

The Brighton and Sussex Medical School magazine

In this issue

- Making medicine accessible
- Keeping kids healthy with an app
- Watch out for antioxidants

Astrophysics meets medicine in dementia diagnosis





from the Dean, Professor Malcolm Reed

As we welcome our new students to BSMS, I look back on my own first days at medical school, which were at the time of the last and only other doctors' strikes in the NHS! In many ways the issues at stake at that time were the same as the ones faced by junior doctors today and the challenges faced by the NHS have continued to be the focus of national attention. Despite this, I have absolutely no hesitation in reassuring our new students that their next five years here at BSMS will be transformational, at times challenging and ultimately thoroughly enjoyable. The excitement and joy of our final year students at graduation just a few short weeks ago is sufficient evidence of this as they take up their posts as foundation doctors throughout the NHS.

During the next five years we look forward to the completion of the first phase of the major redevelopment project of our main NHS partner hospital, Brighton and Sussex University Hospitals Trust at the Royal Sussex County site. This redevelopment is long overdue and will dramatically improve the experience for patients, staff and students. This is currently one of the biggest development projects in the NHS and we will work closely with the Trust to ensure that we maintain the high quality of our student experience. This new academic year is marked by the establishment of our two new departments in BSMS (Neuroscience and Global Health/Infection) and the reconstitution of our existing departments (Clinical and Experimental Medicine, Primary Care Public Health and Medical Education). We believe these changes will support and develop our areas of strength in research while maintaining our relentless focus on an outstanding student learning experience. We're celebrating 10 years of our BrightMed programme (page 4), which has helped more than 800 students

Congratulations to the class of 2016, who graduated from BSMS in July

from local state schools learn about medicine and gain the skills they need to apply for medical school. Competition for places to study medicine in the UK is really tough – only one in ten applicants will be offered a place. So BrightMed plays a vital role in preparing young people who don't have the benefit of a private education or family background in higher education.

This issue highlights some of the exciting research taking place here at BSMS. We're combining astrophysics and medicine to improve the early diagnosis of dementia (page 8), and ensure that people with the condition and their families can get the treatment and support they need. BSMS is working with Brighton & Hove City Council on a new app that monitors children with asthma, with the aim of keeping them healthy and in school (page 9). And Professor Pietro Ghezzi has a warning for the health freaks among us – antioxidants can be bad for your health (page 15)!

Best wishes,

1 pie















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Cover story (see page 8) **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.

The future of medicine is looking bright

Ten years since being launched, the BSMS outreach programme BrightMed is helping more students than ever get into medical school.

"BrightMed has been a really valuable guide through the application process. It's been great being able to talk to medical students, work in a team, practise getting patient histories, do practice interviews and get help with your personal statement. It gives us a real advantage."

Maram Takriti, 17, BHASVIC

It's day three on the BrightMed residential and the year 12 school students are busy diagnosing conditions that range from asthma to broken limbs and suspected heart attacks. Every 15 minutes each group of teenagers moves to a new station, where their 'patients' are medical students displaying various symptoms. The students seem to know their stuff and ask a number of pertinent questions before making their diagnoses and suggesting treatments. They are staying on campus at the University of Sussex, allowing them to becoming

> BrightMed works with state schools in Sussex, encouraging them to nominate promising students who excel at science or have a strong desire to study medicine. Most students have no family background in higher education.

fully immersed in the life of a medical student for a week.

Medicine is one of the most notoriously difficult



courses to get on to; only one in ten applicants will be a offered a place. What's more, these few places are overwhelmingly filled by children from the more privileged backgrounds, with just 20% of schools in the UK providing 80% of medical students.

"These kind of statistics show that if you don't go to the right school, or have a family that understands the application process, your chances of getting into medical school are dramatically reduced," says Darren Beaney, Head of Admissions, Recruitment and Widening Participation at BSMS.

"When the medical school was established, we felt it was important to redress this imbalance, and make medicine more accessible as a career option for all talented students, whatever their background." BrightMed graduate and third-year medical student Craig Tilley teaches on the programme

The beginning

So BrightMed was born in 2006, with just 10 students, and teaching provided by staff. Today there are more than 250 students, studying in cohorts from years 9 to 13. Current medical students run most of the sessions, which take place on Saturdays throughout the year. Classes range from academic to practical, including biology, practice interviews, patient histories, anatomy and the application process.

Third-year BSMS student Craig Tilley took part in BrightMed when he was at secondary school, and now teaches on the programme. "My mum is a school cook and my stepdad a carpenter, and neither had been to university. I went to a school that wasn't performing very well at the time, so I definitely met the BrightMed criteria," he says.

