

Pulse

Spring 2015

The Brighton and Sussex Medical School magazine

Mind over matter

Dr Yoko Nagai's groundbreaking epilepsy research



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- Cold is contagious
- Targeting antibiotic resistance

 brighton and sussex
medical school





Q&A

with our new Dean,
Professor Malcolm Reed

Tell us a bit about your career in medicine

I was the first person in my family to do medicine. While studying at Sheffield I did an intercalated degree in pathology, focusing on breast cancer, which started an interest in academic study and in oncology in particular.

After qualifying I moved to several centres on one to two year contracts, as we did back then. I spent some time in the States, doing research into fundamental mechanisms in cancer and developing new treatments.

I enjoyed my time in research so much that I decided to pursue an academic career, eventually becoming Professor of Surgery in 1999. I believe the past five years as Head of the Department of Oncology at the University of Sheffield have prepared me well for new challenges as Dean here at BSMS.

Why oncology?

I initially planned to be an orthopaedic surgeon, but when training I found I was drawn to oncology. Because I'd done my early research in the field, I found the whole challenge of treating cancer fascinating – I could see there were going to be major advances over coming years.

I also found that working with people when they were first diagnosed and being treated for cancer, a time of crisis when they are at their most challenged and vulnerable, was very rewarding and felt right for me as a doctor. The transformation of all aspects of cancer care including diagnosis, treatment and prognosis and, most importantly, communication and support, has been remarkable. I'm sure the coming decades will see further major improvements in oncology and many other aspects of healthcare.

What are your priorities for BSMS over the next few years?

I see two major priorities over the next five to ten years. Firstly, we need to maintain and improve

the student experience and student learning. There will always be curriculum issues that we need to address, such as the Greenaway report, which proposes that students should be registered with the General Medical Council at the point of qualification. That would mean we would need to help them demonstrate they have foundation year 1 competencies at the beginning of that year rather than at the end, which would undoubtedly have an impact on the curriculum and assessment.

Secondly, we need to further develop our research strategy and activity. I think it's vital that medical schools contribute to the evidence base for medicine, which is always changing. Understanding how research influences patient treatment is crucial and students need to be prepared for lifelong learning to deal with new developments throughout their careers. We need to be active in research in order to deliver this and to raise the profile of BSMS, as a key contributor to the evidence base for medicine. There are some remarkable areas of research in BSMS, as demonstrated by our significant contributions to the recent Research Excellence Framework exercise for both partner universities and the rapid growth of research activity with our partners in the NHS and beyond. Identifying and supporting these areas of strength will ensure research at BSMS thrives in the coming years.

What do you do when you're not working?

As a family, we're really interested in sport and I have played rugby, football and tennis, and am now learning golf – very slowly! So far Brighton seems a really great place to live. My wife Lynne and I are enjoying bike rides along the sea front and getting out for walks on the South Downs, as well as the vibrant cultural life the city has to offer.

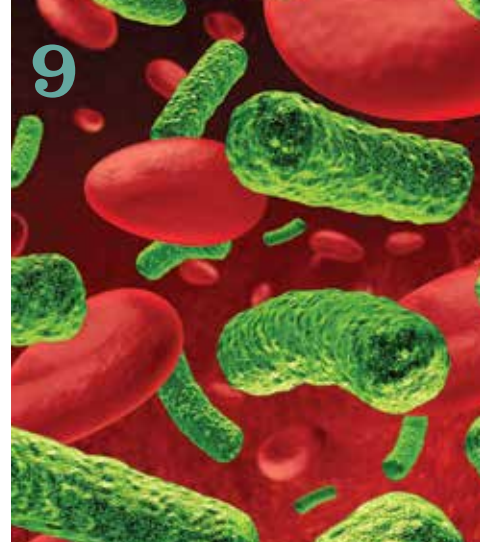
I'm really looking forward to the Brighton Festival, which promises to be a feast of cultural treats, and excited to be involved in our very own event in the festival, the Facing Cancer debate (see page 23).



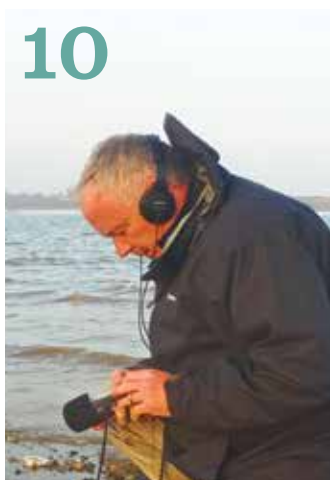
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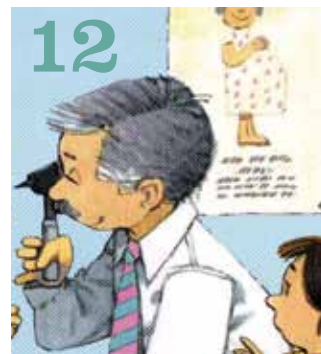
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Pulse is the magazine of Brighton and Sussex Medical School. Contact Julie Wilton at j.wilton@bsms.ac.uk if you have any news stories, comments, or would like to amend your mailing details.

Pulse is published on 100% recycled paper.

Mind over matter

Groundbreaking research among epilepsy patients who are resistant to drugs is reaping dramatic results, with more than half of patients in a clinical trial reporting a reduction in seizure frequency of 50% or more.

Carried out at BSMS, the research is trialling a promising alternative to medication in treating epilepsy by teaching patients to train their brains to be more 'alert'.

Dr Yoko Nagai, Wellcome Trust Research Fellow at BSMS, is training patients to use biofeedback, a behavioural treatment that enables them to gain control over electrodermal activity (EDA), a physical process most people are not even aware of. EDA is frequently used in 'lie detectors' to detect neural activation through stress, measuring this activation from sweating response.

"While drugs are the mainstay in the management of epilepsy, around 30% of patients on medication continue to have seizures," says Dr Nagai. "Therefore it's important to look into other methods to help people manage their epilepsy."

Dr Nagai first started research into biofeedback for her PhD in 1997. "At the time, research into the technique was relatively new in the UK and it was mostly associated with relaxation therapy. But I soon realised that biofeedback is much more than that, enabling the mind control of 'hidden' bodily signals by closing a loop that is usually open."

A surprise result

As it's commonly known that mental stress can increase seizures, Dr Nagai expected that teaching patients to use relaxation techniques would reduce their

susceptibility to seizures. However, she was surprised to learn through her research that, in fact, the opposite was true – and that training patients to increase their levels of alertness actually helped them to calm their brain and reduce the incidence of seizures.

