06.12.2013

Personalised Medicine:

Today's reality, not just a promise for tomorrow

INNOVATIONacademy

Programme

Innovation Academy: Personalised Medicine

9:15 Registration

10:00 Welcome
Dr Dominic Harrington

10:10 Introduction
Fiona Carragher

Therapeutic drug monitoring
Chair: Prof Roy Sherwood

10:20 Personalised medicine – an introduction
Prof David Perrett

10:40 Personalising thiopurine therapy in IBD
Dr Jeremy Sanderson

11:10 Monitoring anti-TNF alpha drugs in chronic inflammatory diseases
Zehra Arkir

11:30 Tea

Infectious diseases and transplantation
Chair: Dr Siobhan O'Shea

12:00 Therapeutic drug monitoring of triazole antifungal drugs
Prof Robert Flanagan

12:20 Emerging technologies in virology
Dr Malur Sudhanva

12:40 A patient specific approach to HLA antibody incompatible renal transplantation
Dr Olivia Shaw

13:00 Lunch – tour of museum led by future leaders of innovation group

Oncology

Chair: Dr Khalid Tobal

14:00 Fluoropyrimidine pharmacogenetics
Dr Tony Marinaki

14:20 Application of genetics to support personalised medicine
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Oliver Smith

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Tony Sackville

16:15 Close

Welcome from the Scientific Directors

Dr Dominic Harrington

Director of The Nutristasis Unit
Head of Haemostasis & Thrombosis

Prof Roy Sherwood

Consultant Clinical Scientist
at King's College Hospital

We are delighted to welcome you to the 2nd GSTS Innovation Academy Symposium here at the Royal Institution of Great Britain. Following the success of the inaugural symposium held in June we are pleased to continue with our program of sharing scientific and clinical service innovations with a wider audience, and bringing these developments into routine service. Today we will hear about some of the practical applications of our innovations in the field of Personalised Medicine, and how these are not just theoretical research ideas, but practical solutions for tailoring and monitoring therapies in a wide variety of clinical conditions, delivering improvements in patient care today.

We welcome presenters from across our laboratories at GSTS, and clinical colleagues who use our services. They will be discussing current applications of new innovations and developments including Therapeutic Drug Monitoring for emerging therapies, transplantation science, infectious diseases and oncology. The aim of these presentations is to share the knowledge and practical application of these innovations, and to stimulate discussion around the current topics of the day.

Clinical Science has been a powerful driver of developments in the provision of healthcare for decades and many of our staff have contributed to current practice. The Innovation Academy aims to create an environment supportive of innovation, quality and the development and growth of our scientific leaders. In short, we know that good science equals good medicine.

We are delighted that you are able to attend this symposium, we hope that you find the day interesting and useful, and invite you to look out for the next Innovation Academy event in June 2014.

Introduction

10:10 Fiona Carragher

Biography
Fiona Carragher is the Deputy Chief Scientific Officer for England, supporting the head of profession for the 50,000 healthcare science workforce in the NHS and associated bodies – embracing more than 45 separate scientific specialisms.

A Consultant Clinical Biochemist by background, Fiona has a broad portfolio of policy responsibilities, providing professional leadership and expert clinical advice across the health and care system as well as working with senior clinical leaders within both the NHS England and the wider NHS.

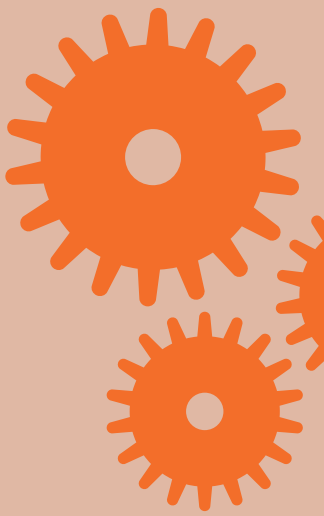
Fiona has a strong background in both public health and treatment & care, having led and worked in multi-professional teams for two decades at Guy's & St Thomas' Hospital, the Royal Hospital for Sick Children, Edinburgh and Kings College Hospital, London - with a focus on providing high quality, innovative laboratory services. Most recently she led a number of specialised laboratories for the diagnosis and monitoring of inherited metabolic disease and was Director of Newborn Screening for the South East Thames Region.

As Scientific Director for London she led a number of broader healthcare science projects including technology adoption and leadership development, and created a proactive scientific and diagnostics network across the capital that supports quality improvement and effective commissioning.

She is a Fellow of the Royal College of Pathologists and is an active member of organisations such as the Association for Clinical Biochemistry, British Inherited Metabolic Disease Group and MetBioNet.