"I really enjoyed applying science to real life and understanding how the human body works. The course made science relatable for me, and gave me the perspective of what it's like to study medicine and become a doctor.

"I definitely wouldn't have applied for medicine if I hadn't done the programme – I wouldn't even have thought it was an option. I thought only rich people became doctors."

continued on page 7 >

"I'll be the first in my family to go to university. So it's been really useful giving me an insight into university life in general, and more specifically medicine. It's also really developed my confidence. I've learned a lot

of new things about medicine – which have complemented my other subjects at school, like biology. The residential has been amazing – five days to embody a medical student, spend time on campus, living like a student." Stacey Harrington, 17, Worthing College

A success story

BrightMed and BSMS graduate Dr Erin Doherty is working as a Senior House Officer in Worthing Hospital. She tells us about her experience of BrightMed.

BrightMed dramatically changed my life – and that's no exaggeration. Without it I am certain I wouldn't have got a place at medical school. In fact, I wouldn't have even thought it was possible for someone like me to study medicine.

I grew up in a working class family in Seaford, and before our generation, no one in our family had ever been to university.

My secondary school was in Ofsted special measures and we had little access to any careers advice. The careers tutor suggested I become a fitness instructor, despite my high grades, and she never mentioned university or higher education as a possibility.

When I was in year 10, I received an email inviting students with an interest in science to apply to BrightMed. I very nearly didn't apply – I didn't actually know what medicine was and I didn't think I would get a place. But I did apply. And it really did change my life.

The programme introduced me to the subject of medicine, which I discovered I loved. But more than that, it made me realise my potential and increased my confidence. It made me work harder academically, and really helped me get to grips with the complex process of applying for medicine.

So I broke with tradition and applied for medicine. My hard work paid off, and I was accepted to study

Facts and stats

- Only 10% of applicants will get into medical school
- 80% of medical students come from just 20% of schools
- 50% of state schools have not had a single applicant for medicine in the last 3 years
- Over the past decade 850 students have taken part in BrightMed



at BSMS. I was the first student from Seaford Head to apply for medicine in three years, and the first successful applicant in six years.

During my time at BSMS, I worked as a BrightMed tutor. I thoroughly enjoyed working on the other side of the programme, encouraging others to pursue a career in medicine and helping them to realise such a career can be a reality.

Widening participation programmes are a brilliant way of bringing variety into medicine, broadening the range of personalities and characteristics in our doctors. They also break down barriers and open up medicine as a possibility to those from less privileged backgrounds.

I absolutely love working as a doctor and I know I wouldn't be here if it wasn't for BrightMed.

You can support Erin's challenge to run a marathon in every continent in a year for the British Lung Foundation and Tearfund at:

mydonate.bt.com/fundraisers/erindoherty

- Of the 35 year 13 BrightMed students in 2016, 25 applied for medicine and 13 have received offers.
 Four others were offered places on courses for other health professions and two for biomedical science
- The first BrightMed graduates are now on specialist training programmes
- BrightMed graduates have studied medicine at over half of all the medical schools in the UK and one is studying overseas.

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BrightMed helped with applying for medicine too. "Talking to actual medical students every Saturday gave me a real insight into the process, along with the practice interviews, mock exams and the personal statement."

Giving something back

So why did Craig decide to get involved in teaching on the programme as a medical student? "I wanted to help people like me, who have an interest in science but don't yet know that medicine is a real option. It's fun too.

"I feel really indebted to BrightMed – I wouldn't be here if it wasn't for the course. So it's good to be able to give back. Not only should doctors fully represent the societies they work in, but those who have the qualities of a good doctor should have equal access to such a career, regardless of where they come from," he adds. Leading delivery of the programme, Widening Participation, Outreach and Recruitment Officer, Sam Wickham is excited about planned developments. "We hope to expand BrightMed to include year 8 – which will mean that students as young as 13 will have the chance to learn about medicine, and hope to offer additional outreach activities directly to schools in Sussex."

Darren Beaney believes there's plenty more to be done to help make this a reality. "BrightMed is a very dynamic programme and it's continuing to grow. The privilege of practising medicine should not be available to just a select few, and at medical schools we have a duty to ensure that it's those who will truly make the best doctors who go into medicine."

To find out more about BrightMed, please contact Sam Wickham on 01273 641841 or at s.wickham@bsms.ac.uk Follow us on twitter@BrightMed



Research Psychological therapy helps postnatal depression

Mothers with postnatal depression should have access to psychological therapies as an alternative to antidepressants, when treated in primary care.