Dr Nagai then established a treatment protocol for patients with drug-resistant epilepsy, using EDA biofeedback. As the essence of biofeedback training involves increasing control over the body's system, she worked on developing an animated computer programme for epilepsy that responds to a person's level of alertness.

Patients in the initial clinical trial were trained in biofeedback three times a week over a four-week period. They were shown how to increase their alertness, or 'sympathetic arousal', by learning to move the computer-generated animation towards a desired goal.

Not only did 60% of patients who learned the technique demonstrate a reduction in seizures of 50% or more, but two who went on to keep a record for three years after their 'training' continued to have a greatly reduced number of seizures.

Dr Yoko Nagai



Following these earlier studies, Dr Nagai is now conducting a wider clinical trial, funded by the Wellcome Trust Fellowship, in collaboration with Brighton and Sussex University Hospitals and University College London Hospitals.

Changing lives

For Michael Meredith, learning the technique has meant he is seizure free for the first time since developing epilepsy six years ago.

"My epilepsy more or less came out of the blue," he says. "Despite being on medication for the past six years, I continued to have between three and six seizures a month. I lost my driver's licence, and as a self-employed carpenter this had a huge impact on my work."

Mr Meredith, from Brighton, learned to use biofeedback with Dr Nagai in November 2014. "It was like playing a computer game but using your mind and body rather than controls – with two electrodes on your fingers to measure the biofeedback. You have to drive

along an animation, to reach a goal. The first time it was quite tricky, but after a few sessions I really got the technique. Now I'm very happy to be seizure free, and I hope to reduce my medication in a couple of months," he says.

A next generation treatment?

The current study, due to be completed in 2016, is using state-of-the-art neuroimaging techniques to scan patients both before and after treatment to further investigate the role of EDA biofeedback in reducing epileptic seizures.

"So far results look very promising, replicating those of the previous clinical trial," says Dr Nagai. "We may well be looking at the next generation treatment for epilepsy – one that emphasises non-invasiveness, minimal side effects, strong patient involvement and a practical opportunity to utilise growing health technology. I hope in the future this scientific discovery will lead to an accessible treatment that can be implemented both in the NHS and internationally."



1. The participant is connected to two small sensors on the finger to measure electrodermal activity (EDA).



2. They are instructed to try to make an animation go forward on the computer screen by increasing alertness increase in skin conductivity.



3. As the EDA changes in the desired direction, the animation changes from a fish to a mermaid. It moves (forward and backwards) with changes in EDA.



4. As the participant successfully masters the technique, the mermaid reaches the shore, turns into a woman and attains her final goal.

A step-by-step guide to biofeedback training



Taking on liver disease

Mortality rates from liver disease have increased by almost 500% since 1970, according to a recent report published in *The Lancet*. Liver disease is now the third most common cause of premature death in the UK, and is predominantly caused by alcohol and hepatitis C infection.

Senior Lecturer Dr Sumita Verma has been awarded two major grants to help tackle this increasingly prevalent disease.

In December 2014, Dr Verma received £134,746 from the Dunhill Medical Trust to screen and treat vulnerable elderly people in the community with chronic liver disease. This was followed in March by a grant of £220,294 from the National Institute for Health Research (NIHR) Research for Patient Benefit scheme, to investigate the feasibility of treating late-stage cirrhosis at home rather than in hospitals.

Screening and treating in the community

Data from *The Lancet* report shows that 73% of patients admitted with chronic liver disease (including advanced forms such as cirrhosis or liver failure) had not been referred to a liver clinic prior to hospitalisation.

“Unfortunately, liver disease doesn’t show symptoms in early stages and is often only first diagnosed when the disease is advanced,” says Dr Verma, Honorary Consultant Hepatologist at Brighton and Sussex University Hospital (BSUHT) and Kings College Hospital. “This underscores the need for screening those at risk of chronic liver disease. What’s more, 90% of people with hepatitis C in England are vulnerable adults with a history of substance misuse who are less likely to engage with health services. So around 75% of hepatitis C cases are still undiagnosed, which is why it’s so important to reach these people in the community, and treat them before their illness becomes critical.”

Dr Verma will use non-invasive blood tests and scans to detect chronic liver disease among Brighton’s vulnerable older people, many of them homeless, with the aim of treating them in the community at an earlier stage.

In July 2014, BSUHT was designated a Regional Hepatitis C Centre. “Both the Dunhill Medical Trust grant and the designation of Regional Centre status should help in reducing the unacceptably high morbidity and mortality associated with chronic liver disease,” says Dr Verma.

Improving end of life care

Dr Verma’s second grant is to investigate how end of life care might be improved for people with advanced cirrhosis.

This kind of care is typically very challenging, and more than 70% of patients in England with terminal cirrhosis end up dying in hospital, compared with 40% of those with terminal cancer. While there are calls to improve this, to date this area has been under researched.

Dr Verma was awarded the NIHR grant to perform a feasibility randomised control trial to assess the use of long-term abdominal drains (LTAD) as a palliative measure in people with end stage cirrhosis and untreatable ascites.

Ascites, an accumulation of fluid in the abdomen, is almost always seen in advanced cirrhosis, resulting in frequent hospitalisations due to debilitating symptoms such as pain and breathlessness.

“Our ultimate aim is to improve end of life care for people with advanced cirrhosis and untreatable ascites. We plan to do this through comparing the use of ascites drainage at home with the current standard of care that takes place in hospital,” says Dr Verma.

“The findings will show whether moving care for this group from hospital into the community both is cost-effective and improves quality of life.”

The feasibility trial will assess whether use of LTAD in the community is tolerated by patients, is acceptable to carers and feasible for health services, and will help shape the design of the definitive trial.



Dr Sumita Verma

Loss of HIV professor leaves a 'huge gap' at BSMS

BSMS staff have been paying tribute to Professor Martin Fisher, who died unexpectedly last month.

Dean of the Medical School, Professor Malcolm Reed said: "The news of Martin's death is an enormous shock to all of us who knew him as a colleague, teacher and friend. I had only met Martin recently but was hugely impressed by his clinical and academic accomplishments and equally by his humour, compassion and humanity."

Professor Fisher had been a Consultant Physician in HIV/Genitourinary Medicine at Brighton and Sussex University Hospitals NHS Trust since 1995, and was instrumental in setting up the trust's specialist HIV unit. His research in the field of HIV was internationally renowned.

Appointed BSMS's first Chair of HIV Medicine in 2013, he rapidly developed HIV-related research based in the medical school and hospitals. In addition to his wide range of research and clinical work, he was the founding convenor for the national Diploma in HIV Medicine and an executive committee member of the British HIV Association.

