

What can research do to improve productivity in the NHS?

6 April 2016

Summary report of the 2016 FORUM Annual Lecture, given by Dame Julie Moore, Chief Executive, University Hospitals Birmingham NHS Foundation Trust, and following panel discussion

The Academy of Medical Sciences

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This document reflects the views of participants expressed at the meeting and does not necessarily represent the views of all participants or of the Academy of Medical Sciences. For further information, please contact Liberty Dixon, Policy Officer at the Academy of Medical Sciences (Liberty.Dixon@acmedsc.ac.uk, 020 3141 3222).

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Summary

The UK has an outstanding record in biomedical research, and key to sustaining this performance is close partnership working between academia, industry and the NHS. The sustainability challenge currently faced by the NHS represents a fundamental threat to UK biomedical research, and is further intensified by the rising demands placed on the system through changing population demographics, the cost of new drugs and the shift towards personalised medicine. Therefore the Academy of Medical Sciences hosted its 14th FORUM Annual Lecture on 6 April 2016 to explore the role of academia in helping to address these challenges.

Research and innovation can be both drivers *and* enablers of improvements in healthcare delivery and productivity, and the end-to-end healthcare system needs to evolve in order to embrace these opportunities. This evolution will require streamlining and enhancing of the research and development model, as well as improving integration across the traditional boundaries of care and embedding research and innovation in clinical practice, to provide higher quality care for patients at greater efficiency. Changes such as these in the healthcare model will allow it to better respond to the rapidly increasing and changing demands placed on the NHS, and there is a strong need to engage and encourage healthcare leaders and policymakers to propagate this change.

Technology and digital innovations have the potential to transform the healthcare model, not only in supporting higher quality care but also for improving patient outcomes and efficiencies across the healthcare system. Strong leadership is critical to embedding technology, research and innovation in the NHS culture, as well as leadership at a patient level to empower patients to better manage personal health.

These were the key messages from the discussions at the Academy's 2016 FORUM Annual Lecture on 6 April 2016. The lecture was delivered by Dame Julie Moore, Chief Executive, University Hospitals Birmingham NHS Foundation Trust and supported by a panel of experts.

Overview

The Academy of Medical Sciences hosted its 14th FORUM Annual Lecture on 6 April 2016 at the Wellcome Collection.

The lecture was delivered by **Dame Julie Moore, Chief Executive, University Hospitals Birmingham (UHB) NHS Foundation Trust**. In her keynote talk, Dame Julie highlighted the extensive benefits of fully embedding research and innovation in the NHS, including the potentially transformational role of technology for enhancing patient care and service efficiency, as illustrated through the information system adopted at UHB. She emphasised the critical importance of leadership to achieving this integration and how the advances in technology have empowered patients to become increasingly involved in managing their personal health.

The lecture was followed by a panel discussion chaired by **Professor Sir Robert Lechler FMedSci**. During this session, Dame Julie was joined by four distinguished panel members, who each gave a brief presentation on their perspectives of what research can do to improve productivity in the NHS, before participating in a discussion session with the audience:

- **Dr Annette Doherty OBE**, Senior Vice President of Product Development and Supply, GlaxoSmithKline.
- **Rt Hon Stephen Dorrell**, Chair, NHS Confederation and Senior Adviser, KPMG.
- **Dr Nicolaus Henke**, Director of Healthcare Systems and Services Practice, McKinsey & Company.
- **Professor Sir Simon Wessely FMedSci**, Chair of Psychological Medicine, King's College London and President, Royal College of Psychiatrists.

This discussion further explored some of the themes from Dame Julie's presentation, namely: leadership and delivering quality care; technology as an enabler and driver of change; the evolving healthcare model; and integration of care.

The key points of discussion from both the lecture and subsequent debate are summarised in this meeting report, in line with the four themes outlined above. A recording of this event is also available to view on the Academy's YouTube channel.

This meeting was convened as part of the Academy's FORUM programme, which was established in 2003 to recognise the role of industry in medical research and to catalyse connections across industry, academia and the NHS. We are grateful for the support provided by the members of this programme and are keen to encourage more organisations to take part. If you would like information on becoming a member, please contact FORUM@acmedsci.ac.uk.

Leadership and delivering quality care

'Breaking down the divisions between research and practice to improve productivity in the NHS', keynote lecture by Dame Julie Moore.

Dame Julie began by expressing the importance of stable leadership for the success of a healthcare organisation. The executive team at UHB has many decades of experience in the Trust, and this stability has given the organisation credibility and helped its executive strategy and ethos to filter down to all levels of the Trust. She emphasised the critical role of the management team in enabling healthcare staff to deliver high quality care, and later argued that a '*culture of indecision*' has been created within NHS leadership, acting as a barrier to achieving high quality patient care. Describing her wider experiences – including her work assisting in the leadership of a number of struggling organisations – she felt that the reasons for failure in NHS Trusts were multifarious, but that stable and dedicated leadership models were a crucial step to improvement.

