Institution: King's College London

Unit of Assessment: 4

a. Context

Background: The Institute of Psychiatry (IoP), a School of King's College London, is Europe's largest centre for research in psychiatry, psychology, basic and clinical neuroscience. Our mission is to increase the understanding of the mind and brain to help prevent and treat psychiatric and neurological disorders. Our translational work is embedded in a century-long partnership between the Institute of Psychiatry and the Maudsley Hospital (now part of South London and Maudsley NHS Foundation Trust, SLaM). We work in one of the most deprived local authorities in England, with four times the incidence of mental health problems (PlosOne, 2012) and a very high representation of black and ethnic minority groups. To these challenges we bring multidisciplinary expertise from academics and clinical-academics. We produce novel treatments, new instruments, change clinical practice, improved services, influence policy and engage with society. Our research beneficiaries include the NHS and health care providers; patients and their carers; industry; policy makers and the public.

Our Research Groups are the **Discovery** arm which develops ideas for novel interventions and evaluates them and their cost-effectiveness, supported by our Centre for the Economics of Mental and Physical Health. Our NIHR Biomedical Research Centre for Mental Health and Biomedical Research Unit for Dementia (BRC/U) is the **Translation** arm specialising in the early translation from 'bench-to-bedside'. Like others, we have realised that even after treatments are validated and endorsed by NICE their uptake still remains patchy. To address implementation during this REF period we established Kings Improvement Science involving service users and clinicians to resolve the barriers to translation. This is our **Implementation** arm. While we start with local partners, we have interactions with 54 UK and 448 non-UK universities (Web of Science, 2013) as well as new initiatives with industry (e.g. EU Innovative Medicines Initiative and collaboration with Pfizer, Lundbeck and Johnson & Johnson for projects of critical interest to NICE).

OUR TRANSLATIONAL LANDSCAPE

Our NHS Partners: Key recipients of our impacts are partner NHS Foundation Trusts: SLaM, as well as Guy's and St Thomas's (GSTT) and King's College Hospital (KCH) and the patients they serve. To enhance the impact of our work in 2008 we reorganised our academic Research Groups to dovetail with a hospital-based clinical arm, now collectively referred to as Clinical Academic Groups (CAG). These **research-led NHS service**s are a local test-bed to produce the first evidence of treatment success that impacts on national policy and practice. For instance, the provision of "memory clinics" for dementia was a local service in our Mental Health of Older Adults CAG and now extends to the NHS through good practice and policy guidance [e.g. Cases 2,4,6 13,14,19]. Our close working relationship with SLaM is exemplified by £37m in NIHR grant funding to SLaM led by IoP staff, including 12 NIHR Applied Programmes active during the REF period.

Our research not only embraces psychiatry but also includes psychological difficulties associated with physical health conditions and clinical neurosciences including neurology, neuropsychiatry and neurosurgery. This research is supported by our link with partner 'acute' trusts (GSTT and KCH) and our local primary care services. As a result we have a track record of impact on physical health [e.g. Stroke (Case 13), Parkinson's Disease (Case 18), Motor Neurone Disease (MND) (Case 24), Eating Disorders (Cases 9,10,16) and Chronic Fatigue Syndrome (Case 22)].

Patients, Carers and Public involvement: Key research beneficiaries are patients who contribute to our institutional research strategy (http://www.kcl.ac.uk/iop/research/iopresearchstrategy.doc). Since NHS services are only one part of what supports patients, we also focus on family carers. **IoP actively promotes and supports patient involvement** throughout our research portfolio. We were first in the world to create a Service User Research Enterprise (SURE) and it is now the largest university research unit which employs people who have a publicly declared experience of mental health service use *and* competitive research skills. Public dissemination is particularly important as our own research (e.g. Stigma Shout, 2008) has shown that public stigma affects the likelihood that individuals with mental health issues will access services and whether their families will feel supported. Therefore, we produce a wider reach for our impacts through extensive public

engagement and media reporting activities supported by our four in-house press staff, **media training for staff as well as strategic links with the Science Media Centre** (e.g. Sir Simon Wessely on the Advisory Board; Til Wykes raised resources for a dedicated staff member for UK mental health science). We actively highlight our research impact through **'Making a Difference' website** (11,000 unique views http://www.kcl.ac.uk/iop/about/difference/Making-a-Difference.aspx; Aug '12-July '13) and we share these impact articles on Twitter. We welcome the public to our popular **Maudsley Debates**, in person and via podcasts (642 downloads for 48th debate http://www.kcl.ac.uk/iop/news/debates/index.aspx).