Professor Fisher was one of 12 site researchers in the recent PROUD study, which found that daily use of the drug Truvada could reduce the risk of HIV infection by 86%.

Most recently he was lead applicant in a new international project to study the use of technology to improve self-management of HIV, which earlier this

year was awarded a multi-million pound grant from the European Commission to run across five countries.

In addition, Professor Fisher made major contributions towards the development of innovative treatment guidelines for the UK, for instance in the prevention of HIV infection by pre-exposure prophylaxis.

"The impact of Martin's death will be felt not only in the Medical School, the Trust and at the universities, but also by his patients in Brighton and his many friends and colleagues nationally and internationally," added Professor Reed.

"Martin leaves a huge gap in the life of BSMS but also a strong legacy and very fond memories."



Radical rethink needed to curb sepsis deaths

Medical and public recognition of sepsis – thought to contribute to between a third and a half of all hospital deaths – must improve if the number of deaths from this common and potentially life-threatening condition are to fall, according to Emeritus Professor and former Dean, Professor Jon Cohen.

In a new Commission, published in *The Lancet Infectious Diseases*, Professor Cohen and colleagues outlined the state of research into this little-understood condition, highlighting priority areas for future research.

Sepsis is a common condition whereby an infection triggers an extreme immune response, resulting in widespread inflammation, blood clotting and swelling. Early symptoms can include high temperature and fast breathing; if left untreated, sepsis frequently leads to organ failure and death. Although there is no specific cure, if identified early enough it can often be treated effectively with intensive medical care including antibiotics and intravenous fluid.

“Sepsis is both one of the best known yet most poorly understood medical disorders, and one of the most challenging medical conditions in routine clinical practice,” says Professor Cohen, lead author of the Commission and BSMS Emeritus Professor of Infectious Diseases.

Every year, sepsis kills around 37,000 people in the UK – more than three times the number killed by breast cancer or prostate cancer. While mortality rates appear to have fallen in the UK and other high-income countries over recent decades, the Commission suggests that a lack of accurate estimates of the incidence of sepsis means that the true extent of the condition is poorly understood, and apparently reduced mortality rates may be an artefact of improvements in hospital reporting of milder cases.

“The number of people dying from sepsis every year – perhaps as many as six million worldwide – is shocking, yet research into new treatments for the condition seems to have stalled,” says Professor Cohen. “Researchers, clinicians, and policymakers need to radically rethink the

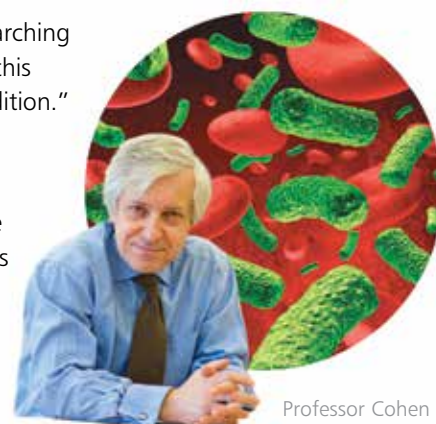
way we are researching and diagnosing this devastating condition.”

In low- and middle-income countries, where most sepsis cases occur outside hospital, there are virtually no data on incidence of

the condition, and the number of people killed by it is likely to far exceed the already high rates in wealthier countries. Furthermore, rising rates of antibiotic resistance globally mean that even if mortality rates from sepsis are improving in some high-income countries, there is no room for complacency.

Not only are mortality rates from sepsis so high, but survivors are at an increased risk of long-term chronic illness and mental or physical impairment. As research into the long-term consequences of surviving sepsis is relatively scarce, doctors have little evidence available on which to base long-term care plans for these patients.

The Commission makes a number of recommendations in order to improve the treatment and diagnosis of sepsis. These include prioritising research into biomarkers for sepsis, allowing for quicker diagnosis; better education of medical staff and improving public awareness to ensure earlier recognition; rethinking clinical trial design; developing targeted treatments (“personalized medicine”); and ensuring new drug treatments are developed.



Professor Cohen

Bringing together art and science

What impact do art and the natural environment have on wellbeing and health? Professor Hugo Critchley, Chair in Psychiatry at BSMS, is attempting to answer such fundamental questions by collaborating with award-winning multimedia artist Mark Ware.

The wavelength project, launched last month, will combine art and neuroscience to investigate and interpret how people respond in mind, body and brain to natural versus artificial sounds and light. What researchers discover in the lab will help create a series of artistic works, including original music compositions, multimedia performances and immersive sound and light installations tailored to clinical, occupational and architectural settings.

Audience responses to these artistic activities will then be monitored. As a result, researchers hope to gain a more detailed understanding of the emotional impact of art on the viewer, and potentially to adjust this impact on-the-fly.

“Being involved in this fascinating project is exciting for my team, which includes fourth-year medical students Oli Sparasci and Alex Mees, supervised by Dr Sarah Garfinkel,” says Professor Critchley, who is also

Co-Director of the Sackler Centre for Consciousness Science. “Despite our very different disciplines and approaches, Mark and I share a common interest in how art and nature can affect our physical and neurological responses.”

Former Fulbright Scholar Mark Ware is also an Honorary Research Fellow at BSMS. He says: “I had a severe stroke back in 1996 – an event that suddenly and abruptly altered every aspect of my life. Since then, my artwork has become increasingly concerned with how my subjective experience has been altered by the changes in my mind and body due to stroke.

“My hope is that the project will deliver widespread benefits including for people with neurological dysfunction such as stroke, autism, cerebral palsy, ME and dementia.”

Mark Ware capturing natural sounds

Photo: Sara Ware

The artistic content of wavelength project is supported by Arts Council England and Kent Wildlife Trust.





Cold is contagious

Just looking at somebody shivering is enough to make us feel cold, new research has found.

Volunteers who watched videos of people putting their hands in cold water found their own body temperature drop significantly.

The research at BSMS, led by neuropsychiatrist Dr Neil Harrison, shows that humans are susceptible to 'temperature contagion'.

Dr Harrison suggests that such unconscious physiological changes may help us empathise with one another and live in communities.

"Mimicking another person is believed to help us create an internal model of their physiological state, which we can use to better understand their motivations and how they are feeling," he says.

"Humans are profoundly social creatures and much of our success results from our ability to work together in complex communities – this would be hard to do if we weren't able to rapidly empathise with each other and predict one another's thoughts, feelings and motivations."

