



### White Rose HIP Health Technology Bulletins

The White Rose Health Innovation Partnership (WRHIP) aims to accelerate new health-related technologies by facilitating interactions between academia, industry and the NHS using an *open innovation* approach.

The new projects funded as part of this initiative are built upon a foundation of excellence in health innovation by the Partnership's members. This series of Health Technology Bulletins offer an introduction to this research excellence and cover a broad range of clinical and technology areas.

Each bulletin is written to give a general introduction to the topic area along with short case studies of clinical applications of new knowledge. Information is also presented on where to learn more about these new technologies and health challenges, and how to access the network of health innovation professionals established by the Partnership.

### E-Mental Health

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Mental health problems are found in people of all ages, countries, regions and societies. It was reported that in Great Britain 1 in 4 adults will experience at least one diagnosable mental health problem in any one year, and that 1 in 10 children aged between 1 and 15 has a mental health disorder. Worldwide, it is estimated that approximately 450 million people have a mental health problem (World Health Organisation, 2001). Mixed anxiety and depression is the most common mental disorder in Britain with between 8-12% of the population experiencing it any one year. People who receive treatment are twice as likely to recover over an 18-month period than those who don't. But poorer people, the long-term sick or unemployed are likely to still be affected. In the age of digital communications, can technologies positively contribute towards a solution?

### What is the current state of play and what has been done in the past?

The mental health industry has traditionally been pre-technological, emphasised by an apprenticeship system (watching and copying the craftsman) as a way of learning vocational skills, individually provided services, lack of standardisation, and a minimal set of tools. Two roles of the clinical psychologist existed. One was of the psychotherapist who learned through interactions with other psychotherapists using knowledge as their only tool. The other was of the psycho-diagnostician who developed complex personality formulations based on projective techniques. Do psychotherapists see new innovations and technologies as a threat to the prestige associated with their role as craftsmen?

Telepsychiatry has, so far, had little impact on clinical practice and health benefits are yet to be shown. Technologies tend to be most useful in environments which have an advanced communications infrastructure, difficulties with professional recruitment, geographical barriers to transport and low population density. Videoconferencing interventions have been implemented in the South London and Maudsley NHS Trust but

adoption has been low due to the lack of referrals and staff reluctance. Other concerns are the inability to assess patients' body language accurately and patients' anxiety interacting with a machine rather than face-to-face. Studies across General Practice (GP) surgeries in Australia also identified barriers to entry such as lack of familiarity with information technology, and insufficient knowledge of available resources.

### What are the trends in patient and clinician requirements?

Three trends have been identified within the mental health field that appear to fit the present definition of mental health technology. Each area is illustrated with the aid of a case study from project partners. The trends are in no way exhaustive but act as stimulus for further action and thought. Firstly, workflow tools for the classification of diagnoses and treatments. These can be used to create assessment guidelines and clinical pathways. Secondly, professional clinical informatics tools such as decision-support which facilitates operational research. Lastly, electronic information intervention tools such as behaviour monitoring technology to aid therapy, rehabilitation and wellness.



## Case Study:

# Audio/Visual Material for Cognitive Behaviour Therapy

Cognitive Behaviour Therapy (CBT) is a form of psychotherapy aimed at helping people experiencing a wide range of mental health difficulties. The basis of CBT is that what people think affects how they feel emotionally and therefore alters how they act. The demand for CBT therapies far outweighs the number of professionals available to deliver them. Alternative delivery options need to be explored including self-help. The self-help approach fits well with the move in the general population to learn more about medical conditions. From toddler taming to depression and eating disorders, many patients will follow this advice before approaching a medical professional.

## Solutions, progress and development areas

Calipso is a range of books, computer-based courses, DVDs and online therapy developed by Media Innovations Ltd. that can be used by healthcare professionals, and also by patients, to help them manage common mental health conditions more effectively. The range of professionals who find Calipso training courses and materials valuable includes general practitioners, practice and district nurses, and occupational therapists as well as students in medicine, nursing, psychiatry, psychology and other healthcare-related subjects. Each course is evidence-based and developed by lead medical experts in mental health training and patient management.

Calipso offers clinical and CBT skills packages to help healthcare professionals become more confident at caring for patients with mental health disorders. The main difference between packages is in the assessment and management approach used. The clinical courses offer mental state examination training and offer guidance on forms of treatment. They are more appropriate for general

practitioners, medical students and trainee psychiatrists. The CBT courses are ideal for busy healthcare professionals who need practical ways to assess patients in a 5-10 minute session. The courses teach valuable CBT skills and offer self-help materials which can also be given to patients.

Research is under way to further evaluate the acceptability and effectiveness of both the written and computerised materials in a variety of different settings including primary care. Do care providers need to have a mental health background, or is it more important that they are empathic and good at motivating patients at working through materials? Could the incorporation of self-help into a counsellor's practice allow them to see more patients and allow the patients to be better prepared and more educated about their treatments? Lastly, are the claimed advantages of computerised self-help true or are we better sticking with self-help in book form? It seems likely that self-help is likely to become more of a feature of primary care services in the future.

