Mental Health

SBRI Healthcare NHS England competition for development contracts

October 2017

Summary

A new national Small Business Research Initiative (SBRI) Healthcare competition is being launched by NHS England in partnership with the Academic Health Science Networks (AHSN's) to find innovative new products and services. The projects will be selected primarily on their potential value to the health service and on the improved outcomes delivered for patients.

The competition is open to single companies or organisations from the private, public and third sectors, including charities. The competition will run in two phases:

- Phase 1 is intended to show the technical feasibility of the proposed concept. The development contracts placed will be for a maximum of 6 months and up to £100,000 (inc. VAT) per project
- Phase 2 contracts are intended to develop and evaluate prototypes or demonstration units from the more promising technologies in Phase 1. Only those projects that have completed Phase 1 successfully will be eligible for Phase 2.

Developments will be 100% funded and suppliers for each project will be selected by an open competition process and retain the intellectual property rights (IPR) generated from the project, with certain rights of use retained by the NHS.

The competition opens on Wednesday 18th October 2017. The deadline for applications is 1200hrs on Wednesday 29th November 2017.

Introduction & Background

The Five Year Forward View for Mental Health[1] reported that mental health problems account for a quarter of all ill health in the UK; that one in four adults will experience mental health problems each year and that mental illness is the UK's single largest cause of disability. Furthermore, the report estimates that mental health problems have an economic and social cost of £105 billion a year – approximately the cost of the entire NHS.

Physical health problems significantly increase the risk of poor mental health, and vice versa. Nearly a third of all people with a long-term physical health condition also have a mental health problem, typically depression or anxiety[2]. Mental health problems can also have a significant effect on physical illness, affecting both outcomes and treatment costs. Furthermore, the life expectancy of people with severe mental illness SMI, such as schizophrenia or bipolar affective disorder, is lower by an average of 15–20 years compared to the general population due to preventable physical illness.[3] The total effect of poor mental health on physical illnesses has been estimated to cost the NHS at least £8 billion a year.[4]

[1] The Five Year Forward View For Mental Health, Feb 2016. https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf

[2] The King's Fund – Mental Health - The connection between mental and physical health. Accessed Sept 2017. https://www.kingsfund.org.uk/projects/time-think-differently/trends-disease-and-disability-mental-physical-health

[3] Improving the physical health of adults with severe mental illness: essential actions. Royal College of Psychiatrists. Occasional Paper 100 October 2016. https://www.rcn.org.uk/-/media/royal-college-of-nursing/documents/news/2016/physical-and-mental-health-report-25-oct-2016.pdf

[4] Naylor C et al., (2012). Long-term conditions and mental health The cost of co-morbidities. The King's Fund and

The majority of mental health problems in adults (excluding dementia) start early in life (half before the age of 15 years)[5], prompting the need for interventions in childhood to avert the development of long-term problems.

This year's follow up to the Five Year Forward View for Mental Health report[6] observed that 120,000 more people are now receiving specialist mental health treatment compared to 3 years ago, including over 20,000 more children and young people.

However, there is continued pressure on Children and Young People's Mental Health Services, with rising demand and variable waiting times. This adds to the challenges of ensuring an increase in access to Mental Health Services for children and young people.

90% of adults with mental health problems are supported through primary care and access to psychological services have been expanded following the introduction of the IAPT programme (Improving Access to Psychological Therapies). In 2013-14, 947,640 people were referred into IAPT services for common mental disorders (CMD), such as depression and anxiety disorders[7]. However, there can be significant variety in waiting times, with the best performing areas reporting a waiting time of just over 6 days, while the worst performing areas have reported waiting times of 124 days (2014-15)[8]. Additionally, there are variations in the uptake and on-going engagement with mental health services among sections of society, *e.g*. black, Asian and minority ethic (BAME) communities are more likely to disengage from mental health services, leading to a potential deterioration in their mental health.[9]

Furthermore, there are challenges in terms of delivering the full package of NICE recommended care. A recent survey from CQC suggested that fewer than half the people on the secondary care caseload reported having treatment or therapies for their mental health needs that were not related to medication.