Partnering with the Military: In the first world war, the Maudsley Hospital was one of the main centres for research and treatment of "shell shock". During the second world-war psychological tests for the evaluation of recruits (e.g. Eysenck Personality Inventory) were developed by Maudsley academics. We continue that tradition through our unique **King's Centre for Military Health Research** – one of the few University-based military health units worldwide. IoP researchers study questions of stress and outcome amongst serving personnel, veterans and their families in the Gulf, Iraq and Afghanistan wars and develop pioneering novel interventions (Cases 3,11,25). This work is funded by UK (Defence, ESRC, MRC) and US Dept of Defense.

Influencing National and International policy and practice: We actively **contribute to the UK National Institute for Health and Care Excellence (NICE) Guidelines** as Chairs, members, or expert witnesses to guideline groups. Our research is extensively referenced in guidance but the process is iterative as our researchers seek to answer questions where NICE reports a lack of robust evidence. For instance Rob Howard contributed to the NICE recommendation on antipsychotic prescribing in dementia based on research which showed a 50% reduction in antipsychotic prescribing with enhanced psychosocial care (BMJ, 2006). Staff are encouraged to take roles on influential committees including **international policy development groups** such as the European ADHD guidelines (Emily Simonoff), USA DSM-5 guidelines (Francesca Happe) and joint chair of the WHO mhGAP Implementation Guidelines (Graham Thornicroft). Not all mental health issues are dealt by "health services" so we reach beyond: for instance research on self-control in children influenced Dept of Transport discussion documents (Louise Arsenault) and research on bullying, violence and mental disorders was cited by the US surgeon general and the US Department of Justice (Louise Arsenault). Our Addictions research influenced practice in prisons by preventing heroin overdose deaths with take-home emergency naloxone (Case 14).

Education and Social Care: Our research showed that 75% of adult mental health difficulties begin in childhood (reiterated in the Department of Health CMO report 2013). Identifying and treating these problems has the potential to reduce their lifetime burden. To achieve this we have helped **UK Local Authorities** identify children in their care who are in need of mental health care with our assessments demonstrating that 45% could benefit from intervention (Case 21). To reach out to school children, Patricia Conrod at our National Addiction Centre developed a school-based substance-abuse prevention program, the Preventure Programme, which was the first to show effects on preventing substance misuse across 25 mainstream schools and has additional effects on emotional and behavioural problems in adolescents.

Industry partnership: Helping industry make the most of research outputs will help to improve services and treatments as well as contribute to economic growth. Recent disinvestment by pharma companies put in jeopardy the development of new medicines in psychiatry. Partnering with industry was therefore vital to make the most of potential new drug candidates and procedures. Our NIHR BRC/BRU has translational research at its core and we have worked to increase our industry links and develop collaborations with large and small pharma, biotech and increasingly with technology companies (e.g. Microsoft to produce our *myhealthlocker* patient portal). Over the past decade we have delivered **spin-out companies** (e.g. ReNeuron, Theragenetics) and have continued to work with them. Collaboration is enhanced through our leadership of several **academia-industry consortia** as part of the EU Innovative Medicines Initiative (NEWMEDS in Schizophrenia and Depression, 2009-2014 (Shitij Kapur) involves 6 academic and 9 pharmaceutical partners; EU-AIMS in Autism, 2011-2016, (Declan Murphy), involves 14 academic institutions and 6 pharmaceutical companies) and Simon Lovestone leads a

European Medical Information Framework (EMIF) partnership (16 industry and 36 academic partners).