That is the recommendation from researchers at BSMS, who reviewed 10 clinical trials, involving 1,324 depressed new mothers, and found that counselling and cognitive behavioural therapy (CBT) are effective alternatives to antidepressant medication.

Led by Dr Elizabeth Ford, Research Fellow in Primary Care Epidemiology at BSMS, they found that offering patients psychological therapy in primary care resulted in reduced depressive symptoms and a higher level of remission immediately after the treatment.

"Approximately 13 percent of mothers experience postnatal depression during the first year after delivery, and 90 percent of cases are managed by GPs," says Dr Ford. "Antidepressant medication is commonly used as a first-line treatment for postnatal depression due to long waits on the NHS for psychotherapy. But the potential side-effects of these drugs, and possible risks to the baby when breastfeeding, cause concern for mothers and doctors. It is really important that GPs can recommend other treatment options to their patients, and that the people who commission NHS services have evidence so that effective treatments can be made available."

The analysis focused on psychotherapy provided in community settings, whether by trained nurses, health visitors or psychotherapists based in general practice clinics. Other benefits of the therapies included improvements in anxiety and stress, marital relationships, adjustment to parenthood and perceived social support.

The findings are published in Annals of Family Medicine.

Space: the final frontier in dementia diagnosis

Astrophysicists will swap galaxies for general practice in an innovative new study that aims to improve the early diagnosis of dementia.

By using statistical techniques developed to catalogue galaxies, researchers at BSMS and the University of Sussex will analyse data from 96,000 GP records to identify common, early indicators of dementia.

Researchers will observe a broad range of data available in the GP records, such as the number of appointments a patient has had, or whether they attended with a family member. These details will be combined with other clinical information known to be predictive of dementia, and could provide a wide range of indicators that may help GPs identify patients at high risk of developing the condition.

"Dementia is one of the greatest public health challenges of our era and more timely diagnosis may help many patients. Therefore, GPs could benefit from a 'real-time' risk stratification tool to use in their workflow. This could then be used sensitively to bring up the topic of memory problems with patients who are at risk, and perhaps start a conversation about a referral for a memory assessment, where appropriate," says Project Lead Dr Elizabeth Ford.

Dr Philip Rooney, a Research Fellow in Astrophysics at the University of Sussex, will conduct much of the data analysis. He adds: "Astrophysicists regularly apply statistical and machine-learning techniques to catalogues of galaxies and galaxy spectra. We can apply these techniques to GP patient records, where the clinical condition is analogous to a galaxy, the GP database is similar to a galaxy catalogue and diagnosis of a condition is similar to the modelling of galaxy properties.

"Methods have been developed for large physics experiments to best account for uncertainties in a dataset and to efficiently extract information. These methods should translate well in analysing GP records where, similarly, we cannot repeat measurements and the data may be noisy, with recording errors and misdiagnosis."

Timely diagnosis of dementia allows patients to maximise their quality of life, benefit from treatments and plan for the future. Currently, however, only 50-60% of patients with dementia receive a diagnosis. Increasing diagnosis rates in general practice and diagnosing earlier in the course of the disease are strategic aims for the UK government and NHS.

The study, ASTRODEM, seeks to produce a statistical model that could be embedded into GPs' standard computer software, to help identify patients with initial indications of dementia. It has been awarded £94,000 by the Wellcome Trust.

App helps keep children healthy and in school

Local schools and families are taking part in a new project to improve the health of children with asthma and reduce the number of days they miss from school.

Researchers at BSMS have teamed up with Brighton & Hove City Council to deliver Inspire, a project that uses an app to track absences due to asthma-related illness and design tailored advice to improve treatment.

In the UK there are three children with asthma in every classroom. Every year more than one in five children miss school due to asthma-like illness, and children with severe asthma may miss many weeks of vital education.

"The connection between children's health and school attainment is well documented. Not only are these children missing out on the quality of life they deserve, but their asthma has a real knock-on effect, impacting on their education, and possibly even their future careers," says BSMS Chair of Paediatrics and lead on the project, Prof Somnath Mukhopadhyay.

"Reducing school absences through more effective management of illness is a health improvement area that receives the unanimous backing of schools, the NHS and families."

Parents use the app, Studybugs, to inform the school if their child is unwell and are prompted for details, for example whether the illness was due to asthma or wheeze.

Each child develops an attack of asthma and allergy in a different way and looking more carefully at the events preceding the attack – through Studybugs – could help develop solutions that are useful for each individual child.

Twelve-year-old Nathan Jones is only in school 70% of the time, due to severe asthma and allergies. His mother Amber explains: "Nathan sleeps very badly because of his asthma and often wakes up wheezy, so we need to get his allergies under control before he



Nathan Jones is only in school 70% of the time as a result of his asthma

can take his medication and go to school. That means he's often in late. Other days he's just not well enough to go in, or the school sends him home because he's reacted to something or his breathing is bad.