Centre for Mental Health. https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/long-term-conditions-mental-health-cost-comorbidities-naylor-feb12.pdf

[5] Wilkes et al., Mental health research priorities for Europe, *Lancet Psychiatry* 2015; 2: 1036–42 http://dx.doi.org/10.1016/S2215-0366(15)00332-6

[6] Five Year Forward View For Mental Health: One Year On, Feb 2017 https://www.england.nhs.uk/wp-content/uploads/2017/03/fyfv-mh-one-year-on.pdf

[7] NHS Digital, Mental Health. Accessed Sept 2017 http://content.digital.nhs.uk/mentalhealth

[8] The Five Year Forward View For Mental Health, Feb 2016. https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf

[9] Mental Health Foundation, Black, Asian and minority ethnic (BAME) communities. Accessed Oct 2017 https://www.mentalhealth.org.uk/a-to-z/b/black-asian-and-minority-ethnic-bame-communities

Whilst there has been progress with patient numbers and waiting times in mental health, it has been estimated that by 2030, there could be an additional two million adults in the UK with mental health problems compared to 2013[10]. Since 2000, overall rates of CMD have increased steadily in women (one in five), although prevalence has remained largely stable in men (one in eight)[11]. Additionally, there are challenges in terms of delivering the full package of NICE recommended care. A recent survey from CQC suggested that fewer than half the people on the secondary care caseload reported having treatment or therapies for their mental health needs that were not related to medication.

Self-harming report rates have increased in both men and women, across all ages, since 2007. In 2014, one in five women aged 16 to 24 reported having self-harmed at some point in her life when asked face-to-face (although one in four reported this in a written survey). The majority of the young people who reported self-harming did not seek professional help afterwards[8].

In England and Wales, suicide is the top cause of death for women and men aged 20–34 years and for men aged 35–49 years[12]. Men are the most at-risk group and, compared to women, are three times more likely to die by suicide.[13]

The Categories

Under the overall theme of 'Mental Health', three categories have been identified via consultation with clinicians and other stakeholders working in mental health. These are outlined in detail below.

Applicants are expected to respond to one of the three categories, whilst being mindful of the broader system.

Companies applying are also asked to consider:

- How will the proposed solution impact on the clinical care pathway, and how will the care pathway need to be changed in order to deliver system-wide benefits?
- How will you ensure that the technology will be acceptable to patients (and their families) and to healthcare workers? How could these groups be involved in the development of the innovation?
- How will you ensure that the technology is affordable to the NHS both immediately and throughout the life of the product? What health economics evidence will the NHS require before the technology can be adopted?

[10] Mental Health Foundation - The future of mental health services, Sept 2013
https://www.mentalhealth.org.uk/publications/starting-today-future-of-mental-health-services

[11] Adult Psychiatric Morbidity Survey: Survey of Mental Health and Wellbeing, England, 2014
http://content.digital.nhs.uk/catalogue/PUB21748

[12] Wilkes et al., Mental health research priorities for Europe, *Lancet Psychiatry* 2015; 2: 1036–42
http://dx.doi.org/10.1016/S2215-0366(15)00332-6

[13] Dept. of Health. Preventing suicide in England: Third progress report of the cross-government outcomes strategy to save lives. Jan 2017
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/582117/Suicide_report_2016_A.pdf

Category 1: Children and Young People's Mental Health

Background

Many mental health conditions in adulthood show their first signs in childhood which, if left untreated, can result in long term mental health issues that require permanent treatment.

According to the Five Year Forward View for Mental Health[8], half of all mental health problems have been diagnosed by the age of 14, rising to 75% by the age of 24. One in ten children aged 5-16 has a diagnosable problem such as a conduct disorder (6%), anxiety disorder (3%), Attention Deficit Disorder (ADHD – 2%) or depression (2%). Children with conduct disorders (disobedient, disruptive and aggressive behavior) are twice as likely to leave school with no qualifications, three times more likely to become a teenage parent, four times more likely to become dependent on drugs and twenty times more likely to end up in prison. The results have been seen in a significant rise in the number of children and young people presenting with mental health needs and with increasing pressures on services, not all are able to access interventions, particularly in a timely manner.

The Future in Mind report[14], published in 2014 sets out the UK government's vision for how service provision for children and young people's mental health can be improved. As services evolve, research activity in this area increases and our understanding grows, so does the demand on NHS services. We need innovation to help alleviate some of this pressure whilst allowing us to help our children, adolescents and young adults.

Challenges

Consultation with people working in and around children and adolescents, from NHS staff to teachers and strategy makers has identified several challenges within this sub-theme.