The UHB ten year strategy is centred on four core values: quality of care; research and innovation; education and training; and patient experience. Of these, there is an emphasis on quality of care and this is promoted as part of everyone's remit and day-to-day obligations. It has been important to define quality in clear and practical terms with set standards, namely in delivering care in a precise and timely manner and minimising all errors, where patient outcomes are prioritised but also balanced with efficiency and patient experience. Finally, to achieve these high standards, quality should be measured clearly using objective outcomes to measure quality directly, where possible, rather than indirect proxy measures.

To enable these measurements at UHB, real-time performance monitoring was implemented through a new electronic prescribing, information and communication system (PICS).¹ This provides real-time digital dashboards, which give rapid and quantitative performance feedback to healthcare staff, also flagging any adverse events or consistent errors (e.g. prescribing errors). Performance metrics are integral to the Trust, allowing all staff to be held to account and facilitating greater responsibility and ownership in clinical practice. The feedback from this system has also been central to supporting workforce development, through shaping educational support based on clinical performance. For example, consultants can use these datasets as a basis for tailored clinical training with junior doctors. This live feedback has proved to be more useful and relevant compared to traditional feedback methods, and highly effective in eliciting change in clinical behaviour.

Leadership in healthcare and instigating change

During the panel discussion, there was broad consensus on the central importance of stable leadership to the success of a well-functioning healthcare organisation, and enthusiasm for the learnings that could be taken from the UHB model. The Rt Hon

¹ www.uhb.nhs.uk/birmingham-systems-pics.htm

Stephen Dorrell, Chair, NHS Confederation and Senior Adviser, KPMG, summarised the importance of leadership and direction for providing high quality care, arguing that to develop an innovative, research-based healthcare system with an internationally competitive research function, we must first '*get healthcare delivery right*'.

Concern was expressed about obstruction to service change in the NHS, alongside an instinct to protect traditional systems and ways of working despite overwhelming evidence for the benefits of change. This is demonstrated, for example, by the very slow adoption of Major Trauma Centres, despite clear evidence of their efficiency and benefit to patients.² Stephen Dorrell emphasised the need to address perverse incentives within the current healthcare system, such as the NHS Tariff, and possible vested interests which continue to protect the outdated models of care. He summarised the issues underlying this resistance to change as the three 'Ps': pricing systems (incentives such as the tariff), small-P politics (vested interests) and capital-P Politics (politicians), and suggested that there is an overwhelming need to create willingness for change at *all* levels of the healthcare system.

Tackling the productivity challenge in the NHS

Participants discussed the lack of productivity in the UK – particularly in the healthcare sector – whether primarily due to stress and absenteeism, problems with management or issues around work values and motivation, and the potential to address this through integrating new research and innovations in the healthcare system. Varying and cumulative bureaucratic requirements, and targets from successive governments (all perhaps with good intentions) may have had unintended negative consequences for healthcare productivity. It was also felt that the healthcare sector may have become '*wilfully blind*' to productivity through the employment of unsuitable metrics which do not adequately capture productivity and quality. Dame Julie cautioned that, whilst these measurements were initially helpful for monitoring and guidance, they should now be readdressed, as '*what starts off as a safety net, becomes a cargo net which holds people down*'. There was universal agreement that embedding different leadership models and research and innovation in the NHS are central to improving productivity and building a more sustainable healthcare system for the future, such as through efficiencies enabled through new digital technologies.

² One example of such evidence can be found in the 2010 NHS Clinical Advisory Groups report: <http://www.uhs.nhs.uk/Media/SUHTInternet/Services/Emergencymedicine/Regionalnetworksformajortrauma.pdf>

Technology as an enabler and driver of change

Dame Julie emphasised the potentially revolutionary role of technology and information systems in delivering improvements in care, as demonstrated by PICS at UHB. This system was initially developed as a research project to improve quality of care by reducing drug dispensing errors. However, it also had unforeseen secondary benefits in areas such as efficiency, cost savings, patient experience and research and innovation, and thus has rapidly evolved to become the main patient care system at UHB. PICS is now used to manage almost all inpatient hospital data including drug charts, observations and bed management. The system not only incorporates live feedback 'dashboards' but also acts as a clinical decision support tool which can filter out errors at the point of care. This breadth of functionality is enabled through a dynamic IT infrastructure which allows near real-time operation.

The clear advantages of PICS for efficiency and cost savings are exemplified by the elimination of the expense of maintaining paper records, as well as the reduction of bed management costs, simplification of audit and coding processes and easier quantitative performance benchmarking between Trusts. There are several examples of where the system has enhanced efficiency, such as in the management of MRSA where pathology results now feed directly into the system, leading to automatic prescribing of appropriate treatments. This intervention alone has led to a step change in MRSA management, reducing the average time from pathology result to prescription from 36 hours to 5 seconds. A second example of where there has been both patient and organisational benefit is closer monitoring of sedatives in intensive care. This has not only led to a significant reduction in sedative use – meaning patients were generally less heavily sedated and could recover more quickly – but also a large reduction in spending on sedative drugs. Finally, PICS has had significant benefits for research and innovation within the Trust, allowing patients to be more rapidly shortlisted for clinical trials based on diagnosis and treatment, and easily added to study databases where appropriate.