There is tremendous potential for computer packages as a training resource across health care disciplines, in particular in primary and community health services. Benefits of Calipso, amongst many others, include: empowering patients as they are able to follow and learn from materials at their own pace; providing effective, affordable and reusable training material for practitioners; helping healthcare professionals to improve their standard of patient care; and, keeping practitioners up-to-date with the latest in interventions and treatments. Whilst computer-based learning shouldn't replace practice-based teaching, Calipso is a tool which is accessible, easy to use and can allow primary carers to offer patients quicker access to CBT. This may reduce referrals to specialist services, enabling secondary care services to focus on treatment of the severely mentally ill.

## Case Study: Electronic Information Interventions

The prevalence of alcohol misuse amongst young people continues to be highlighted within governmental reports, academic writings and the popular press. Of particular concern are the high levels of heavy episodic or binge drinking and the negative effect that this has on physical and psychological health, and anti-social and risky behaviour. One approach attracting increasing interest is that of providing personalised feedback interventions. Brief personalised feedback intervention programmes focus on an individual's alcohol consumption and provide personalised risk level and alcohol-related information. Advances in technology have the potential to deliver personalised feedback to a large audience in a cost-effective manner.

## Solutions, progress and development areas

Unitcheck is developed at the University of Leeds and is funded by the Alcohol Education and Research Council. The current phase of the project began in July 2007 and will run until the end of 2008. Unitcheck provides students with personalised feedback in three parts: their level of alcohol consumption; social norms information (i.e. how their level of drinking compares to peers); and, generic information (e.g. how to calculate alcohol units for common drinks). After registering participants are matched and then randomly allocated to either an immediate-intervention, delayed intervention or control group. All groups are asked to complete questions in the survey at various points during the project period. Participants allocated to the intervention

## Case Study:

# Psychiatry Clinical Management Systems

In mental health, caring for patients in the community is usually an active and significant component of the total care provided. In each case there are two common in-patient psychiatric events: detention of patients under the Mental Health Act if they are considered at risk to themselves or others; and, treatment with Electro-Convulsive Therapy (ECT) most commonly in the case of severe depression. Detention of a patient under the Act involves a series of steps implemented under strict conditions and requiring the consent, with signatures, of a combination of healthcare professionals. A detailed paper-trail is mandatory to satisfy audits of procedures by the Mental Welfare Commission. The importance and frequency of ECT mandates that provision is made for its documentation in an electronic (or otherwise) form. To what extent do psychiatric clinical management systems support the recording of these events?

## Solutions, progress and development areas

In Ayrshire and Arran NHS Trust, electronic health and social care records are managed using FACE Recording and Measurement Systems developed by Interim Ltd which are installed in over 250 sites across the UK. They provide a comprehensive set of risk and functional assessment toolsets as well as outcomes and forms management software catering for most sub-specialties. These include children and adolescents, general adult, psychogeriatrics, learning disabilities and addiction services. There is currently no assessment toolset for use in forensic psychiatry under development. FACE systems also provide tools for capturing basic details related to the two common events described above:

Detention and treatment of patients under the Mental Health Act (Scotland) includes a series of steps and adherence to complex legal procedures. A mental capacity Assessment (MCA) tool developed for use in England and Wales is not usable in Scotland due to subtle differences between legal jurisdictions. A Scottish version of the tool is yet to be developed as investing energy in its development for four Scottish Trusts compared to over 250 across the rest of the UK could be a costly and time-consuming process.

The documentation used in treatments with ECT includes adverse reactions to previous treatments, medical histories, and any medications administered. At Ayrshire and Arran NHS Trust documentation of ECT treatment is paper-based and included within the narrative of a patient's notes. Dr Julius Awakame, a staff grade psychiatrist and prospective Health Informatics PhD student at the University of Leeds, notes that "FACE appears to focus on assessment and management of functioning rather than medical interventions including ECT and electronic prescribing". He suggests "a holistic approach to treatment will require the eventual integration of these functionalities in the fully-fledged system". Currently, no ECT software is recorded in the FACE new developments registry.

The acute hospital, electronic laboratory and GP systems at Ayrshire and Arran NHS Trust are 'stove-piped' with FACE and each other rather than being fully-integrated. This means that information is not being shared electronically which can lead to data duplication and errors. Interim Ltd. has developed an array of advanced modules which have the capability to achieve full integration with other systems. However, the under-utilization of FACE has meant that some of these new modules have simply not been requested or adopted at the Trust.

group will receive instant feedback on their responses to the survey during the first phase of the project. They will be asked to complete the survey a number of times during this period. During the second phase of the project those in the delayed intervention group will receive personalised feedback, and in later phases, follow up for the entire group will occur. All participants in the control group will be given the opportunity to use the feedback intervention site once the controlled project period is complete.