Often mental health issues in children are not identified early enough, some young people may be reluctant to report difficulties or access services for fear of stigma. Late intervention may contribute to worsening of symptoms, poorer response to treatment or more long term mental health needs. How can we identify mental health issues in children and young people as early as possible, so that effective, and even preventative, measures can be taken?

Young people with mental health problems often experience issues at school. There is a greater need for technologies that enable affected children to perform well at school, stay in education and achieve their potential.

[14] Department of Health, Future in Mind, 2014
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414024/Childrens_Mental_Health.pdf

Children and young people with a physical health condition are two to six times more likely to have mental health needs than those without. There are particular links between physical long-term conditions in children, for example diabetes, asthma and epilepsy with anxiety and depressive disorders. Further understanding is needed in these areas so that we are able to identify vulnerable children earlier based on their existing physical conditions.

Accessing mental health support can be challenging for young people, the NHS is keen to consider other ways of offering our young people accessible support, through the use of education, technology, as-well as through traditional services.

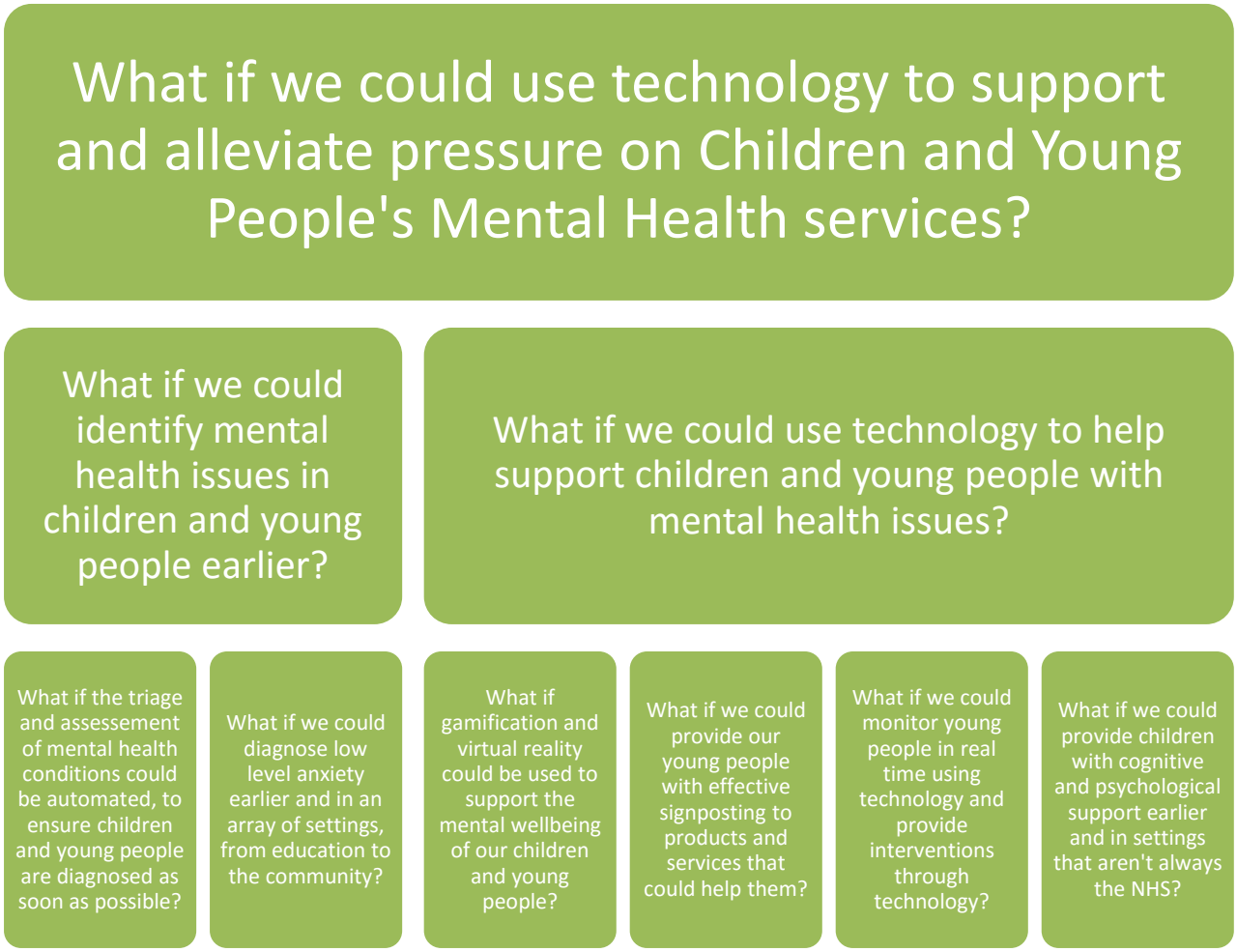
There are lots of potential technologies available (Virtual Reality, Augmented Reality, Artificial Intelligence and Machine Learning) that have the capability to help children and young people, but these are not integrated into existing services, either because we don't understand how they can be used effectively, or because the technologies don't integrate with existing NHS systems and software. How can we achieve better uptake of new technology platforms to help our young people?