The compelling benefits of PICS resulted in a culture change in the Trust, such that the system and values that it instigates are now embedded in clinical practice. It has widely improved communication and collaboration between local partners and organisations and, more recently, has helped facilitate rapid clinical trials recruitment nationwide. Dame Julie envisioned that in the future, increasing levels of data will be captured and shared via PICS, and was keen to emphasise that the system should be adapted to respond to clinical demands, with changes driven by feedback from clinical staff, and not imposed in a top-down fashion.

Dame Julie drew attention to the importance of designing electronic patient record (EPR) systems that aim to enhance and support clinical performance, rather than purchasing off-the-shelf systems and forcing staff to adapt their practice to use them. She suggested that PICS has been particularly successful because it was designed from the outset with the aim of enhancing quality of care, and not with another primary incentive such as for audit purposes.

Embedding technology to improve productivity in healthcare

During the panel discussion, Dr Nicolaus Henke, Director of Healthcare Systems and Services Practice, McKinsey & Company, highlighted the opportunity of harnessing big data to transform biomedical research and healthcare. He noted the UK's global reputation for capabilities in computer science, data science, mathematics and medical science, and outlined the need to bring these together to support translational medicine.

There are three major shifts in technology that will impact healthcare delivery: greater capabilities for collection and 'cloud' storage of vast amounts of data; a dramatic increase in computing power accompanied by a reduction in cost; and expansion in connectivity, data sharing, and artificial intelligence which can be used to analyse data. Building on these developments, capabilities in rapidly linking data are important to help understand productivity issues. It was noted that this is already taking place in some sectors such as motor racing, where linking of hard data (e.g. race performance) and soft data (e.g. email communications) has strengthened understanding of team performance and productivity.

Dr Henke described three ways, in particular, that innovations in technology could be used to exploit the wealth of clinical data being generated: firstly, for collecting data from a range of devices such as hospital beds and clinical monitoring devices; secondly, to build so-called 'data lakes' where data can be tagged and continuously mined and linked to reveal useful trends; and finally, through training 'digital translators' who can combine different disciplines across data science and clinical medicine. He stressed that achieving impact from data lakes and advanced computing, however, requires adaptation of core care processes and new capabilities in care management to be built. The 'CRIS' electronic system employed at Maudsley Hospital demonstrated how technology can be used to enhance healthcare delivery, enabling automatic anonymisation and coding of medical data, which has proved key to successful integration of research and clinical work.³

National adoption of IT solutions

The audience discussed the wider challenge of NHS IT deployment, and whether the model from UHB could be adopted on a national scale. There was broad agreement from the panel that decisions on the most appropriate IT systems to embed should be made locally and adoption of these systems, and their associated interoperability, should be made a requirement with overarching national standards and regulations. Trusts could be supported to purchase or develop those systems that prioritise quality of care rather than being incentivised by efficiency savings.

One participant noted that there is a need to work closely with regulatory authorities on data governance. This is particularly important given the potential issues around data security associated with the increased opportunities for data sharing and linkage, which could lead regulatory authorities to become more risk averse and ultimately limit the benefits of these systems. It was emphasised that there is an effective data governance system already in place in the UK, but that awareness of the details of data legislation is generally low. Therefore whilst the necessary legal frameworks exist to support data use, there are misconceptions around what is legal and illegal in this domain.

³ Further information about the CRIS (Clinical Record Interactive Search) system can be found here: www.slam.nhs.uk/research/cris

The evolving healthcare model

Dame Julie cautioned that there are unprecedented pressures on the UK healthcare system. Challenges include the changing demography and increasingly elderly population, as well as changing patterns of illness and increasing prevalence of chronic diseases and complex co-morbidities.⁴ These challenges are compounded by rising healthcare expenditure, although she argued that these new issues are likely also due, in part, to successes in overcoming past problems. With this raft of potential challenges, Dame Julie highlighted the opportunity to use research and innovation to find novel solutions, quoting the 'Silicon Valley' mantra of '*when times are hard, invest more in research and development*'. Despite the significant advantage in the UK for healthcare research that is offered by the NHS, further work is needed to maintain the UK's reputation as a hub for biomedical research, particularly clinical trials. Progress has been made, facilitated by national initiatives such as the National Institute for Health Research and the NHS Innovation, Health and Wealth plan, but there is still a long way to go.^{5,6}

Dame Julie argued that research and innovation should lie at the core of every Trust's strategy, providing measureable benefits for patients and the NHS. Innovation has efficiency gains for the Trust, as well as other potential financial benefits from developing new technology. Additionally, a strong reputation for research can in turn facilitate recruitment of high calibre staff. A common theme was noted in struggling, smaller Trusts of difficulty attracting high quality staff away from larger, city-based Trusts that are highly research active. Finally, a research active healthcare organisation often has wider benefits for local economies including increased inward investment, a highly educated workforce and a generally healthier population. Therefore to achieve success at UHB, research and innovation was prioritised as one of four key areas of focus in the ten year strategy. Similarly to quality of care, research and innovation are now *everyone's* responsibility and integral to the day-to-day business of the organisation.