For the research, which was published in the journal *PLOS ONE*, 36 participants each watched eight videos of actors putting their hands in either visibly warm or cold water. At the same time, the temperature of their own hands was measured. Their hands were

significantly colder when watching the 'cold' videos. However, the 'warm' videos did not cause a change.

Dr Harrison explains: "We think that this is probably because the warm videos were less potent – the only cues that the water was warm was steam at the beginning of the videos and the pink colour of the actor's hand (whereas blocks of ice were clearly visible throughout the duration of the cold video).

"There is also some evidence to suggest that people may be more sensitive to others appearing cold than hot."

Dr Harrison worked on the project with BSMS colleagues Ella Cooper and Professor Hugo Critchley, and scientists in Cambridge, London and Germany.



Dr Neil Harrison

Doctors in children's picture books

Children's books show a gender imbalance in their representation of women doctors, according to a new study.

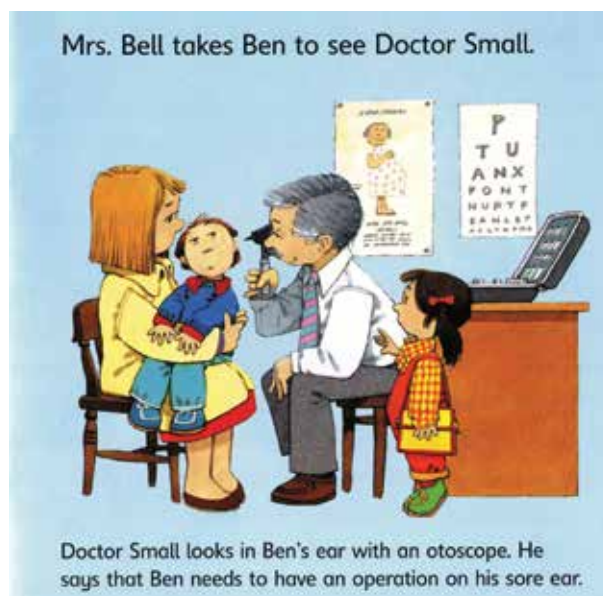
Published in the Christmas 2014 edition of the *Journal of the Royal Society of Medicine*, the study involved scrutinising the text and illustrations of 48 recent fictional and factual children's books featuring medical consultations and hospitalisation.

Dr Hemanth Rao worked with Chair of Primary Care Professor Helen Smith on 'The Representation of Women Doctors in Children's Picture Books' while he was an F2 in academic General Practice at BSMS.

Over the past few decades, the number of female doctors in the UK has increased steadily, and now over 50% of UK medical students are female.

"We were interested to see whether and how this might be reflected in children's medicine-related literature," says Professor Smith. "We found that only 37% of the doctor characters were female, and 59% were male, with a few 'animal' doctors of indeterminate sex."

While workforce statistics show that 37% of GP partners and one third of hospital consultants are female, the children's books did not reflect this reality; they portrayed female doctors working predominantly in primary care or community settings.



"The tendency to show women in primary care could be interpreted as stereotyping, with women placed nearer the home and further from the high status world of hospitals," says Professor Smith. Interestingly, female doctors were more likely to be portrayed taking a history from their patients, while their male counterparts were undertaking examinations or procedures. To the child impressed by diagnostic technology, the work of the male doctor may appear more important.

"We were also interested to see whether the author's gender influenced the choice of gender of the doctor characters they created," she adds. "We found that female authors created an equal number of male and female doctors, while most of the doctors created by male authors were male."

"Although the representation of female doctors in books doesn't reflect social reality, and we would encourage taking steps to rectify this, we appreciate that books are just one of many influences on the construction of gender models: others, particularly children's television programmes, are far more important."

New study targets “serious worldwide threat to public health”

BSMS researchers are tackling antibiotic resistance in a new pilot study. The Wellcome Trust Brighton and Sussex Centre for Global Health Research is working with local and international partners to discover more about antibiotic resistance in hospital-acquired infections in low- and middle-income countries (LMIC). The Centre was awarded a University of Sussex Research Development Fund grant of £21,000 in December 2014.

Identified last year by the World Health Organization as a ‘serious worldwide threat to public health’, antibiotic resistance has been increasing dramatically worldwide, with a significant impact on the treatment options for patients in need of antibiotics.

“While antibiotic resistance is certainly an emerging global threat, it has largely been underestimated and under-researched in LMIC,” says Melanie Newport, Centre Director and BSMS Professor in Infectious Diseases and Global Health. “Our study aims to investigate the epidemiology of hospital-acquired infections and the associated antibiotic resistance in these countries.”

African partners in the project include the Armauer Hansen Research Institute in Ethiopia, the University of Khartoum in Sudan and the University of Buea in Cameroon. At each of these centres a researcher (PhD student) will be trained in molecular microbiological techniques, and will be responsible for sample and data collection, sending copies back to the UK for further analysis. By studying this data, researchers hope to identify the underlying genetic mechanisms of antibiotic resistance in bacteria that are emerging threats in hospitals worldwide.

The Centre is also collaborating on the study with the School of Life Sciences and the Genome Centre at the University of Sussex, the University of Brighton, and the NHS, bringing together a range and depth of expertise in the fields of infectious diseases, molecular microbiology and global health.

“Not only will we support our African partners in building capacity among epidemiological researchers, but the research should provide valuable data to support future large collaborative grant applications,” says Professor Newport. “The study will give us a greater insight into the mechanisms of antibiotic resistance present in Africa, and enable us to then develop more specific research on locally relevant emerging threats.”

The pilot study will be complemented by two other projects on antibiotic resistance. The Centre for Global Health Research is also working with the University of Khartoum to investigate the emerging threat of a specific mechanism of antibiotic resistance known as β -lactam resistance in Gram-negative bacteria.

In March, postdoctoral research fellow at BSMS Dr Leena Al-Hassan received a Rising Stars award from the University of Brighton to investigate mobile genetic elements in bacteria that are important for the transmission of antibiotic resistance genes.

Dr Leena Al-Hassan



Confusing patient/doctor relationships affects cancer treatment decisions

A blurring of professional boundaries can affect young cancer doctors' objectivity when treating patients, according to a recent study by Sussex Health Outcomes Research & Education in Cancer (SHORE-C) at BSMS.

Researchers designed an online survey completed by 338 young (under the age of 40 years) oncologists throughout Europe last August. Results showed that 60% felt that if doctors were too empathetic then they could not make objective decisions, while 59% also thought it difficult to be truthful about prognosis if they particularly liked a patient.

Despite this, around a quarter of respondents had treated family members, and a third had treated friends. Most allowed patients to use their first name, and 60% allowed patients to hug or kiss them in greeting or saying goodbye. Such behaviours are not always wrong but could be liable to misinterpretation in a highly charged clinical setting.