Transition Periods

For eating disorders services for young people in the 16-25-year group in particular, the transition period is recognised as being of risk. Having the capacity to track service users and young people in their recovery accurately and in real time would assist greatly in reducing the incidence of readmission for this group.

We do not need more apps for general symptom monitoring and self-management. What is lacking are new interventions and transformative technologies that can augment existing treatments by improving their efficacy, engagement and delivery. The desire is to ensure that more young people have access to the evidence-based treatments that will improve their lives.

The following "what if's" are some examples of scenarios that have the potential to help meet unmet needs for our young people with mental health challenges. The statements are intended as examples only.



Category 2: Depression, self-harm and suicide

Background

People from all walks of life can be affected by depression, self-harm and suicide, and at any point in their lives; whether new mothers, children, teenagers, students, adults or older people. Mental Health charity, Mind, reported in April 2017, that while the number of people experiencing mental ill health has not changed significantly in recent years, the number who self-harm, or have suicidal thoughts, has increased.

Depression is now recognized as a leading cause of global disability.[15] Beyond the personal suffering, depression is associated with underemployment, poor physical health, impaired social functioning and its most severe form, suicide.[16] The condition therefore carries high cost, for the individual, their family and society.

[15] World Health Organization. *Depression and other common mental disorders: global health estimates.* Geneva*: World Health Organization*, 2017

[16] Hawton K, Casañas i Comabella C, Haw C et al.. Risk factors for suicide in individuals with depression: a systematic review. *J Affect Disord.* 2013;**147**:17-28

Self-harm is when somebody intentionally damages or injures their body; usually as a means of coping with, or expressing, overwhelming emotional distress. According to the Adult Psychiatric Morbidity Survey, in 2014, the proportion of 16 to 74 year olds who reported having self-harmed increased from 2.4% in 2000 to 6.4% in 2014[17]. Women aged between 16 and 24 are particularly vulnerable; with one in four (25.7%) reporting that they have self-harmed at some point. This figure is about twice the rate for men in this age group (9.7%) and women aged 25 to 34 (13.2%).

Self-reported suicidal thoughts, suicide attempts and self-harming (without suicidal intent) are associated with great distress for the people who engage in them, as well as for the people around them[17]. They are strongly associated with mental illness, and help to identify people at increased risk of taking their own life in the future.

In 2015, there were 6,188 suicides registered in the UK[17]. Female suicide rates in the UK are at their highest in a decade. Nonetheless, suicide incidence is higher among men than women across the western world. In the UK, men are three times more likely than women to end their own lives. Men aged between aged between 40 and 44 are at far greater risk of committing suicide, when compared to males in other age groups[18]. Cultural social, economic and employment factors have all been linked to this trend.

Developments in information and communication technology offer huge potential for mental health support. Mobile devices like smartphones and tablets are giving the public, healthcare professionals, and researchers' new ways to access help, monitor progress, and increase understanding of mental wellbeing.

Challenges

Modern society is full of technology that is not only needed, but wanted; manufacturers, designers and service providers need to deliver technology that is not just tolerated, but instead seen as desirable and essential for supporting wellbeing.

There are a rapidly growing number of mental health applications (apps) available for smartphones. However, these new technologies bring with them uncertainty. There is very little industry regulation and minimal information on app effectiveness, it is often not known whether these apps are evidence-based, or whether they contain potentially harmful content. Consequently, research carried out in 2016, cautioned clinicians against recommending apps for supporting people at risk of suicide[19].

Technology that is offered to service users, families and organisations must be tailored, user friendly, safe, and reliable. It should not be a source of stigma or embarrassment; nor should it exacerbate isolation. Where appropriate, feedback from users should be included in the design and implementation of the technology to ensure it meets their requirements. Technological solutions should demonstrate how they would be effective in both addressing mental health issues and promoting interventions.