However, there are challenges remaining that need to be overcome to fully embed research and innovation in the NHS at a national level. With so many competing interests in the system, it should be questioned whether research and innovation is sufficiently prioritised in the NHS. Dame Julie suggested that there is traditionally a belief in some areas of management that research displaces core NHS activity at considerable expense, and there is often low awareness of the potential benefits of research and sometimes a view that it is only for clinician benefit rather than the wider organisation. Research and innovation may even be considered an obstruction by some commissioners.

⁴ The report of the Academy's 2015 roundtable meeting on '*Multiple morbidities as a global health challenge*' can be found here: www.acmedsci.ac.uk/viewFile/567965102e84a.pdf

⁵ Department of Health (2011). *Innovation Health and Wealth: Accelerating Adoption and Diffusion in the NHS*.

http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/documents/digitalasset/dh_134597.pdf

⁶ The 2014 FORUM Workshop on 'Open Innovation in the NHS' explored ways of embedding innovation in the NHS. www.acmedsci.ac.uk/viewFile/53eb4d80e4aed.pdf

In addition, there may be too many different initiatives for stimulating innovation in the health sector rather than establishing this as part of day-to-day practice. Whilst some policies support healthcare research, sometimes other conflicting Government priorities might actually be counterproductive (e.g. visa restrictions for international scientists and clinicians). Finally, there is limited funding for clinical research in the NHS, and it was suggested that the healthcare sector can sometimes have a negative view towards working with industry, which limits its important role as a partner.

In conclusion, Dame Julie emphasised that research and innovation is essential to addressing future healthcare challenges, and a comprehensive cross-governmental strategy is needed in order to drive cost-effective, patient-centric healthcare improvements.⁷

New models for medicines development

In her presentation, Dr Annette Doherty OBE, Senior Vice President of Product Development and Supply, GlaxoSmithKline, highlighted the role of drug discovery and development in supporting a sustainable healthcare system. She outlined four important aspects of drug discovery and development which are evolving to contribute towards this sustainability:

1. The current focus of industry to improve quality of, and confidence in, drug target selection. She suggested that improving confidence in the human biological and clinical relevance of targets through increased use of genetic data could lower attrition and ultimately lead to lowering the costs of drug development. If all drug targets were backed by human genetic data, it could lead to a 25% decrease in the cost of drug development.
2. More efficient selection of candidate molecules to take forward into clinical studies through overcoming past challenges – GSK has been able to increase the proportion of candidate molecules which made it into a clinical study from one third to over 60%, aiming to reach over 90% and thus moving towards a less wasteful and increasingly cost-effective model.
3. Improvements in demonstrating 'proof of concept', where more robust biomarkers and other measures are used to improve the quality of clinical studies and increase the probability of success.
4. Better understanding and earlier development of the 'value proposition' of a medicine through studies which generate effectiveness data in a population intended to represent everyday clinical practice. This allows a more effective assessment of patient outcomes and compliance. Such an approach is exemplified by the Salford Lung Study, where GSK has partnered with the NHS and University of Manchester, which also illustrates the importance of increasing collaboration between industry and the NHS.⁸

The need for this evolution of the drug development model was also voiced by other participants who emphasised the importance of establishing a new, more affordable

⁷ The report of the 2015 FORUM Annual Lecture by George Freeman MP, entitled 'A vision for the UK life sciences sector' explored the need to increase innovation in the NHS and harness this more widely to meet new healthcare challenges: www.acmedsci.ac.uk/viewFile/556c2f27c15af.pdf

⁸ www.gsk.com/en-gb/behind-the-science/patients-and-consumers/clinical-trials-meet-the-real-world

model that supports better outcomes at lower cost. As this model has changed, Dr Doherty noted that drug target selection is increasingly driven by clinical need, ability to differentiate from standard of care and benefit and value for patients.

In addition to streamlining of the drug development process, there are some additional trends in research and development. For example, greater patient involvement in drug development is important in assessing and contributing to quality of life and treatment needs. Industry is also increasing investment in new manufacturing technologies that are more efficient and deliver high quality medicines at lower cost, which will help to increase access to new innovative interventions. To build on this sustainable model, Sir Simon also highlighted the scope for further research into repurposing established drugs for new indications, such as the potential role of anti-inflammatories in psychiatry.

Dr Doherty echoed Dame Julie's message that these various innovations will require a culture of research and innovation to be embedded in the NHS, alongside improvements in use of technology and greater collaboration between industry, academia and the NHS to ensure a sustainable healthcare model for the future. The importance of this shift in the NHS was further highlighted by Stephen Dorrell, who underlined the need for it to embrace change more easily in order to realise the benefits arising from research and technology. The demands on the healthcare system are changing, and there is an opportunity to respond to these new demands through utilising novel digital and biomedical technologies.