"Sometimes they send schoolwork home with Nathan, but it's not the same without the teacher's support, and when he's feeling really rotten he's just not up to studying."

Asthma varies greatly from child to child. While some children miss a good deal of school due to severe asthma, others may only miss the occasional day because of milder symptoms. The project aims to support all children and families who are affected by the condition.

Participation in the project is free for schools and parents, and is easy: schools can register in minutes and invite all parents to download the free smartphone app: **everychildisdifferent.org/inspire**

Research



A conversation with ... **Dr Simon Waddell**

Tell us about your role

I'm a senior lecturer in Microbial Pathogenesis in the newly created Department of Global Health and Infection, and I'm part of the Wellcome Trust Centre for Global Health Research at BSMS. I teach molecular biology to first-year medical students and a little on infectious diseases to third-year students and Global Health MSc students. I'm also co-lead for the independent research project, which aims to give all fourth-year students a taste of conducting medical research whether in the clinic, GP surgery or laboratory.

What are your particular research interests?

My group, situated in the microbiology labs of the Medical Research Building, works on infectious bacterial diseases with a particular focus on tuberculosis (TB). We try to understand how bacteria adapt to our body during infection and how these changes alter the effectiveness of anti-microbial drugs that are used to treat the disease. A better understanding of what bacteria do to cause TB will help us to develop new ways of tackling these infections.

What are you working on at the moment? I've been working with an international team on an

exciting proof-of-principle study, which may lead to a breakthrough in the way TB is treated. We've discovered bacterial biomarkers that predict the early success of drug treatment, which for TB lasts at least six months at the moment. In the future, this may allow patients to finish drug therapy early, reducing the difficult and debilitating side effects of the drugs and cutting treatment costs.

Tell us a bit more about TB. Is it still around?

Yes, tuberculosis is still very much with us. There were 9.6 million new cases and 1.5 million deaths from TB across the globe in 2014. While it is certainly more of a problem in low and middle income countries, there are around 6,000 cases each year in the UK. TB is spread through inhaling tiny droplets from the coughs of an

We also work to discover how potential new drugs kill bacteria, a necessary step in the development of the next generation of anti-microbial drugs that are so desperately needed.

Patients at a sanatorium recuperate in the sun, 1937









infected person. Treating the disease is complex and costly. Standard drug therapy is a combination of four drugs taken over six months, and side effects can be severe. So it is difficult for patients to stay on treatment for the duration. Drug resistance is becoming a problem, so new drug combinations and new ways of assessing these novel combinations are needed.

What did your research involve?

We mapped the responses of TB bacteria coughed out in sputum from patients on standard drug therapy to understand why some bacteria survive through months of treatment. The study showed for the first time that specific changes to the TB bacteria two weeks after starting drug therapy could predict the success of treatment six weeks later. Far left: Glasgow's x-ray campaign against TB, 1957

Left: Advertisement for Angier's emulsion, used to treat TB in the late 19th and early 20th century

Below: Village doctor in Multan, Pakistan, checks villagers for TB

What does this mean in terms of treating the disease?

The study showed that bacterial responses measured during treatment could be used to understand drug action in patients, and that these signatures may be used as biomarkers, allowing us to predict when patients may safely finish treatment.

What is the impact of this?

Profiling TB bacteria in this way could help find predictive markers of treatment success that are desperately needed in clinical trials and in the clinic. This would reduce the cost of drug trials needed to test new drugs for TB, and allow doctors to quickly stratify patients who are not responding to drug therapy. It could potentially save millions of pounds worldwide in drug costs and spare many patients from suffering the severe side effects of such long treatment.

Read about the study at http://bit.ly/TB_SW

9.6 million new cases and 1.5 million deaths from TB across the globe in 2014

Linking with Lusaka

Improved HIV care, fewer child deaths and better pharmaceutical practice are just some of the benefits of an unlikely pairing between Brighton and a teaching hospital in Zambia.

Eleven years since being established, the Brighton-Lusaka Health Link has not only brought significant benefits to medical staff and patients in Lusaka, but has forged a lasting impression on the UK professionals who have taken part in the project.

It all began with a visit to Zambia; Head of the Department of Global Health and Infection at BSMS, Professor Melanie Newport was in the country on other business. She was introduced to the medical director of the University Teaching Hospital (UTH) in Lusaka, a facility that already had a few links to Brighton and the UK.