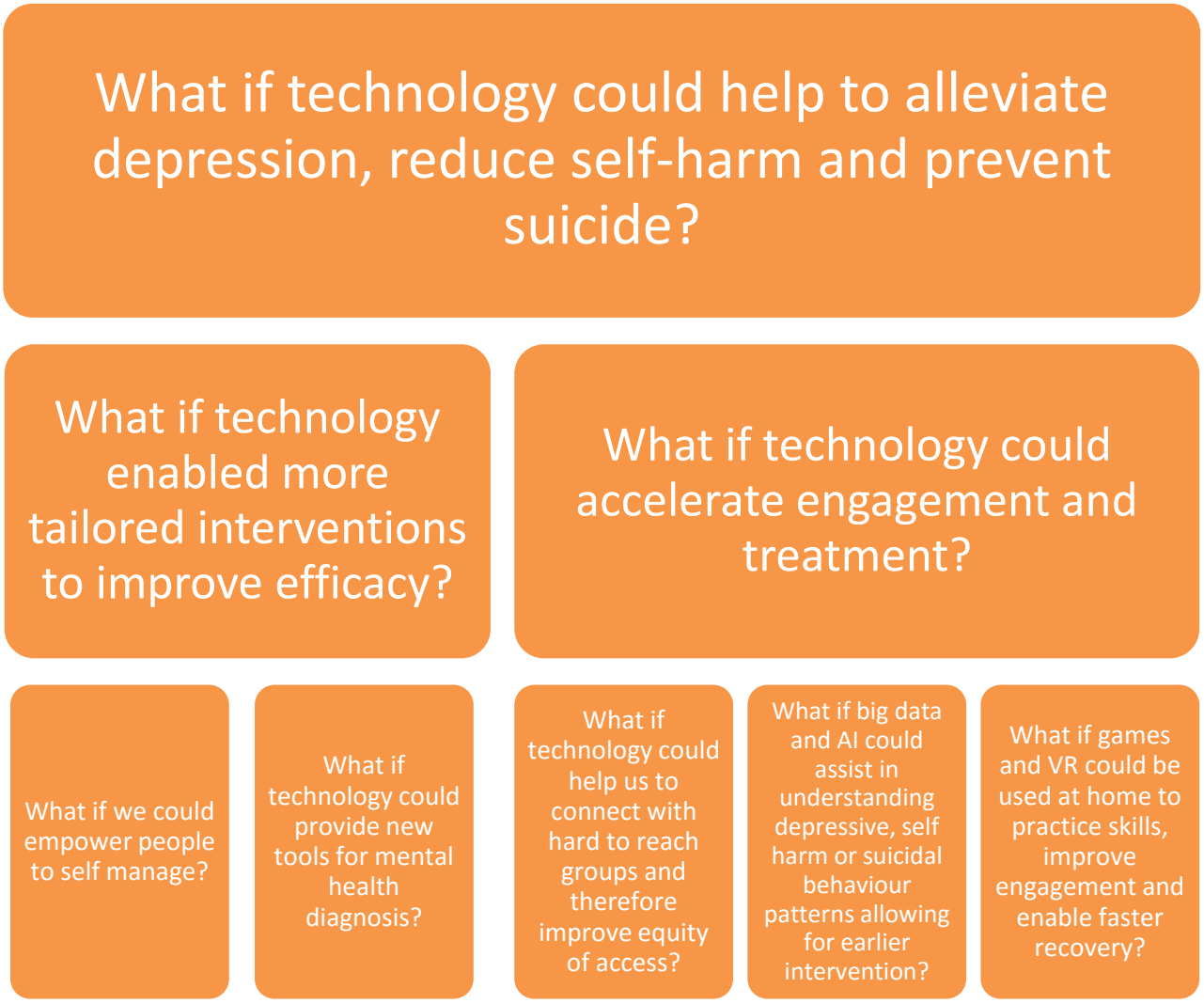
[17] Samaritans (2017). Suicide Statistics Report. Including data for 2013-2015

[18] Samaritans (2012). Men, Suicide and Society. Why disadvantaged men in mid-life die by suicide

[19] Larsen, M E., Nicholas, J. and Christensen, H. (2016). A Systematic Assessment of Smartphone Tools for Suicide Prevention. PLoS ONE 11(4): e0152285. https://doi.org/10.1371/journal.pone.0152285

We do not need more apps for general symptom monitoring and self-management. What is lacking are new interventions and transformative technologies that can augment existing treatments by improving their efficacy, engagement and delivery. The desire is to ensure that more people have access to the evidence-based treatments that will improve their lives.