Adopting a stratified approach to healthcare

There is increasing investment in precision medicines for stratified patient populations. This enables targeting of treatments to the patients most likely to respond, with potential benefits such as more efficient use of expensive, effective treatments by pre-screening to identify responders. Dr Doherty agreed that ineffective treatment of non-responders is highly inefficient and that it will become increasingly commonplace to use both genetic screening and precision drug development to target specific groups more likely to respond to treatment. The Academy explored the potential of stratified medicine and the benefits of more targeted interventions in its 2013 report, and has since worked to identify ways of overcoming barriers to implementation through a 2015 symposium and joint roundtables with NHS England.^{9,10,11,12}

When stratifying patient populations, the panel considered the possibility that some diseases that are currently considered common may actually comprise many different rare diseases. If so, this would reduce the market size for some interventions with a potentially negative economic impact for industry. However, it was felt that the healthcare sector would adapt to such a situation as stratified medicine should enhance patient

⁹ Academy of Medical Sciences (2013). *Realising the potential of stratified medicine*. www.acmedsci.ac.uk/viewFile/51e915f9f09fb.pdf

¹⁰ Academy of Medical Sciences (2013). *Stratified, personalised or P4 medicine*. www.acmedsci.ac.uk/more/events/stratified-personalised-or-p4-medicine-a-new-direction/

¹¹ Academy of Medical Sciences (2015) *Exemplar clinical pathways for a stratified approach to diabetes*. <http://www.acmedsci.ac.uk/viewFile/57cfd3c90098c.pdf>

¹² Academy of Medical Sciences (2016) *Exemplar clinical pathways for a stratified approach to cardiovascular disease*. <http://www.acmedsci.ac.uk/viewFile/57cfd5170e1de.pdf>

outcomes and create a more profitable model with increased medicines effectiveness and reduced waste. For this model to work, better access to innovative, and possibly even curative, medicines will be required alongside reducing the cost of drug development.

The challenge of reproducibility

Finally, the panel discussion briefly touched upon the reproducibility of scientific and clinical findings. One delegate expressed concern that publication bias (caused by pressure to publish positive findings and not negative findings) and other biases, both conscious and unconscious, have led to a body of published work that is not reproducible. Whilst there was agreement that these biases are an issue and there remains a strong need to address this area, there was optimism that there have been significant steps towards improving reproducibility in medical science through improved guidelines, better engagement of journals and increased requirements for authors to share data.¹³ Dr Henke emphasised that a move towards acquiring data at the population level, combined with improved data management and connectivity, should help to drive this change. A culture of data sharing from both academia and industry will lead to results that can be reproduced and validated much more easily and quickly.

¹³ The Academy's 2015 report on '*Reproducibility and reliability of biomedical research: improving research practice*' explored many of these challenges:
www.acmedsci.ac.uk/viewFile/56531416e2949.pdf

Integrating healthcare: disrupting the traditional boundaries of care

Over the course of the meeting, participants discussed the need to reinvent three main boundaries (or interfaces) found within the traditional healthcare model: the patient-healthcare interface; the mental-physical health interface; and the primary-secondary care interface (and other levels of care).

Dame Julie described the ways in which the PICS system at UHB is evolving the patient-healthcare interface with a shift from the traditional system of clinician-led care, to a model of increased patient involvement in the management of personal health. Specifically, UHB is currently piloting a system at Queen Elizabeth Hospital Birmingham called 'MyHealth@QEHB', which allows patients to access their medical records online from home.¹⁴ This enables patients, such as those with chronic diseases, to monitor their results and input measurements that can be viewed in real-time, thus empowering patients to better manage their own health.

The system has facilitated a partnership approach to healthcare between patients and clinicians. This has not only improved patient care and outcomes, but has also had efficiency benefits for the Trust, with a lower volume of phone calls to reception and consultants, and reduced numbers of required appointments. The system has received highly positive feedback and due to its success has already expanded from 5000 to 25,000 patient users.

Furthermore, if patients choose to, they can share this electronic information with their GP, allowing patient ownership over medical information and potential integration of secondary and primary care data. Patients can also use the system to link up with other 'expert' patient communities which have experience of the same medical condition, creating a better patient support network. In general, Dame Julie highlighted the need to better join up primary and secondary care, and pointed out that confining certain conditions to different tiers of care is no longer an appropriate model for current and future healthcare demands.