"Oncology can be a very emotionally challenging field in which to work," says Dr Lesley Fallowfield, Professor of Psycho-Oncology at BSMS and Director of SHORE-C. "Cancer patients need their

doctors to be warm, compassionate and caring but the relationship should not be confused with a social one. Burnout in young oncologists is high, at more than 30%, and often leads to them leaving the profession. Any blurring of professional boundaries can also play a part in the stress faced by oncologists in dealing with patients with a life-threatening illness."

The rise of mobile technology and social media may add to this blurring of boundaries, with more than half (55%) of the doctors admitting they had given their personal mobile numbers to patients, and 14% even accepting invitations from patients to be 'friends' on Facebook.

Professor Malcolm Reed, the Dean of BSMS and an oncologist, says: "Although these results need replicating, they show a worrying trend. The General Medical Council has produced guidance in which these newer risks to

the maintenance of professional boundaries are made clear, and they need to be promoted to students and young doctors."

Professor Fallowfield agrees and her team will be designing such a programme. She adds: "It's so important that patients have strong and trusting relationships with their doctors during what will most likely be a very emotional and difficult period.

"Young oncologists clearly understand that and, as our survey shows, often invest a lot of personal time and emotional energy into doing what they believe to be helpful. But to ensure that cancer patients receive the best and most objective treatment, oncologists must look after their own emotional well-being also and recognise that there needs to be a professional line over which one just shouldn't cross."



Measuring the broader impact of advanced cancer

In a separate study, new scales to measure the impact of advanced illness on patients and their families are being developed by SHORE-C researchers.

"The management of advanced disease can be complex, and impacts on many diverse aspects of life such as finances, work status and patients' own caring roles with family or friends. There's also likely to be a significant impact for informal caregivers and other family members," says Principal Investigator, Dr Valerie Shilling. "It's important to understand these broader implications of disease and treatment, for example to help provide an appropriate range of treatment options and support for both patients and caregivers. There is, however, a need for well-validated measures to be able to do so."

The Patient Reported Outcomes in cancer, impact of Age and Carer/role demands associated with Treatment (PROACT) study will develop and evaluate two self-report scales: one measuring patient quality of survival, incorporating these broader impacts, and one measuring impact for informal caregivers.



BSMS research impact showcased in national report

Leading research at BSMS has been showcased in a new publication by the Medical Schools Council.

Health of the Nation: The impact of UK medical schools' research reports the best medical research happening across the UK and its impact.

The report features a case study of ethics research undertaken by Professor Bobbie Farsides, titled 'Negotiating human bodies and improving donation policies'. The report highlights the major impact that this research has had by developing an ethical framework for managing organ donations, which has contributed to a 50% increase in donations.

Research examples in the report were selected from UK medical schools' submissions to the Research Excellence Framework (REF) 2014, which recently announced its results. According to the Medical Schools Council, of research across

all subjects, "the impact of clinical medicine is unmatched in the percentage of its research which achieved the highest rating of world-leading 4* grade."

As a partnership between the Universities of Brighton and Sussex, BSMS submitted research case studies to the REF under a range of different assessment areas for both institutions. These areas included, 'Psychology, Psychiatry and Neuroscience' and 'Biological Sciences' at the University of Sussex, and 'Allied Health Professionals, Dentistry, Nursing and Pharmacy' at the University of Brighton. The universities' research impact in these areas were ranked nationally at tenth, tenth and 27th place, respectively.

Professor Jackie Cassell, Director of Research and Knowledge Exchange, says: "BSMS is at the heart of research impact with its host universities. By developing interdisciplinary collaborations it's clear that we have opened up new and successful research endeavours, and we look forward to building on these."

Research

Art therapy reduces anxiety in stroke patients

BSMS Senior Lecturer Dr Khalid Ali has led a study to explore whether art therapy could help the psychological recovery of stroke patients.

While depression and anxiety are common symptoms following a stroke, studies have suggested that current stroke rehabilitation neglects the patient's psychological well-being.

For this study, a group of post-stroke patients took part in bi-weekly art

therapy sessions, using paint, clay, iPads and film.

Over the course of six weeks, they worked on creative projects, including a short stop-motion animation film.

"Many participants felt a sense of achievement at the end," says Dr Ali, who is a Consultant Physician at the Princess Royal Hospital in Haywards Heath. "They found the groups to be a valuable place where they could share their feelings and talk to each other about their fears.

"I hope these results will lead to larger studies into the psychological benefits of post-stroke art therapy."



Research tackles chronic whiplash disorder

Researchers at BSMS are investigating why whiplash can cause sufferers chronic pain.

Whiplash commonly occurs after a car accident, resulting in symptoms such as neck and arm pain either directly after the injury or several days later. While most symptoms resolve within a few weeks, there appears to be a growing pandemic of chronic neck and arm pain post injury, where symptoms do not resolve.

Dr Andrew Dilley, who is leading the study, says: "Around 30% of people who experience a whiplash injury continue to get painful neck and arm symptoms. Current treatments often appear ineffective, which is in part due to a lack of basic understanding of this condition."

Not only does chronic whiplash cause ongoing pain to patients, it has created a growing financial burden on the NHS and numbers of insurance claims for the condition have escalated. Whiplash is estimated to cost the UK economy around £3.1 billion every year.

"Patients with chronic whiplash frequently describe shooting pains,

pain during arm and neck movements and increased sensitivity to touch," says Dr Dilley. "Such symptoms are usually associated with a nerve injury. Surprisingly, on clinical examination, patients with chronic whiplash don't show any evidence of an obvious nerve injury. Our research has suggested that nerve inflammation may actually be a cause of such painful symptoms."

Dr Dilley is using magnetic resonance imaging (MRI) to look for signs of nerve inflammation in patients with chronic whiplash injury. If nerve inflammation can be 'measured' in these patients, then the study

would provide, for the first time, new objective evidence for a cause of neck and arm symptoms in this patient group. Such a finding could lead to new treatments for this painful condition.

Participants needed

We're looking for people to participate in the study. So if you've had neck or arm pain for at least three months following a whiplash injury, are under 65 and would like to take part, call 01273 877094 or visit bsms.ac.uk/whiplash Expenses will be paid.



Dr Andrew Dilley

Knowing what to EXPECT from cancer treatment

Researchers are examining how the potential side effects of treatment for prostate cancer affect patients' treatment decisions.