The following "what if's" are some examples of scenarios that have the potential to help satisfy unmet needs in dealing with depression, self-harm and suicide. The statements are intended as examples only.



Category 3: New Models of Care (leading to improvements in operational productivity)

Background

Developing 'new models of care' has been identified as a priority in the Five Year Forward View for Mental Health. The policy forms the bedrock of the aspiration for an integrated system of health provision across health, social care, the third sector and place based/local population based commissioning offers. The latter would require data sharing abilities across agencies within STP or opportunities for "data warehousing". Sitting

alongside the "parity of esteem" agenda, where mental health should be considered equal to physical health care; the twin elements have formed the basis upon which new models of care in mental health have been developing across the country; as part of the NHS England Mental Health New Care Models programme, and latterly in the Sustainability & Transformation Partnership (STP) plans.

The aspiration is that new models of care are able to stimulate effective collaboration between commissioners and providers developing integrated, accessible services for all.[20]. In developing the architecture to support this, the emphasis is on supporting providers to work together to create improved local provision through a variety of organisational mechanisms and improved infrastructure support. These partnerships or reorganisations enable individuals to be treated locally, stepped up into more intensive support locally and then stepped down again as quickly as their own recovery plan requires. The long-term intention is to avoid individuals being treated far from home, instead staying close to loved ones and local communities; ensuring continuity and consistency of care provision and clinician involvement, and better patient outcomes and carer experience.

Emerging evidence from some vanguard sites suggests that integrated approaches to mental health can help to support improved performance across the wider health system.

Why New Models of Care?

This category has been selected as it is both a national priority and a local area of focus in the West of England. We believe there are potentially numerous opportunities to develop technology solutions to create momentum and solve obstacles. STP guidance has required local health system plans to include work to support both physical and mental health needs in every interaction across the entire system including new models of care. For example, in the West of England, work is ongoing to integrate primary and secondary care between 2Gether NHS Foundation Trust and Gloucestershire Care Services, also AWP Mental Health NHS Trust are focussing on new models of care, particularly around eating disorders.

With this in mind, and working with NHS England, an opportunity to focus on a solution to overcome challenges in the infrastructure supporting the information flows around patients in specialist placements (tertiary mental health) has been identified as a priority. This will serve to create a framework that will underpin integration and new models of care.

[20] Five Year Forward View for Mental Health, Mental Health Task Force, Feb 2016
https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf

Challenges

Sharing data across services is a major challenge. For example, NHS England manage the commissioning of specialist mental health placements and hold the relating data about patients and service users in the specialist mental health data base (MHSDS). That database holds data relating to every patient or service user in receipt of specialist services in England. However, the database is 'fed' by data which is manually collected from each mental health trust, social care provider or other agency who is referring a patient, or receiving a patient back into a community setting, or has another role to play along the care pathway. The quality and accuracy of the data is therefore only as good as the human interface relaying the information and the person at NHS England who records the data, and manually inputs it into the system. Integration with leading patient record systems is also a challenge, for example a high proportion of mental health Trusts across the country use RiO as their patient record system, yet there is currently no known direct interface between RiO and the MHSDS database.

This category considers technologies that will assist in developing solutions to address the issues highlighted below. They are all symptoms of the absence of a mechanism for providers of health and care services being able to accurately obtain, share and manage data about patients electronically, in the local, integrated or national system. In particular, we are seeking a technological solution to provide a 'bridge' to enable a standardised data feed between mental health trusts, and/or other providers, who wish to share data and/or receive data from the MHSDS database in a systematic way. This type of data feed is already in place to support the development of local integrated care, however this has not been developed in specialised services. There is a potential opportunity to co-design the solution between an NHS Provider Trust and NHS England.

Key problems

The current challenges we face in this area are set out below:

Case Management / sharing of information

As described, the existing Specialised Mental Health database is a largely manually driven system, which does not best support case management or information sharing between primary and secondary care and across the country. This is particularly challenging when patients are placed in out of area beds for higher level intervention or as a result of capacity issues local to them. In these circumstances, local clinical teams can lose visibility of their patient or service user and lose crucial information, which could be considered when making informed decisions about appropriate step-down care.