b. Approach to impact

Introduction: The main foundation for our 'impact' is first-class academic scholarship (our **Discovery**) but that alone is not enough. To produce impact, science needs **'Translation'** and **'Implementation'**. This focus led us to:

1) Design the "Clinical Academic Groups" to enhance translation within NHS
2) Develop the Service User Research Enterprise to embed the patient-perspective
3) Link our research leaders to government and organisations
4) Use BRC/U infrastructure to develop our bench to bedside translation
5) Work with King's Commercialisation Institute to link with industry
6) Develop our interface for international health and policy
7) Actively work with disease-advocacy charities; and
8) Train our junior researchers in translation and innovation.

"Clinical Academic Groups" to enhance translation within NHS partners. Prior to 2008 our academic units were driven by academic interests while the hospital divisions were organised by local Boroughs (e.g. Southwark, Lambeth etc.). In 2008 working with our NHS partners we reorganised our academic and hospital service units into specialist themes e.g. Psychosis – intimately tying our Research Groups to clinical services. These **Clinical Academic Groups (CAGs) allow us to involve clinicians, family carers and service users in our research leading to accelerated study initiation, research recruitment and impact implementation**. For example, the DOMINO trial led by Rob Howard demonstrated the value of continuing Donepezil beyond the early stages of Alzheimer's Disease (New England Journal of Medicine, 2012) and led to quick changes in treatment at SLaM; the advances in MRI analysis by our researchers allowed us to be the first NHS service to offer automated MRI evaluation for Alzheimer's Disease (Neuroimage, 2011); and Keyoumars Ashkan's neuro-oncology research led to the first dedicated Adolescent Neuro-oncology Service with research-driven methods for minimising cognitive difficulties post-surgery. Our **Clinical Record Interactive Search (CRIS)** application provides access to anonymised information extracted from SLaM's electronic clinical records system and linkages with Hospital Episode Statistics, the Cancer Registry and local Primary Care databases. It now allows our care partners (SLaM) to engage the Clinical Commissioning Groups in a discussion about need, efficacy and effectiveness of services and interventions.

Service User Research Enterprise (SURE) to embed the patient-perspective. SURE is an integral part of our research units (NIHR BRC/U, NIHR Collaboration for Leadership in Applied Health Research and Care (CLAHRC) and King's Improvement Science). It undertakes research on the effectiveness of services and treatments from the perspective of people with mental health problems and their families. SURE research directly contributes to health policy and practise as Dr. Diana Rose chairs the NICE Guidance and Quality Standard on Improving the User Experiences of Adult Mental Health Services. We have developed **two distinct routes to embed the patient perspective**: (i) the FAST-R service (with NIHR Mental Health Research Network in South London) and (ii) our Service User Advisory Group which resulted amongst other initiatives to services for carers of people with eating disorders (Case 16).

Linking our research leaders to government and organisations: We encourage our scientists to take on **expert advisory roles with government** – via committees, advisory boards and secondments. For example, Sir Simon Wessely is a member of three Cabinet Office committees and his work with the House of Commons Defence Select Committee influenced armed-services deployment length (Case 11). Louise Howard was an invited member of the domestic violence subgroup of the NHS Taskforce which led to the development of mental health pathways for those who have experienced domestic violence (Case 4). Our junior staff are also encouraged to contribute, for instance, lecturer James Rubin was invited to be a member of an Advisory Subgroup to Public Health England's Emergency Response Department. At an international level the work of George Szmukler is influencing mental health law reform based on impaired 'decision-making capacity' (Australia, Zambia and Northern Ireland). Gisli Gudjonsson's pioneering research into interrogative suggestibility, psychological vulnerabilities and false confessions has had