Evolving the patient-healthcare interface

During wider discourse on the patient-healthcare interface, delegates explored the relationship between patients and personal data. With the increasing use of genetic data and other personal health information such as fitness monitoring and biometrics, there will be a challenge with the traditional model where the NHS 'owns' patient data. It was agreed that there are legitimate concerns about data privacy and security that must be addressed, but these must be balanced in a proportionate manner alongside the opportunities for innovation in life sciences research, to prevent any unnecessary limitations on data sharing.¹⁵

¹⁴ Further information about MyHealth@QEHB can be found at www.uhb.nhs.uk/myhealth-at-QEHB.htm

¹⁵ Academy of Medical Sciences (2014). *Data in safe havens*. www.acmedsci.ac.uk/viewFile/53eb4d247ef80.pdf

Integrating mental and physical healthcare

Professor Sir Simon Wessely FMedSci, Chair of Psychological Medicine, King's College London and President, Royal College of Psychiatrists, highlighted the importance of integration across the mental-physical healthcare boundary, and the need to overcome the perception that the 'mind' and 'body' are independent from one another (otherwise known as Cartesian dualism). He described how the clinical and academic psychiatry teams at the Maudsley psychiatric hospital and King's College general hospital have been highly successful in improving the recognition and treatment of mental illness in patients with physical conditions. For example, psychiatric intervention in patients with diabetes has led to improved mental *and* physical health. Despite the clear benefits of better integration, he argued that under-diagnosis and under-treatment of physical illness in mental health patients is a significant concern in the NHS, and there still remains a need to better integrate the two.

Integrating all levels of care

There was a strong consensus on the need for integration across all levels of care, and Stephen Dorrell championed the importance of integration at the community-hospital interface. He emphasised that the NHS needs to adapt to manage the increasing burden of lifelong illness, moving away from the traditional system largely designed for treating acute disease. This requires better use of community based services for chronic care so that hospitals can focus more effectively on acute and specialist care, as well as integration of primary, secondary and tertiary services. One participant suggested that the Alzira model – which integrates primary and secondary care providers and incentives, as well as other aspects such as an interoperable IT system for all services – could be considered for the UK.¹⁶

Professor Wessely drew attention to the successes of shifting psychiatric care from the hospital into the community so that many patients with mental illness, who historically would have been inpatients, are now living and receiving treatment in the community. However, integration of primary and secondary care here is limited and has proved significantly more difficult due to the challenges faced in integrating the two very different models of care provision which have developed, for example with the different IT structures. Some progress has been made in the Maudsley hospital where the secondary care IT system has been successfully linked to the primary care database as well as educational and criminal justice databases for research purposes, however, there is much progress still needed in this area. Concern was also expressed around the low numbers of research-active GPs and a lack of academic training in the next generation of GPs.

It was highlighted that the concept of primary care should not be simply confined to GP services, but must also involve other essential community health and social services such as pharmacy and housing management, although there was some measure of caution from a few delegates around over-complexity of very wide ranging integration. Stephen Dorrell argued that the care model must be constructed around the needs of the

¹⁶ NHS Confederation (2011). *The search for low-cost integrated healthcare: The Alzira model – from the region of Valencia*. http://www.nhsconfed.org/~media/Confederation/Files/Publications/Documents/Integrated_healthcare_141211.pdf

population, and so in future, primary care should focus as much on prevention as treatment, thus better incorporating the breadth of primary and community care services to address this demand. The newly established Sustainability and Transformation Plans offer the potential to better link up these services through engaging both local Government and social care.¹⁷ Stephen Dorrell challenged conventional attitudes to public services, arguing that we should not just aim to provide better public services, but rather view these services as a support system for a broader objective of creating 'liveable cities'. He described 'liveable cities' as a vision of a more holistic approach to lifestyle which promotes healthy, fulfilling lifestyles with quality care available when required, but avoiding unnecessary interfaces with the health and social care system wherever possible.

Building an integrated model

Dr Henke suggested that, from his experience, the key feature of successfully integrated care systems is '*deep integration*' by providers, and aspects such as governance-level integration and financial incentives are often insufficient to enable the level of integration required for a fully functioning linked system. He suggested three ways in which this system can be achieved:

1. A comprehensive top-to-bottom strategy with integration across all levels of care, which is effective but slow to implement.
2. A so-called 'carve-out' strategy, where care is efficiently integrated for very specific groups of patients.
3. An 'accountable care' model where incentives for collaboration and integration are created at the top to encourage providers to integrate lower down, which can be faster than the comprehensive model but with less 'depth' of integration.

¹⁷ <https://www.england.nhs.uk/ourwork/futurenhs/deliver-forward-view/stp/>

Conclusions

In his summary, Sir Robert outlined the opportunity to overcome the challenges faced in the healthcare system through applying some of the achievable solutions discussed over the course of the day. He noted four key areas which are important in helping to address these challenges:

1. High quality leadership and management are essential for propagating change, as demonstrated by Dame Julie herself at UHB.
2. The potential to create a more sustainable and affordable drug development model through increasingly intelligent drug design. This will be further supported by facilitating a partnership approach between the different stakeholders involved.
3. With the NHS facing '*a change in needs with an unchanged model*', the healthcare model will thus have to adapt to meet new demands.
4. The need to overcome 'Cartesian dualism' of treating mental and physical healthcare separately, and to better integrate these for a more holistic approach to healthcare.