Nationally, all mental health providers are committed to delivering the *Five Year Forward View for Mental Health* priorities, one of which is to provide more care, close to home. Within specialised service provision, a key component of this is to repatriate service users from out of area beds back into area as quickly as is clinically appropriate and possible within local capacity.

Financial impact/True cost of placements

At present there is a paucity of data about the true cost to the health system of mental health provision to any one patient or service user. The patient data is held at a national level, but not in an easily accessible system and the data is of variable quality. A suitable technological solution to ensure accurate data would enable clear sight of finance and aid prompt decision making.

Standardised referrals

At a regional level, providers do not have visibility of patient, or service user, referrals in relation to any one particular care pathway. The entry and exit point into a care pathway cannot therefore be mapped to create a standard care package. If a technological solution could be provided, Case Managers could focus on case management instead of data entry, allowing more appropriate use of their time, leading to improved operational efficiency and better patient outcomes. If there were a system of standardised referrals in place across any region, with visible entry points, this could enable work to design standardised care packages with standardised, consistently offered interventions – and it could all be fully financially modelled.

Research and Evaluation

The King's Fund report "Mental health and new models of care: lessons from the vanguards"[21] concluded that testing the mental health components of existing vanguard sites must be a central part of the evaluation strategy for the new care models. Leading from this, there is great potential for research and evaluation in the area of new models of care. The creation of accurate and clean patient datasets, and the ability to manipulate this data would provide a range of valuable opportunities for research in an area which is, to date, lacking in published research.

The following "what if's" are some examples of scenarios that have the potential to help satisfy unmet needs in New Models of Care (leading to improvements in operational productivity). The statements are intended as examples only.

What if technology provided better data integration between different mental health service providers?

What if there were a technological innovation that enabled integration between a national database and local delivery systems in the area of mental health and wellbeing?

What if we could automate decisions about standardised components of care packages?
e.g. AI/machine learning

What if case managers could be released from manual reporting and data entry, allowing them to refocus on real case management?

What if technology could enable improved clinical and case management oversight (across primary and secondary care) to support better decisions about a patient in specialist care?

What if there was an innovation that ensured data collection was specific, accurate, consistently applied and timely? Plus easy to share across the primary / secondary divide

[21] King's Fund, Mental Health and New Models of Care: Lessons from the Vanguards, 2017 https://www.kingsfund.org.uk/publications/mental-health-new-care-models

Application process

This competition is part of the Small Business Research Initiative (SBRI) programme which aims to bring novel solutions to Government departments' issues by engaging with innovative companies that would not be reached in other ways:

- It enables Government departments and public sector agencies to procure new technologies faster and with managed risk;
- It provides vital funding for a critical stage of technology development through demonstration and trial – especially for early-stage companies.

The SBRI scheme is particularly suited to small and medium-sized businesses, as the contracts are of relatively small value and operate on short timescales for Government departments.

It is an opportunity for new companies to engage a public sector customer pre-procurement. The intellectual property rights are retained by the company, with certain rights of use retained by the NHS and Department of Health.

The competition is designed to show the technical feasibility of the proposed concept, and the development contracts placed will be for a maximum of 6 months and up to £100,000 (incl. VAT) per project.

The application process is managed on behalf of NHS England by the Eastern Academic Health Science Network through its delivery agent Health Enterprise East. All applications should be made using the application portal which can be accessed through the website www.sbrihealthcare.co.uk.

Briefing events for businesses interested in finding out more about these competitions will be held on 24th October in Bristol, 31st October in Nottingham and 3rd November in Liverpool. Please check the SBRI Healthcare Website for confirmation of dates and venues, information on how to register and details of the challenges that will be presented at each event.

Please complete your application using the online portal and submit all relevant forms by 1200hrs on the 29th November 2017.

Key dates

Competition launch	18 October 2017
Briefing events	24 October 2017, Bristol
	31 October 2017, Nottingham
	3 November, Liverpool
Deadline for applications	29 November 2017 (12:00)
Assessment	December 2017 / January 2018
Contracts awarded	March 2018
Feedback provided by	April 2018

More information

For more information on this competition, visit:
www.sbrihealthcare.co.uk

For any enquiries e-mail:
sbrienquiries@hee.co.uk

For more information about the SBRI programme, visit:
https://www.gov.uk/government/collections/sbri-the-small-business-research-initiative

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