worldwide impact on police training regarding confession evidence, for which he was awarded a CBE in 2011. Our research team leaders also take prominent roles in policy initiatives. For instance between 2006 and 2010 Sube Banerjee (KCL to 2012) was seconded as the Department of Health's Senior Professional Advisor in Older People's Mental Health. He led the expert group and wrote the policy document 'Living well with dementia: A national dementia strategy' (2009) which was crucial in the development of new memory services nationwide (Case 6). Finally our clinical academics often lead, and routinely participate in, NICE guideline development groups: Sir David Goldberg chaired the Depression guidelines group 2009 which updated evidence on computerised depression treatments for primary care – treatments first developed at the IoP. Michael Gossop was a special advisor on Opioid drug misuse guidance which referenced KCL research on epidemiology, randomised trials and health economic analyses on the type and place for detoxification. Elizabeth Kuipers chaired both of the two recent updates on Schizophrenia Treatment (medicines, services and psychosocial treatments) which stressed increased access to cognitive behaviour therapy and family therapies both of which were the focus of attention at the IoP (Cases 1, 23).

BRC/U infrastructure to link bench-to-bedside. This infrastructure allows the latest **basic discovery science findings to be pulled through into "first-in-man" clinical studies** and then to be pushed forward towards impact. The emphasis is on individualised treatments and to support advances in the prevention, diagnosis, treatment and care of mental ill health and dementia. Trials of lithium for dementia and computerised cognitive remediation for Schizophrenia are some recent examples. We bring together researchers, clinicians, allied health professionals and service users from across our University/Trust partnership to work together better in order to meet these research challenges.

King's Commercialisation Institute linking with industry. Our strategic focus is on scientific partnerships with private-sector partners (big pharma, biotech and technology companies) that fuel the next health care innovations. Our success in leading three out of the four EU Innovative Medicines Initiatives in mental health shows our commitment. This was achieved through the **effective infrastructure and support of our technology transfer experts** in King's Commercialisation Institute (formerly King's Business). King's Commercialisation Institute (KCI) supports the research assets associated with Intellectual Property and improves commercial readiness by embedding commercial, project management and regulatory planning resource and skills nearer to researchers. KCI facilitated our strategic relationships with Johnson and Johnson, Roche and Lundbeck around the use of the CRIS database for drug research. We partner with small and medium sized enterprises including a strategic relationship with Proteome Sciences, a world leading UK based diagnostics company, with laboratories embedded in KCL and in Frankfurt. Over the past decade, we evolved spin-out companies including: ReNeuron, a leader in regenerative medicine in Central Nervous System disorders. This company, with our help, conducted the "first-in-man" study of stem cell therapy in the UK (see Case15).

International health and policy: We host a World Health Organisation (WHO) Collaborating Centre for Research and Training in Mental Health (one of five such worldwide) with Graham Thornicroft and Martin Prince as coordinators. This **centre is helping to put mental health on government agendas and works with professionals around the world** to develop locally appropriate services. Our researchers' impact healthcare and policy in countries such as Ethiopia, India and Nigeria, where lack of knowledge and investment mean most people with mental health problems cannot access treatment. We supervise the training non-specialist health workers to use WHO mental health treatment guidelines and our **Maudsley conferences provide research updates to leaders in developing countries**.

Work with mental health and neurological disorders charities. We engage with charities to campaign for increased research funding (e.g. with the Alzheimer Society to produce increased funding for Dementia research). But we also engage in other activities such as the recent **Schizophrenia Commission (chaired by Sir Robin Murray)** sponsored by the charity Rethink. It developed specific evidence-based recommendations for service provision on which the charity could continue to campaign. Paul McCrone and Martin Knapp produced the **Schizophrenia**

