current CTFs with an average WTE of 5.9 (4M: 5F). This submission also includes two academics from the Faculty of Population Health Sciences, one 0.6 WTE Category A staff and one 0.6 WTE early career researcher. All staff are on open ended-contracts, three with fund end dates. Women who work less than full time predominate, the percentage of less than full-time staff ranges from 42% to 66% over the assessment period. Approximately two thirds of all staff are also clinical academics and around a quarter actively practise within the NHS. We have pioneered flexi-time working and working from home to facilitate their academic effectiveness. A divisional application for the Athena SWAN Silver Award will be submitted in November 2013. We recognise that additional support is needed to nurture staff and we actively promote and develop mechanisms to enable them by supporting research training and acquiring research qualifications and encouraging applications for promotion. Staff are mentored by senior academics, given financial support and protected study time. During this assessment period we have supported three part-time MD students, four part-time EdD students, one part-time PhD student and two full-time PhD students (£32K). We also use UCLs facility for maternity sabbaticals so returning staff can catch up with their research by being freed from other duties. We jointly appoint NHS staff so that they can have an academic home and job planned time to continue with education research.

**Career progression of staff at all stages of their careers:** The information for application for promotion is circulated to all UCLMS staff once a year. We have had two successful internal promotions in 2011/12, one from Lecturer to Senior Lecturer and one from Teaching Fellow to Senior Teaching Fellow. **Early career researchers – clinical and non-clinical:** We have a range of approaches to support early career staff. We raise awareness about the availability of research training and use the schemes described above to assist part-time research staff. We recognise and promote excellence, for example Woolf was shortlisted for an early career grant: **ESRC Future Research Leaders**, supported by the Vice Provost Research at UCL. We also support new researchers by providing academic guidance on research proposals and facilitate their entry into professional organisations where their research is carried out e.g. GMC and Royal Colleges. One of our **doctoral students** (Ludka) within her two-year tenure has co-authored three papers with senior staff. Post-docs are encouraged to collaborate widely and supervise other junior researchers. We have a wealth of experience and knowledge which we share either informally or through departmental academic meetings. We have regular academic meetings including the 'publish or perish' group and seminars. We contribute to UCL training days for postgraduate and postdoctoral researchers on research methods skills, ethics and governance and how to get published. We have published and contributed to textbooks on research methodologies (Boynton, Griffin) and self-help guides for researchers at all levels. Four members of UCLMS are UCL **Academic Role Models** (Dacre, Gill, Boynton and Woolf). Woolf is being mentored under the SLMS UCL scheme.

**International staff appointments:** McManus is Visiting Professor, University of Vienna. **Visiting scholars:** Prof. Grant has an honorary contract to encourage collaborative research. Dr Hirsh, Harvard USA; Prof Billett, Griffiths University Australia; Ass. Prof. Jorm, Sydney; Prof. Mann, Dalhousie, Canada and Prof. Chu from National Taiwan University.

We aim to **engage the public** and have been involved with the Wellcome Trust and Chelmsford science festival (please also see invited talks). This submission includes two individuals who have been awarded **NIHR Fellowships**. (Park), 2012 £100K NIHR National School of Primary Care Research. "Systematic review of undergraduate medical education in general practice". Co-investigators include Oxford, Nottingham, Manchester, and Bristol. (Verma) NIHR integrated

**Environment template (REF5)**

academic training path NIHR in-practice fellowship (Clinical Research Fellow) “Communication differences between UK trained and non-UK trained doctors at stations 2 and 4 of the MRCP PACES exam” Award: £66K. Collaborators: UCL and MRCP (UK).

**Research students:** Five doctoral degrees have been awarded in the assessment period.  
**Prestigious awards:** Two UCL Impact PhD studentships, these are UCL co-sponsored appointments aimed to increase research capacity and impact. These collaborative projects have been match funded by the RCP (£31K) and Divisional Strategic Funds. Both PhDs align with our strategic theme of assessment. All PGR students have access and time to attend UCL training events for research skills development and networking with other researchers. **Training events have included:** ‘Think Write’ course, various in house statistics courses and Springboard Women’s Development Programme (specifically for UCL’s female researchers). All PGR students (indeed all UCLMS staff) are encouraged to present/attend internal and external medical education conferences. Funding for external conferences is provided via the consultancy monies and the Divisional Strategic Fund. There is active supervision, upgrading at year one is strongly encouraged and monitoring of progress is undertaken by supervisors and the Departmental Graduate Tutor via the UCL student research log. Students take part in the *Graduate School Skills Development Programme*.

