

Institution: University College London		
Unit of Assessment: UoA 23 Education		
Title of case study: Benefitting patients and the medical profession by improving quality and fairness in medical education and training		
Period when the underpinning research was undertaken: 2014–2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Chris McManus	Professor of Psychology & Medical Education	September 1985 to present
Katherine Woolf	Associate Professor Medical Education	March 2004 to present
Dame Jane Dacre	Professor of Medical Education	September 1995 to present
Period when the claimed impact occurred: 2013 to 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact (indicative maximum 100 words) <p>Research by McManus, Woolf and Dacre, in the UCL Research Department of Medical Education, has informed and driven policies and practices to improve the quality and fairness of medical education and training across the UK. Their research influenced the decision by the General Medical Council to introduce the UK Medical Licensing Assessment, a common threshold examination which will ensure safe practice among 9,000 UK and 14,000 international medical graduates annually from 2023. The work has created policies requiring medical schools, Royal Colleges and Health Education England to provide fair education and training for 100,000 medics, and equalities training for providers and those quality-assuring training. Finally, it led to and influenced the creation of the UK Medical Education Database by the General Medical Council and Medical Schools Council, which has provided high-quality evidence for research and policy addressing issues including attainment and participation.</p>		
2. Underpinning research (indicative maximum 500 words) <p>Background: In the UK, most new medical practitioners have undertaken a recognised five-year medical school degree before joining the Medical Register as junior doctors. Further education to become a Consultant or GP requires five to ten more years of postgraduate training and extensive examinations. The General Medical Council (GMC) ensures the fitness to practise of 336,500 UK doctors; it also sets standards for, and quality-assures, the education and training provided by 40 medical schools, 24 Medical Royal Colleges, and 16 Deaneries across the UK to 100,000 medical students and doctors training and working within the NHS.</p> <p>Research findings: <u>Patient safety and examinations:</u> Examinations are often criticised as irrelevant to medical practice. However, McManus, Woolf and colleagues studied the performance of 72,000 doctors sitting two Royal College examinations, of whom 1,648 later had GMC sanctions for poor professional practice. They showed that greater knowledge and skills, as measured by exams, correlated with fewer GMC Fitness to Practise sanctions (R1). Doctors assessed as having more knowledge and skills, reflecting higher-quality education and training, therefore deliver better and safer clinical practice, reflected in fewer Fitness to Practise problems.</p> <p><u>Equivalence of medical qualifications:</u> Each UK medical school currently sets its own final qualifying examinations. McManus and Dacre studied 28,000 graduates of different UK medical</p>		

schools. They found very significant variation in the knowledge and skills tested in postgraduate examinations, despite all the graduates having passed their finals, concluding that standards are not equivalent across medical schools. Most doctors qualifying outside the EU must pass the GMC's Professional and Linguistic Assessment Board (PLAB) examination to practise in the UK. Research led by McManus for the GMC's PLAB review showed that doctors gaining a licence via PLAB had poorer knowledge and skills than UK medical graduates, as measured in subsequent GMC-regulated Royal College examinations (**R2**). PLAB therefore set a lower standard than UK qualifications.

Differential attainment: A meta-analysis of 24,000 UK medics by Woolf and McManus (**R3**) showed that on average, Black, Asian and Minority Ethnic (BAME) doctors and medical students performed less well than their white counterparts in assessments. As a result, the GMC commissioned two national studies from Woolf. These showed that differential attainment reflects 12 additional risks faced by BAME doctors during training (**R4**), including difficult relationships with seniors, assessments and recruitment vulnerable to bias, increased likelihood of isolation, and greater mental health issues hindering learning and performance. Woolf et al. also identified barriers to interventions to address these inequities (**R5**), with non-stigmatising interventions recommended to focus on trainee-trainer relationships at work and organisational changes to improve trainees' social support.

Development of UK Medical Education Database (UKMED): UKCAT (now UCAT, the Universities Clinical Aptitude Test), is an aptitude test used by most UK medical schools to select medical students. The UKCAT-12 study (**R6**) of 4,800 students at 12 medical schools, undertaken by McManus and colleagues, demonstrated that test scores showed incremental validity over A-level scores in predicting first year medical school performance. This large-scale, collaborative study provided adequate statistical power to answer questions that a single medical school could not, and provided generalisability to other medical schools. UKCAT-12's demonstration of the power of a large-scale study of medical education, made the case for a national database to research questions on student selection, education and training outcomes. It was therefore proof of concept for the development of the UK Medical Education Database (UKMED) – a longitudinal database that tracks undergraduate and postgraduate performance of UK medical graduates on student and trainee doctor progression across their education and future career.