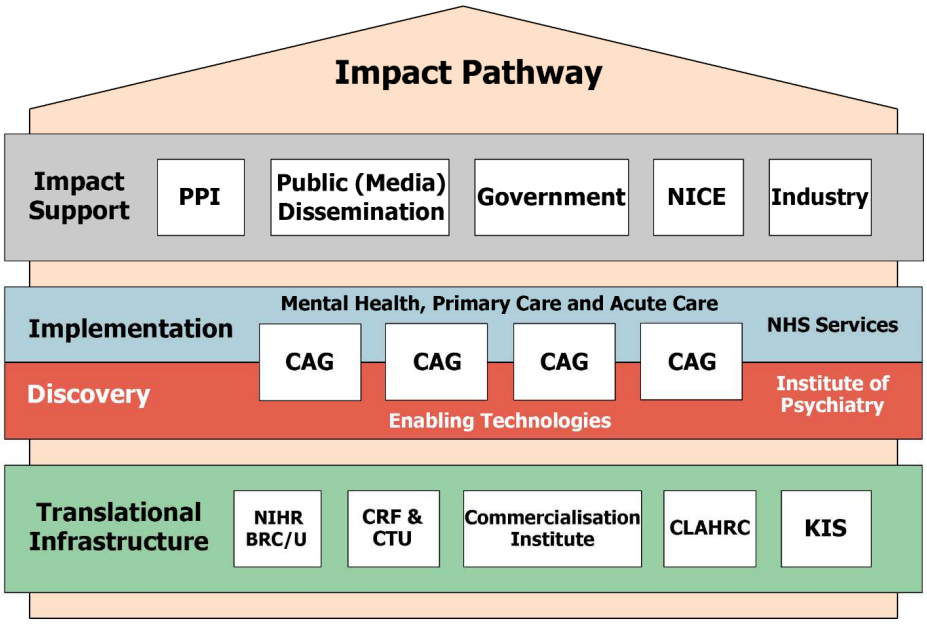
Commission's economic report that showed not only the costs of the disorder but also the savings that could be made if interventions were provided at the earliest stage. Both documents report our research and the Commission received evidence from our researchers. KCL researchers influenced the Time to Change project, the national anti-stigma campaign in England through collaboration with the mental health charities Mind and Rethink (Case 20). We work closely with the local Maudsley Charity, especially through ORTUS, a new state-of-the-art learning centre which provides space for local residents and service users to hold events and will be instrumental in raising awareness of mental health and wellbeing within the local community.

Training our junior researchers in translation and innovation. We recently sponsored **five IoP *Industry Fellows*** (Ecker, Chaddock, Mehta, Mill, Ougrin) who engaged with industry supported by our technology transfer infrastructure. **Senior researchers mentor their junior colleagues** in translation – for example using Sir Simon Wessely's interactions with the MoD, James Rubin was invited to be a member of a further committee, Public Health England's Advisory Group for Non Ionising Radiation, and Barbara Barrett was an invited expert in economic evaluation to the Ministry of Justice Evaluation Consultation Group mentored by Martin Knapp and Paul McCrone.

A worked example of translation using our infrastructure. Our approach to translation is strengthened by the NIHR Biomedical Research Centre for mental health (BRC) and more recently the NIHR Biomedical Research Unit in Dementia (BRU). BRC/U concentrate on translating basic laboratory based research into "first-in-man" studies. This means that novel therapies are built in the laboratory and then move from feasibility and acceptability through to clinical trials. One such therapy is a computerised Cognitive Remediation programme called CIRCuITS which is used to help patients with Schizophrenia improve their thinking skills. The scientific concept of CIRCuITS were developed by a KCL academic team (Til Wykes and Clare Reeder) and the prototype was built by software engineers with service users advisors supported by **SURE**. It then moved to more general acceptability and feasibility studies using **BRC support**. Resources from the MRC Developmental Pathways Funding Scheme allowed further developments so it could be exploited in real-world trials. Extensions to the software to aid wider application were supported by **King's Commercialisation Institute** to produce Spanish, Norwegian and French translations as well as national and international trademarks. CIRCuITS is now being evaluated in a clinical trial supported by our **UKCRC-registered Clinical Trials Unit** and by NIHR Research for Patient Benefit in order to understand its efficacy in routine practice settings. This is an example of how all our supportive infrastructures moved the research from the laboratory [2006] through to individuals in SLAM [2008] and then to testable services [2010] which will now become the focus for implementation science in our CLAHRC and an NIHR applied programme [2014] to facilitate impact.

c. Strategy and plans

Our infrastructure support is shown in Figure 1.Our translational advantage derives from very effective links with our NHS partners, our proactive approach to including patients, our growing reach beyond just mental health and our increasing links and success with industry. In the next five years (2013-2018) we plan to further enhance them with five main adaptations.