"Often, the model for links between UK and international rural hospitals was limited to short-term visits to deliver clinical care," recalls Professor Newport. "For example, someone from the UK may visit a rural hospital to perform surgery for two weeks, before returning home. We really wanted to set up a longer lasting, two-way connection that would focus on training and allow all departments to be linked up. As teaching hospitals with medical and nursing schools attached, UTH and Brighton were perfectly matched."

Improving HIV treatment

With the link established, the Brighton group wasted no time in speaking to staff at UTH to find out the needs of the hospital and how they could help. The first project saw them set up an HIV education programme for nursing staff.

"We were surprised to learn that many of the nurses had poor knowledge of HIV, despite it being such a big problem in the country," Professor Newport explains. "There was little respect for their role, morale was low and contracting the infection from needle stick injuries was a common hazard of the job. Consequently, we were asked to put together an education programme that not only helped the nurses' clinical understanding of HIV, but empowered them, too."

Set up by senior nursing staff from Brighton and Sussex University Hospitals (BSUH) and the University of Brighton, the programme is ongoing and has made a number of lasting impacts: HIV now features in student nurses' pre-registration curriculum, post-exposure



prophylaxis (PEP) treatment has been made available to hospital staff, and Zambia's Ministry of Health has since introduced a policy for dealing with HIV in the workplace.

The group's HIV work continues today. Dr Jaime Vera, a Clinical Senior Lecturer at BSMS, recently received funding to develop a sustainable link between collaborators at the medical school, the Universities of Brighton and Sussex, and UTH, to design research projects exploring sexual health and preventing sexually transmitted infections (STIs) and HIV. Dr Vera explains, "Despite the improvement in the coverage of treatment, STIs including HIV and hepatitis remain a major public health problem in sub-Saharan Africa. We are aiming to set up a link that will enable research projects on the testing and management of STIs, and the stigma and discrimination associated with sexual health in HIV and non-HIV populations."

Enhanced paediatric care

With the success of the HIV education programme, the link began to expand into other areas. Staff from BSUH and BSMS also began regular visits to UTH as external examiners for the medical school.

During one of their regular visits to Lusaka, the group learned of the extremely high mortality rate for its child patients. "Two-thirds of children who died at the hospital, died within 48 hours of admission," says Professor Newport. "While they were often very ill on arrival, simple errors or knowledge gaps among healthcare staff contributed to these avoidable deaths. Many nurses weren't equipped with the skills needed to treat children."

The team worked hard to help address this issue, with the Schools of Nursing at the University of Brighton





Paediatric nursing at UTH

and UTH collaborating on the introduction of a postregistration diploma in paediatrics. The course provides nurses with essential skills and knowledge to care for child patients.

Further paediatrics links continued to grow over time, with UK clinical and academic staff volunteering, setting up training courses and joint clinics.

Currently, the group are running a fundraising campaign to replace the hospital's special-needs school bus, as many of the schoolchildren are otherwise unable to travel to attend classes.

Pharmacy links bring mutual benefits

A relatively recent development has seen the group working on building links with the pharmacy department at UTH and the University of Zambia's Pharmacy Department.

Together with local colleagues, Dr Sarah Marshall, a global health pharmacist at BSMS, visited the hospital and university in Lusaka to identify ways that they could help. During their visit, the team lobbied Zambia's Ministry of Health to increase funding for pharmacists. "The pharmacists in Zambia are doing amazing work," says Dr Marshall, "but there is a need for additional funding to expand their work further, with pharmacists urgently required in rural hospitals."

> The UK pharmacists have already helped with a number of projects, including developing educational materials and sharing resources to help UTH's staff audit their day-to-day tasks, to help increase the visibility and perceived value of their role.

> In volunteering on the link, many UK staff have gained insight and learnt from their Zambian

The first paediatric nursing class at UTH

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peers. "These days, a lot of a pharmacist's work is done at a desk in front of a computer screen," observes Dr Marshall. "One of the things that struck us about the pharmacists in UTH was that they were out there on the wards, and it really inspired our group to make sure we get out and see patients."

Going strong

"The success of the projects has been through people travelling between Brighton and Zambia, meeting colleagues, building friendships and sharing experience," surmises Professor Newport. "The link sees us all working towards a common goal: improving health of people in Zambia through training healthcare professionals." In Zambia pharmacists are urgently required in rural hospitals

The initiative continues to flourish, with volunteers from the medical school, NHS Trusts, local universities and the community getting involved with projects at UTH.

If you would like get involved with the Brighton-Lusaka Health Link or make a donation please visit http://bit.ly/BrightonLusakaHeathLink

The Brighton-Lusaka Health Link (LHL) was established between BSMS, Brighton and Sussex University Hospital NHS Trust (BSUH), and the University Teaching Hospital (UTH) in Lusaka, Zambia in 2005.

