

From the Editor's desk

By Kamaldeep Bhui

The brave new world of medicine, neuroscience and society

Advances in knowledge bring with them expectations that new interventions are adopted into standard practice and that patients can expect the best interventions. For example, Brunoni *et al*'s study (pp.522–531, this issue) shows that transcranial direct current stimulation is comparable in efficacy to transcranial magnetic stimulation and antidepressant treatment, although weaker effects were observed among those with refractory depression, and further research is recommended regarding dosage. Might patients expect these interventions to be commissioned locally at times of austerity and reorganisation of healthcare? In some middle- and low-income countries with limited psychiatric services and few clinicians, the priority is to ensure early intervention, prevention and acceptable standards of safe healthcare, including the treatment of psychosis and depression and suicide prevention. Societal expectations of healthcare drive professional expectations and the flow of resources, making public education and knowledge a powerful transformative influence in health economies. In the UK, societal impact is one of the critical criteria by which research is now assessed for value. The Royal College of Psychiatrists has assembled examples of excellent psychiatric research showing positive societal impacts; the case studies cover suicide prevention, psychological interventions for anxiety, depression and psychosis; more effective medical management and earlier intervention in psychoses, treating depression in palliative care, interventions for substance misuse, mental illness in the armed forces, drug addiction, violence prevention and improving the management of dementia and eating disorders.¹ With appropriate adaptations and resources, some of the findings may translate to other countries.

In addition to providing more neuroscientific, biological, genetic and sociocultural research into effective interventions for use by clinicians, sharing this knowledge with patients, carers and the public is necessary so that they can make better choices, weighing personal risks and benefits. And leadership, management and commissioning of healthcare systems are instrumental in recognising the mandates provided by new evidence and ensuring that they enter practice. These may not always be decisions about healthcare systems, perhaps falling in the realms of social ideology, political philosophy and ethical reasoning.² Medical practitioners, including psychiatrists and other mental health professionals, must all be adept at marshalling evidence from the broadest range of research disciplines and communicating its nuances in plain English. The Royal College of Physicians' report on the future of clinical academic practice provides concrete recommendations that all doctors be competent in research practice.³ All doctors and health professionals need the skills to critically appraise evidence. They should also support research more generally, for example by assisting with recruitment into trials, supporting staff and patients to participate, and abiding by ethical principles. Only then can we discover new ways of improving patient outcomes, cost-effectively and with fewer adverse effects. At the Royal College of Psychiatrists' Academic Faculty strategy meeting in April 2016, chaired by Professor Lingford-Hughes, the notion of promoting more academic practice by all psychiatrists and trainees was well supported, alongside ambitions to ensure that we nurture future career academics as early as possible along the career pathway.

Of course, these noble ambitions require investment from NHS trusts, recognising that patient-centred care and personalised medicine need adequately equipped doctors and practitioners who can understand new and emerging technologies and evidence of effectiveness. Not only should all practitioners be engaged in research practice, future clinicians will also need to be well prepared for the renaissance in practice that new technologies offer. In the spirit of equipping the future workforce, the training curriculum for psychiatrists in the UK is being overhauled to include more neuroscience. A visionary partnership between the Wellcome Trust and the Gatsby Foundation is supporting this revolution in education.⁴ Medical students, basic scientists, nurses, psychologists, social workers: all will need to grapple with the new and emerging technologies and techniques that promise patients better chances of recovery. The project seeks to equip future psychiatrists with knowledge to integrate new and emergent findings from neuroscience so that there are commensurate changes in clinical practice. Another challenge that will need evolution is better knowledge on managing 'big-data' projects within sound ethical frameworks that respect legal precedents and protect patient data, especially as genomic, biological sample and imaging data are increasingly digitised and linked with patient records. Perhaps we need an international standard for core data that reflects patient interests and informs care decisions, while protecting patients' identity and avoiding unintended financial and societal consequences of participation in big-data projects.