**d. Income, infrastructure and facilities**

**NHS:** UCLP and UCLMS’s partner hospitals activity benefit from knowledge transfer and professional development provided by UCLMS, this includes teacher training and opportunities to attend our medical education conferences and seminar series. This infrastructure has also resulted in commissioned research, for example the professionalism project (Gill) and the evaluation of responsible officers for NHS England London (Griffin) and is an area for strategic development.  
**Expertise:** There is expertise in a wide range of research methodologies, both qualitative and quantitative. Longitudinal cohort studies, social network analysis and world-recognised expertise in psychometrics (McManus, Woolf). Expertise in qualitative analysis includes interpretative phenomenological analysis (Griffin), linguistics and text mining (Griffin and Gill), Foucauldian discourse analysis (Griffin and Park). **Major infrastructure funding and investments:** We have invested more than £420K into the development of assessment facilities. **UCLMS academic strategy** provides details by which an appropriate balance between the scholarly, organisational and operational infrastructures is established, and by which these elements are prioritised and maintained. Our strategic alliance with the IoE, University of London aims to collaborate and work towards large scale ERSC grant applications. We are currently setting up an expert network to collaborate on combined research projects that will achieve funding success. **Business and KT Manager:** We will recruit a Business Manager (£50K per annum) to support the development of the MSEC and further generate research income by identifying appropriate research funding and facilitate the awarding of commissioned research and to take a proactive approach to forming networks, nationally and internationally, and to promote the knowledge transfer aspect of the educational consultancy. We are exploring other research partnerships, with the IoE to share methodological expertise and set up infrastructures that facilitate our strategic alliance as well as market research companies in order to build a greater research presence. **Policy and practice in relation to research governance:** We have a **Medical School Quality Assurance in Research (MSQAR) policy** that sets out the principles, standards and procedures for research governance for existing or future funders of research. Senior members of staff provide guidance for ethical approvals and have pioneered a screening service with the graduate school for student research. These procedures also ensure that once projects have been completed and results disseminated and published, they meet the high standards associated with UCL and UCLMS and provide an accurate record of events. This MSQAR Policy covers all types of research whether funded by external bodies, internal University sources, or unfunded. **Consultancies and professional services MSEC** has raised more than £3M during the period of 2008-2013.

**e. Collaboration and contribution to the discipline or research base**

This unit researches empirical issues for other bodies. This makes it inherently collaborative and is illustrated by the wide range of projects (national and international), as listed below. As research problems arise from healthcare practice, the outcomes of the research reach beyond academia