The link was set up by Professor Melanie Newport at BSMS and colleagues at BSUH. It aims to provide educational and clinical support for healthcare workers at UTH, and to share knowledge and clinical experience between the institutions. The link gained charity status in September 2011.

New clues in sepsis diagnosis

Researchers have identified a new way of diagnosing sepsis. Also known as blood poisoning or septicaemia, sepsis is one of the leading causes of death worldwide and is responsible for 37,000 deaths in the UK alone every year.

Sepsis is triggered by an infection or injury, which pushes the body's immune system into overdrive as it tries to fight infection. This systematic inflammation can affect vital organs and lead to multiple organ failure and death if not treated quickly.

The study found that molecules known as micro-RNAs were found to circulate in the blood of patients with sepsis, and could therefore be used as biomarkers to identify the condition. This would help to



differentiate sepsis from other similar, critical illnesses such as non-infective systemic inflammatory response syndrome (SIRS). While SIRS has very similar symptoms to sepsis, it is not caused by an infection and the two conditions must be treated very differently.

"Severe sepsis kills many thousands of people in the UK every year, and early diagnosis is key to successfully treating it and preventing deaths," says postdoctoral researcher Dr Stefano Caserta, who worked on the study with Dr Martin Llewelyn at BSMS and the intensive care team at the Royal Sussex County Hospital. "We are hopeful that our work will aid the development of novel biomarkers to help doctors diagnose the condition and put the right treatment in place as early as possible."

The study has been published in Scientific Reports.

Beware of antioxidants

There is no proof that antioxidant supplements, taken to prevent or cure diseases, are useful; in some cases, they may actually be harmful, according to a new review.

The lay press and thousands of nutritional products warn of oxygen radicals or oxidative stress and recommend taking so-called antioxidants to prevent or treat illness, prevent ageing or "boost the immune system".

But Chair in Experimental Medicine at BSMS, Professor Pietro Ghezzi and Professor Harald Schmidt at the University of Maastricht have analysed the evidence behind this and concluded that there are no demonstrated benefits to taking these supplements.

"A lot of people assume antioxidants will only do them good, but they can actually be doing harm," says Professor Ghezzi. "Our review shows that to be safe, you should only take these if you have been diagnosed with a clear vitamin deficiency."

Life depends on oxygen to produce energy for our body. The oxygen has also the potential to generate so-called oxygen radicals, which may cause "oxidative stress" and disease. Markers of oxidative stress have been correlated with cardiovascular disease, cancer, and diabetes. Because of these associations, antioxidant supplements are taken by millions of people.

"Randomised clinical trials testing antioxidants have not shown conclusive evidence for any benefit. On the contrary, some antioxidants may have a harmful effect. This is due to the fact that oxygen radicals are not only triggers of disease, but have many important functions in our body, such as the immune defence and hormone synthesis. So antioxidants will always interfere with both healthy and potential disease-triggering oxygen molecules. The net effect is therefore zero or apparently even negative," says Professor Ghezzi.

Professor Schmidt adds: "Nevertheless, oxidative stress could be important in some conditions and in a small proportion of patients. However it can be managed in a totally different manner, with classical drugs targeted only at those sources of oxygen molecules that are triggers of disease and leaving the healthy ones alone."

The review is published in the *British Journal* of *Pharmacology*.

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Safe prescribing training lacking in some junior doctors

Lack of training in safe prescribing for doctors in their foundation year 2 (F2) has been highlighted in a new study.

Researchers at BSMS and the University of Brighton found that in doctors' second year of foundation training, there was insufficient emphasis on training in practical safe prescribing compared with that of F1 doctors. This is despite F2 doctors having the highest prescribing error rate, according to an earlier study by the General Medical Council (GMC). In addition, the data suggested that there was a considerable variation in the safe prescribing training delivered in different NHS hospitals.

"We were concerned to see that despite F2 doctors making the most errors in prescribing, they do not seem to be receiving optimal training in this area. With an ageing population and increasing reliance on medication, we need to ensure that all doctors, especially in their early years, receive appropriate training in practical prescribing," says Dr Michael Okorie, Senior Lecturer in Medicine and Medical Education at BSMS, speaking on behalf of the research team.

"We hope that our study results prompt NHS hospital trusts to review the safe prescribing training delivered to foundation doctors and prescribers in general. We would also recommend the development of minimum standards for safe prescribing training across the NHS, particularly in the induction period and for F2 doctors."