Prostate cancer is the most common cancer among men in the UK, and one of the standard treatments is hormonal therapy. This treatment slows disease progression and alleviates symptoms but over time most patients develop resistance to it and the cancer continues to grow. This is known as

hormone refractory or castrate resistant prostate cancer (cRPC), and it is initially treated with chemotherapy.

Researchers at Sussex Health Outcomes, Research & Education in Cancer (SHORE-C) at BSMS are conducting a scoping exercise to identify the kinds of information healthcare professionals provide to patients and their partners regarding the benefits and side effects of further treatment.

"We believe that certain side effects may have far more relevance to the decision-making process for some patients than clinicians are aware," says Principal Investigator and Senior Research Fellow Dr Val Jenkins. "So what may be termed relatively minor symptoms by the clinician may, in fact, have a profound effect on certain people and strongly influence their decision-making process." The Expectations and Experience of Treatment in men with metastatic cRPC (EXPECT) study will take place over six months.

A photograph of Dr Val Jenkins, a woman with short brown hair, looking down at a large, light-colored folder she is holding. She is in a room with tall filing cabinets filled with many small, light-colored folders. The background is slightly blurred, focusing on Dr Jenkins and the folder she is holding.

Dr Val Jenkins

Scanning milestone

January saw the Clinical Imaging Sciences Centre (CISC) at BSMS perform its 10,000th scan.

"Since CISC was established back in 2007, we've really broadened our range of work," says Professor Mara Cergignani, Chair of Medical Physics and Academic Director of the Centre.

"We now undertake a very wide range of activity and are becoming a linchpin to researchers, educators and clinicians alike, collaborating inter and intra campus."

The Centre houses a magnetic resonance imaging (MRI) scanner and a positron emission tomography-computed tomography (PET-CT) scanner. The scanners are used across a number of academic disciplines and schools, including psychology, neuroscience, life sciences, research at the Medical School, and the Sackler Centre for Consciousness Science. They have even been used by geographers, sports scientists, and anatomists.

The Centre also opens its doors to a wide range of patients, who are scanned to monitor for dementia and before neurosurgery, as well as those taking part in collaborative clinical trials with partners such as Sussex Partnership NHS Trust, the Clinical Investigation and Research Unit (CIRU) and Sussex Cancer Services.



Brighton hosts non-medical prescribing training day

A national training day for non-medical prescribers was held at BSMS in February. Delegates from around the UK attended the British Hypertension Society's 'Education for Non-medical Prescribers: Putting Prescribing into Practice'.

Currently, nurses, pharmacists, optometrists, physiotherapists, podiatrists, community practitioners, paramedics and radiographers can train and be registered as non-medical prescribers, and there is ongoing consultation to extend these prescribing responsibilities to other healthcare professionals.

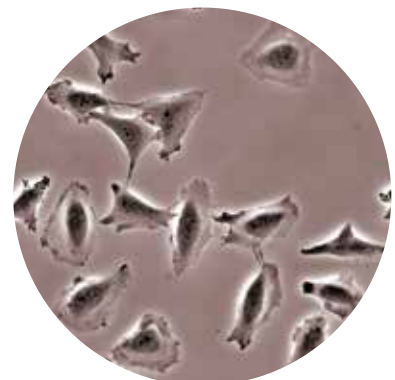
Senior Lecturer in Medicine and Medical Education at BSMS, Dr Mike Okorie, who organised the event, says: "The NHS is continuing to extend the range of healthcare professionals who can prescribe medicines in an attempt to ensure easy access to the medicines patients require. In today's rapidly changing healthcare landscape, non-medical prescribing is a very relevant subject, and will play a major role in improving patient care."

"The non-medical prescribing model may also provide an opportunity to optimise the undergraduate teaching and learning of safe prescribing in medical schools."

Understanding cell death

A new way of controlling cell death has been discovered by researchers at BSMS. Using a model system, they have found that a protein named Pacman (or XRN1) is normally required to switch off two other proteins that activate cell death. The findings have been published in *Biology Open*.

The work is relevant to understanding the ways that cell death and cell proliferation are regulated in cancers as well as normal tissue development. The research was carried out by BSMS PhD students Joe Waldron and Ben Towler, as well as researchers funded by the Biotechnology and Biological Sciences Research Council.





Event attracts young bright sparks

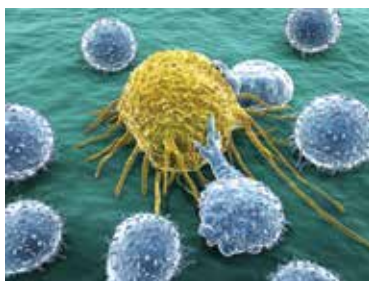
Student society BrightWAMS (Widening Access to Medical School) has been helping local children to find out about medicine and the body.

The society's 'Explore the body' event at the Bright Sparks children's interactive science weekend in February offered a range of activities for children, including 'Organs: the good, the bad and the unhealthy', 'Make your own germ' and 'Pretend to be a doctor'.

"We were inundated during the day," says society vice president Katy Owen,

a fourth-year BSMS student. "Kids got really involved, particularly making a germ and seeing if their weird and wonderful creations looked anything like real bacteria or viruses. They seemed to have loads of fun, and really got interested in science and the human body."

The organisation also arranges for student volunteers to visit Brighton's inner city primary schools. By teaching years 5 and 6 about medicine, the human body and what doctors do, BrightWAMS aims to interest and inspire children, particularly those who may otherwise have never considered being a doctor.



Lymphoma outcomes study

Final-year BSMS medical students Stephen Robinson and Joseph Gabriel have published a landmark paper on the survival of patients with an aggressive type of lymphoma called diffuse large B cell lymphoma (DLBCL).

Published in the journal *Leukemia and Lymphoma*, the paper was co-written by Dr Timothy Chevassut, Senior Lecturer at BSMS and Consultant Haematologist, in collaboration with clinical colleagues at the Royal Sussex County Hospital.

It is a six-year retrospective analysis of data collated from lymphoma patients to determine whether the specific microscopic subtype of the disease can provide useful prognostic information. The study is the largest of its kind to compare survival outcomes according to subtype, and confirms the importance of incorporating this analysis into the routine diagnostic work-up of newly diagnosed lymphoma patients. The findings will have implications on the counsel and treatment of patients with this aggressive form of cancer.

Rhythms of the heart

Two researchers at BSMS' Clinical Imaging Sciences Centre took part in a multimedia mix of art, science, performance and philosophy at a British Science Week event in March.

Postdoctoral research fellow Dr Cassandra Gould and Dr Charlotte Rea spoke at 'Rhythms of the heart', explaining how signals from the heart influence emotion. They also contributed to a workshop combining neuroscience, theatre,



storytelling and improvisation, demonstrating the heartbeat awareness tasks that they use in the lab.