The intervention was first trialled at the University of Leeds (e-UNICAL) and is currently being tested at four other universities across the UK. Preliminary results from the University of Leeds randomised control trial show the intervention to be effective in reducing certain aspects of alcohol consumption. One survey found that about 5% of those questioned were drinking enough during a week to

potentially damage their health. The team are currently exploring the potential to modify this intervention for non-student populations including Leeds Sixth form students, and are looking at how tools could be modified and promoted to other intervention groups.

Initial results show a reduction in drinking per occasion of approximately one unit during the trial and a three-month follow-up shows this lowered intake had persisted. Lead researcher, Bridgette Bewick said: "Our approach indicates many of the young people surveyed did not realise how many units they were consuming on an average occasion. The heaviest drinkers surveyed were surprised to find the majority of their peers stay within sensible weekly limits. High levels of alcohol taken on a single occasion can be particularly damaging to health, so a small change in this pattern is a step in the right direction."

## Founding partners in the Programme include:

University of Leeds  
University of Sheffield  
University of York  
University of Bradford  
Medipex  
Medilink Yorkshire & the Humber  
The Leeds Teaching Hospitals NHS Trust  
Sheffield Teaching Hospitals NHS Foundation Trust  
Bradford Teaching Hospitals NHS Foundation Trust  
Yorkshire Forward  
Health Technologies Knowledge Transfer Network  
New Jersey Biotechnology Life Science Coalition  
Rutgers, The State University of New Jersey  
University of Medicine and Dentistry of New Jersey  
New Jersey Institute of Technology  
Princeton University  
International ARI Institute, University of Toledo, Ohio  
Polymer Centre for Industrial Collaboration  
Biomaterials and Tissue Engineering Centre for Industrial Collaboration  
Pharmaceutical Innovation Centre for Industrial Collaboration  
Wireless Technologies Centre for Industrial Collaboration  
Particles Centre for Industrial Collaboration



## Regional Centres of Expertise

**Media Innovations Ltd** is a leading provider of multimedia training materials across a wide range of industry and professional sectors. The company is also a significant developer of Training Systems, Risk Management and Diagnostic Support tools to the medical profession. Their team of dedicated staff – including leading medical experts from the School of Medicine at the University of Leeds and University of Glasgow – have been involved in commercial developments of innovative software solutions originating from high quality university research for over eight years.

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**Functional Analysis of Care Environments (FACE) Recording and Measurement Systems**, developed by Interntation Ltd., is the product of over 18 years of development involving thousands of practitioners. FACE is in use in over 250 health and social care organisations across the UK and Republic of Ireland. Interntation Ltd. is a Nottingham-based company whose members include senior practitioners and software developers. They collaborate with the Department of Health, managers, practitioners, service users and other IT companies in the development of products which enable the effective collection and use of personal information to support services providing the highest possible quality of care.

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### Yorkshire Centre for Health Informatics

Based within the Leeds Institute of Health Sciences (LIHS) in the Faculty of Medicine and Health at the University of Leeds, the Yorkshire Centre for Health Informatics (YCHI) is a leading international centre for health informatics expertise, collaboration and research. It provides world-class facilities and the capacity to host large numbers of research and development projects. The international reputation of the academics within YCHI has also attracted collaborative activity with the NHS and industry, and has led to partnerships with leading information technology companies.

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**Leeds Institute of Health Sciences** (LIHS) is a multi-disciplinary Institute that delivers applied health research, professional training and teaching programmes aimed at enhancing health and health care nationally and internationally. Members of the Mental Health research team at LIHS are working to develop and evaluate new treatments and service models aimed at improving the wellbeing of people with mental health problems who present in physical healthcare settings.

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Whilst this bulletin has predominantly focused on innovations in Leeds, there are many exciting projects across the region.

At the **University of Bradford**, although closing by 31 March 2009, the Centre for Citizenship and Community Mental Health (CCCMH) was informed by a conceptual and philosophical critique of mental health practice that prioritises social, cultural and political contexts, and has an ethical rather than technical orientation.

At the **University of Sheffield**, the Mental Health group of School of Health and Related Research (SchARR) has major programmes of research being carried out in the evaluation of innovative methods of teaching, in prison mental health, in personality disorder treatment, in well-being, and in the treatment, causes, and consequences of Asperger syndrome. Current research includes elements of Internet-based learning and teaching complementary to the case studies presented in this bulletin.

At the **University of York**, there is a thriving multidisciplinary research group which models, develops, measures and tests new ways of organising treatment for people with mental health problems. Work is ongoing in stepped care and collaborative care models and in guided self-help treatments for common mental health problems. Research projects include: MIDAS, a trial platform of guided self-help for mild to moderate depression in primary care; the Randomised Evaluation of the Effectiveness and Acceptability of Computerised Therapy (REEACT); and, CADET, collaborative care for depression.

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