Appendix I – Programme

Wednesday 6 April 2016

Wellcome Collection, 183 Euston Road, London, NW1 2BE

13:45 – 14:15	Registration and refreshments
14:15 – 14:20	Welcome and introduction Professor Sir Robert Lechler PMedSci, President, Academy of Medical Sciences
14:20 – 15:00	Keynote speech Dame Julie Moore, Chief Executive, University Hospitals Birmingham NHS Foundation Trust
15:00 – 15:30	Tea and coffee
15:30 – 17:10	Panel discussion session with Q&A: What can research do to improve productivity in the NHS? Chaired by Professor Sir Robert Lechler PMedSci Panel participants: <ul style="list-style-type: none"> • Dr Annette Doherty OBE, Senior Vice President of Product Development and Supply, GlaxoSmithKline • Rt Hon Stephen Dorrell, Chair, NHS Confederation and Senior Adviser, KPMG • Dr Nicolaus Henke, Director of Healthcare Systems and Services Practice, McKinsey & Company • Dame Julie Moore, Chief Executive, University Hospitals Birmingham NHS Foundation Trust • Professor Sir Simon Wessely FMedSci, Chair of Psychological Medicine, King's College London and President, Royal College of Psychiatrists
17:10 – 17:20	Closing comments from the President Professor Sir Robert Lechler PMedSci, President, Academy of Medical Sciences
17:20 – 18:30	Drinks reception

Appendix II – Delegates

Dr Christiane Abouzeid, Head of Regulatory Affairs, BioIndustry Association

Professor David Adams FMedSci, Pro-Vice Chancellor and Head of College of Medical and Dental Sciences, University of Birmingham

Dr Dipti Amin, Senior Vice President and Chief Compliance Officer, Quintiles

Mr Christopher Annus, Policy Manager, British Heart Foundation

Professor Richard Barker, Director, Centre for the Advancement of Sustainable Medical Innovation

Mr Tom Beardmore, Fundraising Officer, Academy of Medical Sciences

Mrs Colby Benari, Operations Manager, University College London

Ms Carol Bewick, Director of External Affairs, Fight for Sight

Dr Edward Blandford, Policy Adviser, Cancer Research UK

Dr Ben Bleasdale, Policy Officer, Academy of Medical Sciences

Ms Elizabeth Bohm, Senior Policy Adviser, Royal Society

Miss Jennifer Boon, Policy Manager, British Heart Foundation

Dr Sarion Bowers, Research Policy Adviser, Wellcome Trust Sanger Institute

Dr Keith Bragman, Immediate Past President, Faculty of Pharmaceutical Medicine

Sir Alasdair Breckenridge CBE FRSE FMedSci, Emeritus Professor of Clinical Pharmacology, University of Liverpool

Professor Peter Brocklehurst FMedSci, Director, Institute for Women's Health, University College London

Dr Rachel Brown, Policy Officer, Academy of Medical Sciences

Dr Caroline Canavan, Medical Advisor, GlaxoSmithKline

Dr Lina Carmona, Clinical Research Fellow, University College London

Mr Ross Carroll, Public Affairs Director, UCB

Dr Hollie Chandler, Senior Policy Adviser, Cancer Research UK

Dr Susannah Cleary, Account Manager, Incisive Health

Sir David Cooksey GBE FMedSci, Chair, The Frances Crick Institute

Professor Dame Nicky Cullum DBE FMedSci, Professor of Nursing, University of Manchester

Professor Adrian Davis, Director, AD Cave Solutions

Mr Giorgio de Faveri, Senior Press Officer, Academy of Medical Sciences

Dr Annette Doherty OBE, Senior Vice President of Product Development and Supply, GlaxoSmithKline

Rt Hon Stephen Dorrell, Chair, NHS Confederation and Senior Adviser, KPMG

Mr James Duffy, PhD student, University of Oxford

Sir Christopher Edwards FRSE FMedSci, Senior Research Fellow, Imperial College London

Dr Mark Edwards, R&D Director, Ethical Medicines Industry Group

Professor Timothy Evans FMedSci, National Director of Clinical Productivity, Department of Health

Dr Robin Fears, Programme Director, European Academies Science Advisory Council

Miss Siobhan Fitzpatrick, Policy Adviser, Medical Schools Council

Miss Amy Fleming, Public Affairs Officer, Association of Medical Research Charities

Professor Gary Ford CBE FMedSci, Chief Executive Officer, Oxford Academic Health

Science Network

Dr Norman Freshney, Strategy Consultant, Freshney Consulting

Ms Grace Gottlieb, Policy Officer, Royal College of Surgeons

Dr Jeremy Haigh, Chairman, Cogent Skills

Miss Suzanna Haller, Graduate, Wellcome Trust

Ms Christine Hancock, Director, C3 Collaborating for Health

Dr Shahid Hanif, Head of Health Data & Outcomes, Association of the British Pharmaceutical Industry

Professor Bernie Hannigan, Director - Research, Translation & Innovation, Public Health England

Dr Nicolaus Henke, Director of Healthcare Systems and Services Practice, McKinsey & Company