1. Seamless integration beyond mental health NHS Trusts. Increasingly our research has implications for primary

care, social care and general health care systems. To crystalise this impact we are reaching beyond our traditional association with SLaM. First, as a school of KCL, we are full members of **King's Health Partners** (KHP), one of the five AHSCs in England and Wales. Second, KHP, working closely with St George's NHS Healthcare Trust, local authorities and general practices will work together in the **South London Academic Health Science Network** (AHSN). Two of the four AHSN priority programmes are in mental health: addictions and dementia. These partnerships will allow us to reach beyond our traditional boundaries to work with those who are best positioned to translate our research into impact.

2. **King's Improvement Science – to enhance the science of implementation.** The emphasis on translation has highlighted how little is known about the factors that influence real world translation. KCL initiated a university-wide effort embracing academic experts in social science, social and organisational psychology and management to ensure the sustainable uptake, adoption, and implementation of evidence-based interventions. This KCL-wide effort is anchored at the IoP and includes specific mental health features. These KCL efforts were recently supplemented through a successful £18m bid for an NIHR **Collaborations for Leadership in Applied Health Research and Care** (CLAHRC) which pools the clinical and research expertise for implementation science across the NHS and universities in south London.

3. Neuroscience focussed Clinical Research Facility, to cement our industry partnerships. To enhance the conversion of promising neuroscience-based mechanisms into treatment possibilities and with circa £20m from the Wellcome Trust, Department of Health, Wolfson Foundation and KHP we built a purpose-designed Clinical Research Facility (CRF). It has intensive-monitoring beds, a 3T MRI scanner, EEG suite, Virtual Reality facility and cognitive testing labs. The CRF opened in 2013 and we recruited Prof. Peter Goadsby, an international leader in headache research, from UCSF, USA to lead it. **Our CRF is one of the few facilities in the world based in an intensive hospital setting with full neuroscience-investigation functionality**. With links to our BRC/U, enhanced recruitment via our CRIS system and the support of our UKCRC-registered Clinical Trials Unit, we anticipate that the CRF will become a major centre for neuroscience bench-to-bedside translation. Two key new appointments (Zahn and Mitchell) will facilitate these links.

4. Enhanced informatics – eHealth, mHealth. Our SLaM-wide real-time anonymised database is changing practice. Information from **CRIS is used in service audits** to enhance SLaM clinical service quality and, at the same time, anonymised data on dementia and schizophrenia outcomes is being **used by the industry (Roche) to refine the targeting of new compounds**. We have begun to establish mobile health applications and therapies that extend the reach of evidence based care. The 'big data' produced will be processed by our informatics team to improve treatment impact through establishing specific therapeutic processes. Our informatics expertise, mentioned by the Prime Minister (http://www.huffingtonpost.co.uk/2011/12/05/david-cameron-on-life-sciences), is being trialled through Department of Health funding in four other mental health trusts to broaden the usefulness of electronic data and increases our impact potential for delivering self-help treatments e.g. in Eating Disorders (Case 10).

5. Patient Reported Outcomes and *myhealthlocker*. We are developing true patient reported outcome measures (PROMs) using participatory methods within our SURE unit. These will be added to our innovative personal health record available to all our patients (*myhealthlocker*) to draw in higher quality data that can be mined using our novel informatics developments**.** This will give us access to more meaningful outcomes which should **increase the pace and relevance** with which we can move our discoveries to the clinic.

d. Relationship to case studies

Our impacts are effective at different levels and often in multiple domains: we produce novel treatments [Cases 1,9,10,15,16,18,22,23,25], new instruments [Cases 5,17,18,21], change practice [Cases 1,2,3,11,13,14,19,22,24], improve services [Cases 1,2,4,6,9,13,14,16,19,24], influence policy [Cases 1,3,4,5,6,7,8,9,10,11,12,13,14,17,18,19,21,22,23] and engage with society [Cases 12,20]. The beneficiaries include the NHS and health care providers; patients and families; industry; policy makers and the public both in the UK and worldwide.