New psychiatric technique for depression and anxiety

BSMS Postgraduate Research Fellow Dr Cassandra Gould has been awarded a grant to help develop new techniques to treat psychiatric illness.

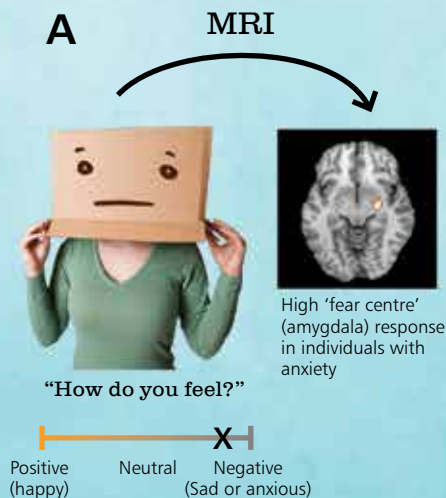
The Winston Churchill Memorial Trust has awarded Dr Gould £3,000 to visit Professor Rainer Goebel at the Maastricht Brain Imaging Centre in Holland. The visit is the first step in bringing real-time functional imaging and neurofeedback (rtFIN) to BSMS, a technique that could benefit those with psychiatric illnesses such as depression and anxiety.

rtFIN is a brain-imaging technique that enables near-immediate analysis of brain data, and displays the results to the participant. This feedback can be used to assist people in controlling their brain activity, and could therefore benefit sufferers of depression or anxiety who haven't responded to medication or other treatment.

"It's great to be developing and promoting such an exciting new technique in the UK," says Dr Gould. "rtFIN allows us to close the 'causal loop' in our interpretation of brain activity, bringing great benefit to research into psychiatric illness and consciousness in general."

Professor Goebel is a world leader in rtFIN, and the visit will allow Dr Gould to acquire the skills and knowledge necessary to begin to implement the technique at the Clinical Imaging Sciences Centre (CISC) at BSMS.

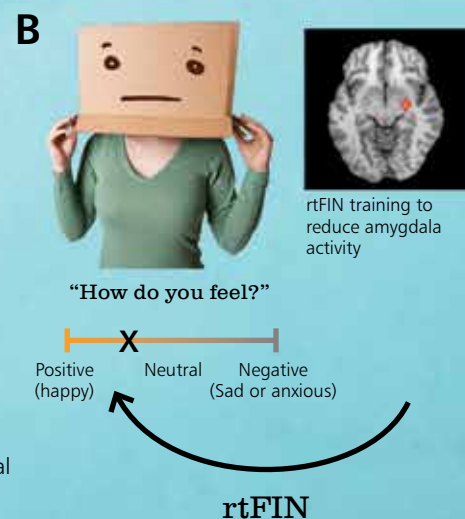
CISC will be one of the first centres in the UK to use the rtFIN, which Dr Gould believes will attract collaborations from other UK groups and benefit multiple strands of research.



How rtFIN works

Someone with anxiety is asked to rate how they feel when they are shown a face. This may be a happy face, a neutral face (as left) or a fearful face. It has been shown that people with anxiety rate the neutral face as more negative than people without anxiety, and that this is associated with an increased amygdala response.

With rtFIN, we can train these people to reduce their amygdala response, which should make them feel less negative, fearful or anxious when viewing a neutral stimulus (B). We can then infer that not only does the behaviour correlate with the brain state, but the brain state causes the behaviour.



Talking physicians and magicians

Final-year BSMS student Fiona Dogan explored the relationship between medicine and magic in a paper recently published on the BMJ Blogs (Medical Humanities) website.

Fiona first wrote 'Physicians and Magicians: A Magical Education in Life, Death, Power, Potions and Defence Against the Dark Arts' as part of her third-year student-selected component in literature and medicine. She has since presented it at the Association of Medical Humanities Conference in Southampton, and at the 2nd International Conference on Medical Sciences and Humanities in Sofia, Bulgaria.

blogs.bmj.com/medical-humanities/2015/01/20/



Why are there still so few women in science?

BSMS Professor of Global Health Epidemiology Gail Davey recently hosted an event at Pembroke College, Cambridge, to mark 30 years since women were first admitted to the college and to ask why science remains such a male domain.

As one of the first female students to join the college in 1984, and one who read Medical Sciences, Professor Davey set the scene for a lively discussion. She was joined by a panel of academics to discuss the possible social and biological causes of the gender discrepancy in the scientific fields.

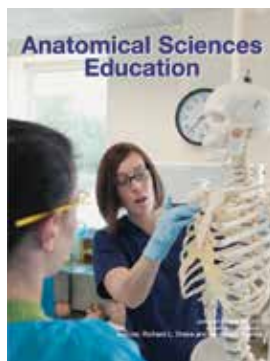
"We agreed that the issue is not so much the presence of



women in science," says Professor Davey. "In fact women are well represented in many sciences, but rather there is a lack of women progressing to senior positions within all the sciences. Issues around expectations, stereotypes, role models and mentoring emerged during the discussion."

BSMS is addressing these issues within the framework of the Athena SWAN Charter, which aims to advance the representation of women in science, technology, engineering, medicine and mathematics.

The School submitted an application for the Bronze award in November 2014, and is now carrying out a range of activities to improve the progression of women. These include an annual academic staff survey, a student survey at the end of the academic year, a pilot mentoring scheme underway for six senior lecturer staff and improvements to the School's induction, maternity and manager development processes.



Cover shot

Head of Anatomy, Dr Claire Smith, is featured on the cover of *Anatomical Sciences Education*, teaching a group of first-year BSMS students. The January/February issue also sees Dr Smith describe how the traditional spotter exam can be developed into an Integrated Anatomy Practical Paper (IAPP) examination.

BSMS on film

BSMS featured in an episode of BBC One's *Inside Out* that investigated why there's such a shortage of GPs in the Kent/Sussex area.

Journalist Vince Rogers (far right) visited the Medical School to find out about BSMS' role in helping create a new generation of GPs, interviewing Senior Lecturer in General Practice Dr Max Cooper (left) along with fourth-year students Amy Sharpe, Lucy May and Dilan Joshi.



The team also filmed a 'simulated surgery', where under supervision students act in the role of GP, helping 'patients' played by actors. "BSMS is unique in providing simulated surgeries dedicated to communication and clinical skills for general practice. These sessions prepare our students for the real-world challenges of a busy GP surgery," says Dr Cooper.