## Environment template (REF5)

and impact the workplace, the NHS. These impacts include the selection of tomorrow's doctors (McManus); lowering the social barriers to medicine and increasing the diversity of the ethnic, gender and socio-economic balance of the medical workforce (Boynton, Dacre, Woolf); NHS workforce planning and women (Dacre); the assessment of competence (MRCP) and the Fitness to Practise (FtP) of doctors (Dacre, Sturrock). Many of the examples contained within this submission are collaborations with professional bodies, other HEIs, policy makers and providers of healthcare. **Collaborations with policy makers and DoH:** Academy of Medical Royal Colleges (AoMRC), with the DoH, the GP National Recruitment Office and The Work Psychology Group (Patterson) to pilot a national multi-specialty invigilated and computer delivered machine markable test (DoH funding £200K). Selection pilots for Department of Health, AoMRC and RCP including collaboration with work psychology group and Acute specialties NHS South West team. **Key NHS collaborations:** NHS London Revalidation £30K for the evaluation of the appraisal of Responsible Officers in London. Health Foundation co-creating health collaboration with Whittington and Guys St Thomas' Trust. **Main Professional body collaborations:** Dacre and Sturrock - GMC project Assessment, Fitness to Practise. Dacre - RCP research on women and medicine, jointly with RCP London £60K. Dacre and McManus - MRCP research jointly with UCL. Gill 2010 - London Deanery £20K. Evaluation of Trust-based learning groups to foster professionalism. Griffin 2013 - NHS London £30K Evaluation of Responsible Officer appraisal. **Other Academic collaborations:** Social networks investigating the causes and consequences of social network formation. Collaboration with Prof. Nick Crossley at Manchester, £4K British Academy Grant (2011-2012). PPI Collaboration: Selection to medical school pilot with Burnham consultancy. **Contribution to the discipline - Participation in peer review process - Grants committees and editorial boards** Dacre - Medicine International editorial board, ARC Education Grant reviewer, BSR conference abstract reviewer. Boynton - grant applications for funding bodies such as Leverhulme; ESRC; and Wellcome. Woolf - Portuguese Foundation for Science and Technology Project Scheme Grants 2011 and 2012. **Membership of Research Council or similar national and international committees / advisory, strategy or review boards:** Woolf - Elected member Association for the Study of Medical Education (ASME), Education Research Group (2011); Race Equality Group Co-Chair (2013 -); UCL REF 2014 Equality and Diversity Panel (2012-). Griffin - Member of Researching Clinical Learning Network. **Refereeing academic publications:** (ALL) The Lancet; British Medical Journal; Clinical Teacher; Medical Education, Medical Teacher, Academic Medicine; British Journal of General Practice; BMC Medical Education; Patient education and counselling, Social Science and Medicine. **Editorial boards:** McManus - BMC Medical Education; BMC Medicine; Perception; Developmental Neuropsychology; Empirical Studies of the Arts; Annals of Improbable Research. **Editorial positions:** McManus - Laterality (Founding co-editor); Journal of Health Psychology (Assistant Editor). Woolf - BMC Medical Education Associate editor. **Organisation of conferences:** Griffin - UCL Medical School "Getting ready for the REF" conference (2012); "The Second National Conference on Student Evaluation: Embedding Evaluation: Working with Students to Close the Loop", 2009; UCL, London; UCL Medical School Medical Education Conferences (2011/12/13); Boynton - Sense About Sex for the ESRC Festival of Science November 2012; Disability: Sex, relationships and pleasure; Sexuality and Sexual Health Section RSM and SHADA (2009). **Conference programme chairs:** Dacre-Chair RCP conference on Quality of Care 2009. UCLMS staff are invited to give many **keynotes and lectures** and including: McManus: The Ignobel Tour lectures; Scandinavian Tour (Karolinksa Institute) (2013); Lord Cohen Lecture, ASME Association for the Study of Medical Education (2011); Brunel Science lecture, Portsmouth Grammar School 2009; University of Surrey, Faculty of Arts and Sciences Annual Public Lecture, 2009. Dacre: Lectures on women and Medicine: RCPE; Kings Medical School; "Ethnicity and academic attainment" Italy (2011); Sharing Good Practice in Postgraduate Assessment, RCP London; "The ethnic gap in attainment at UCL Medical School" (2009). Woolf: Higher Education Equal Opportunities Network (HEEON); Student attainment – one year on. London; "Ethnicity and the academic attainment of medical students and doctors." (2011) Public Lecture, UCL Race Equality Group. London; "How do gender and ethnicity predict performance in the undergraduate period?" CRAMET research collaboration seminar, Making Assessment Fair and Equal in Postgraduate Medical Exams, Cambridge, 2010; Mitchell Centre for Social Network Analysis group (2013). Sturrock - Competence assessment group for Ottawa - paper in Florida, panel member in Singapore; GMC talks for BMA and COMAR conference (2012).

**Responsiveness to national and international priorities and initiatives:** McManus - GMC PLAB Review professional services; Educational Advisor, MRCP. Dacre - working group on Widening Participation for UCL SLMS; Member of the CMO working group on Women and Medicine; Chair RCP Research Steering Group on Women and Medicine; Lead for Undergraduate Medical Education Portfolio; Review of the Regulation of Legal Education Invited Contributor Solicitors Regulation Authority and Bar Standards Association (2011); The Patel Review, invited contributor (2009). **Leading positions in professional subject associations and learned societies:** Dacre - Medical Director MRCP examination and Chair MRCP Management Board; Chair Specialty Certificate Examination Steering Group; Member of MSC; Chair GMC Education and Training committee; BSR, MWF, RCP, GMC, RCOG review of their assessments; Chair GMC, RCP, NHS professionalism road shows; Chair the Examination Quality and Research Committee until 2009. Gill: council member of the ASME, ASME is an independent body that can influence policy in medical education and training through established links with decision-making bodies such as the GMC, National Association of Clinical Tutors, COPMeD and the DoH. Sturrock: Standard setter for Medical School Prescribing Alliance. **Examination of doctorates:** (Dacre) Andy Brown; Cath Taylor, Sara McAleese. (McManus) University of Vienna (PhD 2012); Swansea Metropolitan (MPhil, 2011); Essex (PhD 2009); Nottingham (MPhil 2008); Oxford (PhD 2008). **Fellowships and relevant awards:** (Dacre) Fellow of all UK Medical Royal Colleges; FHEA. (McManus) Fellowship Academy of Medical Sciences; RCP Edinburgh; RCP London.