There is a risk that, because psychiatric illnesses span the social, cultural, psychological, biological and genetic fields, the phenotypes may be perceived to be too complex for the inflexible, linear efforts of scientific advance. For example, Genomics England's rare diseases project does not include psychiatric illness or clinical interpretation partnerships on mental illnesses, even though schizophrenia and autism may be considered as collections of rare disorders with significant genetic aetiology.^{5–7} Genetic counselling may help realise the ambitions of personalised medicine, that is, to make shared and precise decisions with patients, and this process may improve treatment adherence, reduce self-stigma and be a form of psychological intervention that empowers patients.^{8,9} Reflecting the importance of neurobiological research in improving care for patients, this month's *BJPsych* includes mostly original research showing new cognitive, genetic and biological markers for psychosis, dementia, Huntington's disease, bipolar disorder, autism and gambling disorders (Georgiades *et al*, pp.539–547; Cheung *et al*, pp.548–555; Rosenblau *et al*, pp.556–564; McKechnie *et al*, pp.565–570; Domínguez *et al*, pp.571–578; Chamberlain *et al*, pp.579–584; Liu *et al*, pp.585–590; Fusté *et al*, pp.591–592); specific gene–environment interactions showing specificity in the genesis of psychosis symptoms in response to life events, and the effectiveness of pharmacological interventions is assessed against differing levels of baseline depression and anxiety disorders in randomised controlled trials and in clinical cohorts (Zimmerman *et al*, pp.512–514; de Vries *et al*, pp.515–521).

In contrast to this prevailing tide of scientific advances, Lewis-Fernández *et al* (pp.507–509) advocate more balance in the research portfolios of nations, specifically the influential National Institute of Mental Health in the USA. For example, among the greatest risks to healthcare in the NHS are the barriers, financial and otherwise, to the organisation and delivery of consistent, reliable, safe systems of care with adequate numbers of well-trained and competent professionals. Recent political interventions in England, for example, involving unfulfilled promises of funds for mental healthcare militate against engagement with or excitement about neuroscientific and genetic advances. Despite noble ambitions of neuroscience, for many patients and

practitioners it is the political economy of healthcare provision that is a greater priority. This includes attending to minimal standards of care, adequate numbers of clinicians, interventions to improve treatment and reduce risk of suicide, psychosis, depression and anxiety; and societal changes to mitigate critical risk factors such as violence, discrimination, gender disadvantage, poverty, stressful life events and family history. Evidence of a societal 'big bang' as a consequence of research is difficult but essential to capture; societal impact drives the public understanding of science, the social ideology of what mental illness is and how to treat it; and it also shapes receptivity to the findings of future psychiatric research and the ease with which these are translated into practice.

- 1 Wessely S (ed). *Research and Psychiatry: Making an Impact* (http://www.rcpsych.ac.uk/pdf/RCP_Making%20an%20impact.pdf). Royal College of Psychiatrists, 2016.
- 2 Ikkos G. 'Lethal discrimination', ideology and social justice (letter). *Br J Psychiatry* 2016; **208**: 399.
- 3 Royal College of Physicians. *Research for All: Building a Research-Active Medical Workforce*. Royal College of Physicians, 2016.
- 4 Wessely S. *Invitation from the College President Professor Sir Simon Wessely*. eNewsletter 2016; March (<http://www.rcpsych.ac.uk/usefulresources/rcpsychenewsletters/enewsletters2016/march2016/invitation-lecture.aspx>).
- 5 Singh T, Kurki MI, Curtis D, Purcell SM, Crooks L, McRae J, et al. Rare loss-of-function variants in SETD1A are associated with schizophrenia and developmental disorders. *Nat Neurosci* 2016; **19**: 571–7.
- 6 Wang HG, Jeffries JJ, Wang TF. Genetic and developmental perspective of language abnormality in autism and schizophrenia: one disease occurring at different ages in humans? *Neuroscientist* 2016; **22**: 119–31.
- 7 Curtis D. Consideration of plausible genetic architectures for schizophrenia and implications for analytic approaches in the era of next generation sequencing. *Psychiatr Genet* 2013; **23**: 1–10.
- 8 Austin JC, Honer WG. The genomic era and serious mental illness: a potential application for psychiatric genetic counseling. *Psychiatr Serv* 2007; **58**: 254–61.
- 9 Hippman C, Ringrose A, Inglis A, Cheek J, Albert AY, Remick R, et al. A pilot randomized clinical trial evaluating the impact of genetic counseling for serious mental illnesses. *J Clin Psychiatry* 2016; **77**: e190–8.