After finishing medical school, graduates are required to undertake the foundation programme, a two-year,

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general postgraduate medical training programme which forms the bridge between medical school and specialist/general practice training.

Prescription of medicines is the most common healthcare intervention in the NHS and although the intention is to improve patient outcomes, understandably there is a potential to cause harm. Unfortunately, prescribing errors can compromise patient safety and remain a significant cause for concern.

In 2009 the GMC published the results of the EQUIP study, which looked at prescribing errors by foundation doctors in NHS hospitals. It revealed that F1 and F2 doctors were responsible for the vast majority of prescribing and had a higher prescribing error rate than more experienced doctors. F2 doctors had the highest error rate at 10.3%.

The new study analysed responses from web-based questionnaires to foundation doctors and prescribing training leads in NHS hospitals in the South Thames region, a large geographical area for healthcare education and training in the UK. Quantitative data were analysed using descriptive statistics and thematic analysis was performed on qualitative data.

The study has been published in *BMC Medical Education*.

Resilience A personal experience and why it matters

Dr Rebecca Gardiner

In order to show resilience you must first face adversity, which can appear in all sorts of situations. During my first year of medical school, I remember vividly when a conversation with a patient undergoing chemotherapy and two fellow students tested that resilience. The patient, let's call him Mr X, was a friendly and articulate man who after five minutes openly shared that his cancer was terminal. I could see my two colleagues begin to grapple for words, and the conversation between us suddenly became stilted where it had once been flowing.

For me, resilience is not only the ability to thrive in a workplace facing multiple stressors but also to provide a compassionate and consistent professional performance – for sometimes what we need to get through is a performance! It's well known that those in the caring professions are particularly susceptible to burnout – a state of of physical, mental and emotional exhaustion. As doctors, we want to provide our patients with a first-class experience, holding high ideals and expectations of ourselves. Studies have shown that burnout can lead to low job satisfaction, an increase in medical errors, and a negative patient experience.

The hot wards, endless paperwork, and being surrounded by pain and suffering day in, day out can take its toll. I want to provide patients with a safe and positive hospital experience and treat them with dignity, and I have learnt that in order to do that I must also look after myself. To be able to continue adapting to stressful situations I need to find a way to reflect, and not ruminate on difficult days. For me, this involves ensuring I make time for exercise, cooking and even knitting! For others it's meditating, playing an instrument or spending time with a friend.



It is remembering that learning to be a doctor is one of the many joys in my life, and while it takes a significant part of my time, it is not the only thing that defines me.

For the remainder of our time with Mr X, I was the only one to continue to ask him about his experiences. Afterwards, my colleagues asked me how I could carry on talking to him so casually, apparently taking his sad news in my stride. It had taken a great deal of conscious effort and the knowledge that I had ways to care for myself afterwards, but his openness had made me realise that he clearly wanted to discuss his situation and I pushed through my own discomfort.

This memory is not dramatic, but shows that something as simple as having a conversation can require personal and professional strength. Both my fellow students and I showed resilience; I was able to adapt to the conversation accordingly and my friends came away motivated to adapt the way they would approach such a conversation in the future.

Five years on I have completed my medical training, but resilience is something I am still learning. The most rewarding and humbling experiences I have had once again boil down to the simple conversation, reminding me that I came into medicine to be able to comfort, as well as to heal.

Rebecca won the College of Medicine's Michael Pittilo Student Essay Award for her essay on resilience, in her fifth year at BSMS. She is now working as a Foundation Year 1 doctor in cardiology at Ealing Hospital.

New app aids student learning

An app that quizzes medical students on realistic clinical scenarios has been launched by BSMS. Built on an existing in-house quiz bank, CAPSULE delivers a custom-built website and app that helps students apply their knowledge to clinical practice throughout the year.



"The vision was to create an online learning resource that students could access at any time, any place," says Tim Vincent, BSMS Learning Technologist. "While similar paid-for apps are available for revision, it's of great benefit to our students that content is mapped to the entire medical curriculum and is free."

CAPSULE offers 670 clinical case studies with more than 3,500 questions. After completing a case, students are provided with instant feedback to maximise their learning, and they are given an indication of their strongest and weakest areas.