We produce **novel treatments** and move them from the laboratory into clinical care using the local CAG links with the help of our BRC/U. Their effectiveness is tested in routine NHS care and worldwide using our CTU. Our research leaders then engage with policy makers worldwide to produce treatment guidance such as NICE (e.g. Cases 1, 22). Some also require close contact

with charities. For instance our researchers worked with the Eating Disorders charities BEAT and SUCCEED, which then adopted our self-help intervention programme for carers (Case 10). Our work on therapeutic stem cells was in close cooperation with industry supported by KCL's Commercialisation Institute and post-research work with the Medicines and Healthcare products Regulatory Agency enabled the first license to test their use in clinical studies of stroke (Case 15).

Our **new instruments** are developed with an eye towards applicability across service contexts (utility) and with strong involvement of service users (relevance). With the aid of our international engagement with service providers they often have widespread use. For instance our Needs Assessment tool is used by health and welfare practitioners in many countries (Case 17), the UK Government's Improving Access to Psychological Therapies scheme, which sees nearly a million patients each year, recommends the use of our Standard Assessment of Personality Abbreviated Scale (SAPAS) (Case 5) and Local Authorities now have the tools to detect mental health problems in children in their care (Case 21). Service user needs prompted the development of a novel patient-reported questionnaire that highlighted non-motor symptoms in Parkinson's Disease – and is now integral to local and national recommendations, is widely supported by charities and professional groups and is used internationally (Case 18).

We **change practice** by focussing on outcomes relevant to our key beneficiaries: such as reduced numbers of overdoses and saving lives in the care of addictions (Cases 2,14). Delivering this impact required engagement with key government agencies, such as the UK's National Drug Treatment Agency and similar organisations across the world. Our close partnerships and interactions at all levels (membership and evidence to key committees) with the military encourages implementation of research driven policy and practice including adopting a peer support programme for military personnel following trauma (Case 3), ensuring that length of deployment was kept within certain limits (Case 11) and implementation of brief psycho-educational treatments for risky behaviours (Case 25).

We have **improved services** in the NHS through interactions with key decision-making bodies as well as providing vital evidence on costs and effectiveness. For example, our research led to the creation of a national network of memory services for dementia patients by influencing the National Dementia Policy through interactions with government (Case 6). Our research on effectiveness and costs of post-stroke care provided to the National Audit Office contributed to a new system of care (Case 13). We discovered several MND-causing genes and tests for early diagnosis can now be found in laboratories around the world. Following our research evidence the first UK licence from the Human Fertilisation and Embryology Authority was granted for predictive gene testing in high-risk families and enabled children to be born free of MND (Case 24).

We **influence policy** with numerous instances of our research being mentioned in health policy guidance nationally (NICE) and internationally including national schizophrenia treatment guidelines in USA, Netherlands and Germany; German Eating Disorder Guidelines (Cases 1, 9). The Government's emergency plans changed following our findings that the public are largely resilient to disaster and through our interactions with government bodies to translate this research into policy (Case 7). In the social context our research influenced national and international health policy on the effective detection and management of domestic violence particularly in people with mental health problems (Case 4). The impact was achieved through our membership of key government committees. KCL researchers highlighted the lifetime costs of children with Conduct Disorder and through our interactions with the government, including three presentations to the Prime Minister, we influenced the setting up of a National Parenting Academy led by KCL. This has so far trained more than 3000 practitioners who have treated 192,000 children (Case 8).

Engaging with society allows us to increase the understanding of mental health and neurological disorders and thereby reduce stigma. Through active dissemination of our findings to public officials and through media interactions, the public's understanding of the role of cannabis in mental health disorders improved (Case 12). Working with the charities like Rethink Mental illness and MIND led to the development of the largest ever anti-stigma programme in England. 'Time to Change' achieved improvements in: discrimination reported by people with severe mental illness, anti-stigmatising articles in the press, improved understanding of employers about mental illness, the provision of mental health related policies in the workplace and changed attitudes in the general public about mental illness. Our continued input has helped document these results and has affected changes in the campaign style over the last five years (Case 20).