3. References to the research (indicative maximum of six references)

R1 Wakeford R, Ludka K, Woolf K, McManus IC. Fitness to practise sanctions in UK doctors are predicted by poor performance at MRCGP and MRCP(UK) assessments: data linkage study. *BMC Medicine*; 2018; 16:230. <https://discovery.ucl.ac.uk/id/eprint/10061349/>

R2 McManus IC, Wakeford RE. Data linkage comparison of PLAB and UK graduates' performance on MRCP(UK) and MRCGP examinations: Equivalent IMG career progress requires higher PLAB pass-marks. *BMJ*, 2014; 348:g2621. <https://discovery.ucl.ac.uk/id/eprint/1428527/>

R3 Woolf K, Potts HWW, IC McManus. The relationship between ethnicity and academic performance in UK-trained doctors and medical students: a systematic review and meta-analysis. *BMJ*, 2011; 342:d901. <https://discovery.ucl.ac.uk/id/eprint/593389/>

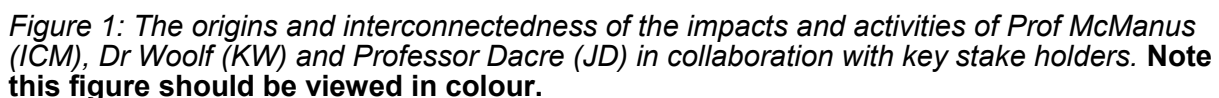
R4 Woolf K, Rich A, Viney R, Needleman S, Griffin A. Perceived causes of differential attainment in UK postgraduate medical training: a national qualitative study. *BMJ Open*. 2016; 6:e013429. <https://discovery.ucl.ac.uk/id/eprint/1527438/>

R5 Woolf K, Viney R, Rich A, Jayaweera H, Griffin A. Organisational perspectives on addressing differential attainment in postgraduate medical education: a qualitative study in the UK. *BMJ Open*. 2018; 8:e021314. <http://dx.doi.org/10.1136/bmjopen-2017-021314>

R6 McManus IC, Dewberry C, Nicholson S, Dowell JS. The UKCAT-12 study: educational attainment, aptitude test performance, demographic and socio-economic contextual factors as predictors of first year outcome in a cross-sectional collaborative study of 12 UK medical schools. *BMC Medicine*, 2013; 11:244. <https://doi.org/10.1186/1741-7015-11-244>

4. Details of the impact (indicative maximum 750 words)

As shown in Figure 1, the impacts described below are underpinned by sustained research and knowledge exchange with major stakeholders, which support each other in improving patient care. Stakeholders include the GMC, postgraduate Deaneries (Health Education England and devolved equivalents), Medical Schools Council (MSC), and medical Royal Colleges, together responsible for 40,000 medical students and 150,000 NHS doctors (including 60,000 doctors in training) at any one time. Dacre, McManus and Woolf's research therefore helps patients to be treated by better doctors.



Differences between graduates of UK medical schools and International Medical Graduates:
Research by McManus and colleagues has driven the GMC's introduction of a new UK Medical Licensing Examination (UKMLA) by providing clear evidence that the standards of medical school final examinations differed significantly, by demonstrating that PLAB showed a far lower

standard than for UK graduates (**R2**), and by showing the existence of differential attainment (**R3**). As the Assistant Director of Education and Standards at the GMC confirmed: *'The UCL team of Chris McManus, Katherine Woolf, and Jane Dacre has over a number of years produced research which has articulated the need for change, and have been influential in several aspects of the development of the MLA... By 2014 the GMC was becoming concerned about these three issues – differences between medical schools, standards for the PLAB exam for IMGs, and underperformance of UK BAME candidates – all of which involved issues about the comparability of assessments across students, doctors, assessments and institutions. The GMC therefore agreed to develop proposals for a Medical Licensing Assessment Examination' (S1).* The GMC's proposal of a medical licensing examination was agreed in principle in 2014 and a timetable set for full implementation in 2023 (**S2**). This is a major research-based reform of UK medical training and qualifications. The UKMLA will *'be a means to address concerns about variation in standards, create a level playing field for all those seeking to join the register with a licence to practise and enable the GMC to set a clear and unified standard for any doctor wishing to practise medicine in the UK' (S2, S3)*. The UKMLA will ensure all doctors in the UK reach a common threshold for safe practice in terms of clinical knowledge and skills, with 14,000 overseas and 9,000 UK medical graduates taking the UKMLA annually. **R2** and **R3** were instrumental to the GMC's introduction of the UKMLA, to ensure UK and international medical graduates pass the same assessment before registration (**S1, S2**).

Differential attainment (Impact 2)

GMC strategy on differential attainment: Research by Woolf, McManus and Dacre on differential attainment in BAME and IMG doctors has *'significantly increased awareness and understanding'* and *'significantly influenced the GMC's approach to tackling differential attainment'* (GMC) (**S4, S5, S6**). **R3** was cited in a judicial review of differential attainment in 2014, and in 2015 the GMC established its Differential Attainment Project to understand causes and identify solutions. The GMC's approach was underpinned by a literature review citing 10 of the team's studies including **R2** and **R3**, summarised in Chapter 5 of the 2015 GMC State of Medical Education in Practice (SOMEPE) report (**S5**). The report restated the essential need for the GMC to understand the reasons for, and consequences of differential, attainment.