Research news

- Masters in Research student Norris Igbineweka has received the Fulbright-Nursten Award to carry out research on sickle cell disease in the US.
- The Department of Global Health and Infection is to collaborate with the Universidad del Valle in Guatemala on tackling the crippling foot disease podoconiosis in Central America.
- Professor Dame Lesley Fallowfield has been awarded a prestigious Breast Cancer Research Foundation (BCRF) grant of \$250,000 annually to work on developing a communications skills DVD/workshop for clinicians discussing genomic test results with patients and to examine the factors involved in personalised supportive interventions for women with breast cancer.
- Recent PhD graduate Dr Kebede Deribe has won the Royal Society of Tropical Medicine and Hygiene's Emerging Leaders Award.
- PhD student Daire Cantillon will be studying folk medicines and their role in TB treatment in Brazil, after being awarded the highly competitive Santander Knowledge Transfer Grant 2016.
- Research, clinical services and education at BSMS's Clinical Imaging Sciences Centre (CISC) are to be given a boost, thanks to a new agreement with radiology provider Medical Imaging Partnership (MIP). CISC provides MIP with musculoskeletal CT and MRI scanning services for Sussex patients, and this workload will increase, with the potential for developing specialist scanning, such as prostate.



• The University of Sussex Research Development Fund has awarded a grant to Lisa Mullen for safety testing of a novel drug delivery system to underpin therapeutic applications.

Course targets health's young leaders

A new multidisciplinary CPD course at BSMS is helping hone leadership skills among 50 healthcare staff in their first team leader or project roles. Leading for Quality: New Leaders combines high-quality online learning with five day workshops.

"It gives young leaders a unique opportunity to really develop their leadership skills, and to engage successfully with patients and wide range of multi-professional colleagues to improve services and achieve real change," says Breda Flaherty, Course Leader for the MSc Healthcare Leadership.

School and student news

- In July BSMS hosted the annual conference of the Anatomical Society and the British Association of Clinical Anatomists.
- Fourth-year student Ciara Luscombe has received a prize from the Junior Association for the Study of Medical Education for her poster on medical student learning.
- Fifth-year student Alex Parr presented at the BASHH conference in Oxford on the sexual appetites of men who have sex with men taking part in a sexual risk reduction intervention.
- Work by recent graduates Alice Campion and Darleen Chamles, and third-year Haniah Habash-Bailey has led to a paper on GPs' recording on anxiety disorders published in *BMJ Open*.

Death gets people talking

The greatest taboo of them all was the focus of BSMS's annual debate at this year's Brighton Festival. 'Let's Talk About Death' tackled this tricky subject, asking the question how can we best prepare to have 'a good death'?

Palliative care specialists, a philosopher and a writer/director joined chair Bobbie Farsides, Professor of Clinical and Biomedical Ethics at BSMS, for a challenging discussion and insightful Q&A with the audience.

The Right Worshipful the Mayor of the City of Brighton & Hove, Councillor Pete West, said: "The panel presentations and audience discussion proved very thought provoking. As a society we don't talk too easily about death, but given its inevitability for us all, and the impact loss has upon others, perhaps we would be the better for it if we did."

Events



Celebrating difference

BSMS students collaborated with artists in leading interactive workshops about DNA in Fringe event 'Every Child is Different'. Led by Professor Somnath Mukhopadhyay and Dr Chrissie Jones, the family workshop taught children about how genes can affect individuals' reactions to medicines and the environment through fun and interactive activities.



Alopecia Uncovered

The reality of living with alopecia was the theme of May's Ethics in Performance event. 'Alopecia Uncovered' was based around an exhibition of photos taken by artist Daniel Regan over a five-year period, depicting members of Alopecia UK. Black and white headshots showed individuals without the wigs or scarves that many use to disguise the condition in public, confronting ideas of identity, self-esteem and self-acceptance.

> Professor Bobbie Farsides was joined in a discussion by Daniel, NHS dermatologist Dr Paul Farrant, and project participant Amy Richardson, who shared her personal experiences of alopecia.

October

The Incredible Unlikeliness of Being

Join BSMS for a fascinating public lecture by honorary graduate, Professor Alice Roberts.

Anatomist, osteoarchaeologist, anthropologist, author and Professor at the University of Birmingham, Professor Roberts has featured in TV programmes including *Coast* and *The Incredible Human Journey*.

Her lecture will take us on a journey to help us understand how we develop as an embryo, from a single egg into a complex body, and how our embryos contain echoes of our evolutionary past. Bringing together the latest scientific discoveries, Professor Roberts will illustrate that evolution has made something which is far from perfect.

Friday 21 October, 6.30pm Attenborough Centre for the Creative Arts, University of Sussex

Tickets are free but must be booked at: **bit.do/aliceroberts**

December

Let Joy Be Unconfined

A solo performance piece about what it really means to live in the moment, the power of memory, our limitless capacity for love and joy, and the powerful relationships that can be forged in an instant. Nigel Parkin recounts spending the last month of his father's life with him in a hospice as he discussed his great love, the theatre, and received visitors new and old.

Thursday 1 December, 6.30pm, Brighton and Sussex Medical School



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