Doctoral fellow attends international workshop

Natalie Edelman, a National Institute for Health Research doctoral fellow at BSMS, recently participated in a workshop for early career researchers at the University of Capetown, South Africa. The workshop explored the juncture between critical and applied health and social research, with a view to international collaboration and methodological development. "It was an intensive and inspiring five days, attended by medical anthropologists, epidemiologists and social scientists from the UK and across Africa," says Ms Edelman. "My ideas around critical epidemiology were taken up and developed into a collaboration between UK and South African universities. This work will centre on co-publication and the development of a consultation group to inform a critical epidemiological approach to a study of HIV anti-retroviral treatment adherence led by the University of Cape Town."

Community

Charity raises money to help asthma and allergy research

A charity, founded by a mother who lost her son to an anaphylactic reaction, has raised money to help asthma and allergy research at BSMS.

Emma Wileman, from Haydn's Wish, presented a cheque for £10,000 to Professor Somnath Mukhopadhyay, Chair of Paediatrics at BSMS.

Ms Wileman founded the charity after losing her nine-year-old son, Haydn, when he suffered an anaphylactic reaction to peanuts in his breakfast cereal.

The money will be used for research into asthma and allergies. Professor Mukhopadhyay says: "Asthma and allergies come closely hand-in-hand, together with other skin problems such as eczema, and it's almost misleading to consider them as separate diseases. They are all different manifestations of the

same condition and they need to be studied together."

Committee members from Haydn's Wish raised the money by participating in the Brighton Marathon, a football tournament at Newhaven and growing handle bar-shaped moustaches during 'Movember'.

Ms Wileman has been touring around local schools with Dr Hilary Jones from GMTV, to raise awareness about allergies.



Medical students help change the lives of ill children

Students from BSMS presented children's hospice Chestnut Tree House with a donation of more than £2000 in December 2014, following a year of fundraising for the charity.

Director of Children's Services at Chestnut Tree House, Linda Perry says: "We were delighted to receive this donation from such an enthusiastic group of young students. It will help to us to continue providing the best quality of life for children, young

people and their families, and to offer a total package of practical, social and spiritual support throughout each child's life, however short it may be."

BSMS Medical Society (MedSoc) ran a number of fundraising events, ranging from fancy dress nights to raffles and even a cabaret. MedSoc President Jaz Singh says: "Chestnut Tree House is such an amazing charity, helping children with life-limiting conditions, it was easy to get people motivated to raise money for them."

Professor Malcolm Reed, Dean of BSMS, adds: "It's inspiring to see our students going to such lengths to raise money for charity – and to support a local Sussex charity that really touches the lives of so many families in need."

MedSoc students with Linda Perry, Chestnut Tree House and Professor Malcolm Reed, Dean of BSMS



BSMS10 helps tackle neglected tropical disease

BSMS' ten-year anniversary fundraising efforts have helped fund a podoconiosis training workshop in north west Cameroon.

Two million Cameroonians (10% of the population) are at risk of podoconiosis, a treatable form of elephantiasis that causes swelling in the legs and feet and can lead to severe immobility. The disease isn't infectious, but is caused by long-term barefoot contact with irritants in soil found in specific highland tropical areas in Africa. Preliminary mapping in north west Cameroon has shown podoconiosis to be endemic in this region, with around 1% of the population being affected by it.

The December workshop trained 19 nurses from the Cameroon health ministry and six leaders from a local community development organisation, with sessions ranging from the theoretical to the practical.

Participants discussed ways forward in preventing and treating the disease through advocacy efforts, developing a regional committee and local patient support groups, and improving patient education.

Patients were also invited along to the workshop to provide hands-on training for participants in screening, disease management and patient education. Trainees learned how to register patients, help them to wash and treat their legs and feet, and carry out bandaging.

The workshop was co-funded by the charity Footwork: **podo.org**

Events

May

Telling the Story of Parkinson's Disease: Can Comics Help?

As part of Brighton's Fringe Festival, people with Parkinson's Disease, researchers, graphic artists and comic creators are getting together to capture a sense of being diagnosed with the condition. This free evening event is being hosted at BSMS, and will mix visuals, discussion and a close-up look at the experience of patients and their carers.

Come along and learn more about the lived experience of neurological disease and help decide whether there is a place for the comic in telling those all-important patient stories.

**Thursday 7 May, 6.30pm,
Brighton and Sussex
Medical School.**

You can book your free ticket at **boxoffice.brightonfringe.org** visit the Brighton Fringe Box Office at the 1 Stop Travel Shop, 26 North Street, Brighton, BN1 1EB, or call 01273 917272.



May

Thought-provoking cancer debate

BSMS is sponsoring the Facing Cancer debate in this year's Brighton Festival.

Professor Malcolm Reed, oncologist and Dean of BSMS says: "Cancer is an illness that has affected most of us in one way or another, and having spent my career as a surgeon working with patients affected by cancer, the subject naturally holds a particular interest for me. Our engaging debate will examine this challenging subject from multiple perspectives: the medical, the ethical, the research and, most importantly, the personal."

Professor Reed will be joined on the panel by a range of experts, including BSMS Professor of Ethics, Bobbie Farsides; and Professor of Psycho Social Oncology, Lesley Fallowfield; along with Peter Johnson, Chief Clinician at Cancer Research UK; and Marion Coutts, author of *The Iceberg*, a widely acclaimed account of her husband's battle with cancer, which was recently shortlisted for the Wellcome Book Prize.

The event will be chaired by Nicholas Timmins, Senior Fellow at the Institute of Government and the King's Fund and former public policy commentator at the Financial Times.

Sunday 24 May 2015, 1pm
at the **Brighton Dome Corn Exchange.**

To find out more and buy tickets online go to:
brightonfestival.org/event/5869/facing_cancer/

You can also book tickets by phone on 01273 709709 or in person at the Brighton Festival Ticket Office, 29 New Road, Brighton BN1 1UG.

November

Simulation conference

The Association of Simulation Practice in Healthcare (ASPiH) conference will take place in Brighton during early November.

Drs Wesley Scott-Smith, Martin Parry and Amit Mishra, who are all involved with simulation-based education within BSMS and Brighton and Sussex University Hospitals Trust, are on the local organising committee and will be coordinating some of the conference activities.

If you're interested in simulation-based education and technology-enhanced learning, you can find out more at **blogs.brighton.ac.uk/simulationhub/category/blog/**

3-5 November at the **Brighton Centre.**





Pulse

The Brighton and Sussex
Medical School magazine

BSMS Teaching Building
University of Sussex
Brighton
East Sussex
BN1 9PX

T: 01273 606755

E: news@bsms.ac.uk