Woolf's research and recommendations for 'Fair Training Pathways' were profiled in the 2018 GMC SOMEPE report, highlighting 12 risks to the training progression of BAME and IMG doctors, and providing information on interventions for training providers to address inequalities. The research was also highlighted as an example of good practice by the GMC's regulator, the Professional Standards Authority (**S4**). Because of Woolf's research, the GMC commissioned guidelines for the evaluation of interventions tackling differential attainment and published an evaluation toolkit for local organisations.

GMC standards, and the quality assurance of undergraduate and postgraduate medical education: Woolf's Pathways research now forms part of the GMC quality assurance process for medical education and training providers. Since 2017, the GMC has asked all postgraduate Deaneries and Medical Royal Colleges to describe how they are responding to differential attainment, and to the risks identified by the research, and requires all providers to use the research to ensure fair training pathways for all doctors, so they in turn can provide safe patient care (**S4**). In 2017 the GMC introduced new Standards for Medical Education and Training, with accompanying equality and diversity guidance, to which Woolf contributed as a GMC Equality and Diversity Advisory Group member, with research cited in the GMC Equality, Diversity and Inclusion Strategy 2018-20 (**S6**).

Undergraduate medical education: Woolf's work has influenced the development of the Medical Schools Council's differential attainment strategy for education of undergraduate students, and the policies and practices of the UK's 40 medical schools (**S7**). Woolf has trained Deans, Directors of Education, and student representatives of all medical schools across the UK, facilitating knowledge exchange workshops (based on **R3, R4** and **R5**) to address differential attainment. Since 2018, Woolf's training has influenced practices for senior medical school and university staff at five UK higher education institutions including Warwick, Keele, Norwich,

Birmingham and Glasgow Universities, prompted two schools to set up a differential attainment taskforce based on her recommendations, and resulted in the MSC setting up a national Equality Diversity and Inclusion Alliance of all UK medical schools.

UK Medical Education Database (Impact 3)

As a result of the UKCAT-12 study McManus was asked by the GMC and the MSC to join the UKMED Advisory Board (now Development Board) in January 2013, and he has contributed extensively to the development of the database across the REF 2021 period. McManus is a founding member, and the only purely academic member of the UKMED Research Sub-group due to his experience working with data from longitudinal cohort studies (**S8, S9**). The UKCAT-12 analysis (**R6**) acted as proof of concept for UKMED, and later analyses by McManus were used in piloting UKMED database software, procedures and secure safe haven access (**R6**). The UKMED Advisory Board commenced officially in January 2013, collecting data prospectively and retrospectively and developing secure safe haven access. Public applications for access to UKMED data started in 2016. As a member of the Research Advisory Group, McManus has reviewed over 100 applications for research proposals based on UKMED access, as well as developing the group's policies on data use. He has worked to bring in more data partners such as UCAS - a significant negotiation which now allows the entire selection process of medical students, and their subsequent training to be studied, particularly in Woolf and McManus's NIHR-funded programme UKMACS (2018-2020) as well as by researchers more generally. The Chief Executive of MSC states '*Chris has been involved in the conception and development of UKMED, both through his own cohort studies, and by his support and intellectual input firstly to UKCAT and its data collection, and then to the implementation of UKMED itself...I feel confident therefore that the research of Professor Chris McManus has been influential in developing and implementing UKMED*' (**S9**), with the GMC affirming the UKMED database as a 'gamechanger' for medical education (**S10**).

Taken together the research undertaken by Dacre, McManus and Woolf has informed and driven policies and practices that are improving the quality and fairness of medical education and training for tens of thousands of medical students and new doctors across the UK.

5. Sources to corroborate the impact (indicative maximum of 10 references)

- S1** Testimonial from Assistant Director, Education and Standards, General Medical Council,
- S2** [GMC Council papers 25th Sept 2014](#) para 10; para 13b.
- S3** [GMC Council Meeting Paper](#) 2nd June 2015 para 20b, 20d, 20e.
- S4** Testimonial from Head of Operations, General Medical Council.
- S5** 2015 [GMC State of Medical Education and Practice in the UK](#). (document refs 55, 130, 134, 136, 139, 143, 144).
- S6** 2018 [GMC Equality and Diversity Strategy 2018-2020](#) (p16, 17, 18).
- S7** Joint testimonial from the CEO and the Assistant Director, Medical Schools Council.
- S8** [Minutes from an initial scoping meeting for UKMED](#) in which Prof McManus is identified as a key individual to engage with.
- S9** Testimonial from CEO, Medical Schools Council.
- S10** [GMC blogpost by UKMED Chair Professor Steve Thornton](#) outlining the importance and use of UKMED to medical education.