Dr Henrietta Hughes, Medical Director for North Central and East London, NHS England

Sir Miles Irving FMedSci, Emeritus Professor of Surgery, University of Manchester

Ms Wendy Jarrett, Chief Executive Officer, Understanding Animal Research

Dr David Jefferys, Senior Vice President – Global Regulatory, Government Relations, Public Affairs and European Safety, Eisai

Professor Derek Jewell FMedSci, Professor Emeritus of Gastroenterology, University of Oxford

Professor Peter Johnson FMedSci, Professor of Medical Oncology, University of Southampton

Professor Martin Johnson FRS FMedSci, Professor of Reproductive Sciences, University of Cambridge

Professor Jonathan Kay, Professor of Health Informatics, City University London

Dr Hannah Kerr, Head of R&D Policy and Scientific Affairs, GlaxoSmithKline

Professor Michael Kopelman FMedSci, Emeritus Professor of Neuropsychiatry, King's College London

Ms Debra Ladd, Director of Marketing and Communications, Fight for Sight

Professor Sir Robert Lechler PMedSci (chair), President, Academy of Medical Sciences

Dr Louise Leong, Director Science Relations, AstraZeneca

Mr Charles Lowe, Past President, Telemedicine & eHealth Section Council, Royal Society of Medicine

Ms Catherine Luckin, Head of International, Academy of Medical Sciences

Dr Rebecca Lumsden, Head of Science Policy, Association of the British Pharmaceutical Industry

Professor Neil Marlow FMedSci, Professor of Neonatal Medicine, University College London

Ms Katherine Mayes, Policy Officer, Association of Medical Research Charities

Dr Rachel Macdonald, Head of Grants and Programmes, Academy of Medical Sciences

Mrs Jennifer Mitchell, Head of Policy, British Heart Foundation

Mr Oliver Moody, Science Correspondent, Times

Dame Julie Moore, Chief Executive, University Hospitals Birmingham NHS Foundation Trust

Mrs Erica Moyes, Research Engagement Manager, Brain Tumour Charity

Dr Helen Munn, Executive Director, Academy of Medical Sciences

Dr Ian Newington, Senior Programme Manager, National Institute for Health Research
Ms Sarah Norcross, Director, Progress Educational Trust
Dr Liam O'Toole, Chief Executive Officer, Arthritis Research UK
Dr Christopher Parker CBE, Managing Director, West Midlands Academic Health Science Network
Sir John Pattison FMedSci, Member, Longevity Science Panel
Mr Timothy Payne, Osteopath
Professor Jeremy Pearson FMedSci, Associate Medical Director (Research) and Emeritus Professor of Vascular Biology, King's College London
Mr Andrew Pountain, Policy Intern, Academy of Medical Sciences
Ms Katherine Powell, Policy Officer, Wellcome Trust
Ms Daniela Puska, Operations consultant, CoVi
Dr Rachel Quinn, Director of Medical Science Policy, Academy of Medical Sciences
Dr Habib Rahman, Cardiology Specialist Registrar, NHS
Dr Frances Rawle, Head of Corporate Governance and Policy, Medical Research Council
Mr Adam Roberts, Head of Economics, Health Foundation
Ms Holly Rogers, Communications Officer, Academy of Medical Sciences
Professor Caroline Savage FMedSci, Vice President and Head, Experimental Medicine Unit, GlaxoSmithKline
Miss Philippa Shelton, Policy Advisor, Royal Academy of Engineering
Ms Kruti Shrotri, Policy Officer, Medical Schools Council
Miss Amy Slater, Intern, Association of Medical Research Charities
Mr Paul Stein, Director of Fundraising, MQ: Transforming mental health
Mr Peter Storey, Director of Communications, Kidney Research UK
Professor John Strang FMedSci, Professor of Addictions and Head of Addictions Department, King's College London
Mr Andrew Taylor, Advisor – Public Policy, Association of British Healthcare Industries
Mrs Laura Thomas, Head of Policy, British Heart Foundation
Miss Joanna Walsh, Osteopath
Professor Peter Weissberg FMedSci, Medical Director, British Heart Foundation
Professor Sir Simon Wessely FMedSci, Chair of Psychological Medicine, King's College London and President, Royal College of Psychiatrists
Dr John Williams, Former Interim Executive Director, Academy of Medical Sciences
Professor Roger Williams CBE FMedSci, Director, Institute of Hepatology, University College London
Dr Janet Wisely, Chief Executive, Health Research Authority
Dr Louise Wood, Deputy director and head of research infrastructure and growth, Department of Health
Sir Kent Woods FMedSci, Chair of the Management Board, European Medicines Agency
Miss Louise Wren, Policy Adviser, Wellcome Trust
Dr Hakim Yadi, Chief Executive, Northern Health Science Alliance

Secretariat

Ms Liberty Dixon, Policy Officer, Academy of Medical Sciences
Dr Thomas Hall, Policy Intern, Academy of Medical Sciences



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