Therapeutic drug monitoring

Chair: Prof Roy Sherwood



Chair: Therapeutic drug monitoring

Prof Roy Sherwood

Biography
Prof Roy Sherwood is Consultant Clinical Scientist and Scientific Director of KingsPath, the GSTS laboratory at Kings College Hospital, a post he has held since July 1989. Prior to this he trained at the Royal Sussex County Hospital, Brighton. In 2013 he became Professor of Clinical Biochemistry at King's College London. He has an interest in biomarkers in liver, gastrointestinal and cardiovascular disease in particular. He has built up an interest in tumour markers associated with endocrinology and neuroendocrine tumours and the laboratory at King's will soon be offering a comprehensive service for these. He has a BSc in Clinical Biochemistry from Salford University, an MSc in Clinical Biochemistry from the University of Surrey and a DPhil from Sussex University.

Introduction
The principles of personalised medicine have been around and applied for years, but in recent times it has been primarily associated with developments in "companion diagnostics" and their use in oncology. This is a key area of patient care with developments improving the therapeutic success and reducing harm through the targeting of medication to patients who are most likely to respond. However, the technologies and expertise that deliver these improvements are also being applied in other clinical areas, and this session will examine our Therapeutic Drug Monitoring service for tailoring Thiopurine and anti-TNFα treatments for patients with IBD and other inflammatory disease, and how our laboratory innovations are leading to improvements in clinical care.

Personalised medicine – an introduction

10:20 Prof David Perrett

Biography
Prof David Perrett read chemistry at Exeter before becoming Professor of Bioanalytical Science at Barts and the London School of Medicine and Dentistry Queen Mary University of London. His research has centred on separation science especially HPLC and CE applied to clinical problems. This led him into purine metabolism, an interest that continues today. He has published some 200 scientific papers and has recently co-authored a book on gout.

Other research interests include forensic and drug analyses and decontamination of surgical instruments to limit the spread of CJD.

Abstract
The human body is very selective in the ways individuals process everything from foodstuffs to pharmaceuticals and this selective process is under genetic control. It is now very clear that one size does not fit all. This talk will introduce and overview what we now term pharmacogenetics.

Notes

Personalising thiopurine therapy in IBD

10:40 Dr Jeremy Sanderson

Biography
Dr Jeremy Sanderson is a Consultant Gastroenterologist at Guy's & St Thomas' Hospitals where he is Head of Gastroenterology. He is also Reader in Gastroenterology in Diabetes and Nutritional Sciences, Kings College London. He has a specialist interest in the management of IBD running a large multidisciplinary IBD clinic. He also has a specific interest in the management of oral Crohn's disease. His research interests include the genetics and pharmacogenetics of IBD, and the pharmacogenetics of other drugs including cancer chemotherapy. He is a regular lecturer at national and international level and has published widely in his field.

Abstract
Thiopurine drugs (azathioprine and mercaptopurine) have been used for many years in the management of chronic inflammatory bowel disease (IBD) to achieve and maintain a steroid free remission. With the advent of biologic therapy and a change in goals of treatment towards mucosal healing, better outcomes are now demanded of immunosuppressive treatment.

Much work has been done to explore ways of improving outcomes on thiopurines by personalising treatment according to pharmacogenetic testing pre-treatment and metabolite monitoring on therapy. Indeed, thiopurines have become one of the classic models of pharmacogenetics being translated into clinic practice though testing TPMT activity pre-treatment and altering dosing accordingly. However, a number of other personalised approaches can also now be applied with a documented improvement in treatment outcomes at one year of therapy.

In effect, this type of personalised treatment applies to all types of drug therapy and should become standard practice over the next 5 -10 years.

Notes

Monitoring anti–TNF alpha drugs in chronic inflammatory diseases

11:10 Zehra Arkir

Biography
Zehra Arkir graduated from University of Southampton in Biochemistry with Pharmacology. She started her career in Clinical Biochemistry in 1996 with an MSc at University of Surrey and working block-release at Frimley Park District General Hospital. She completed her Clinical Scientist training at Guy's & St Thomas' Hospitals and worked as Senior Clinical Scientist at North West London Hospitals and Guy's Hospital before moving to St Thomas' Hospital in 2005. Currently she is the lead scientist, directing the Reference Chemistry laboratory at GSTS Pathology. She is a Fellow of Royal College of Pathologists.

Zehra has a broad portfolio of responsibilities, providing clinical and scientific advice in immunochemistry, anti-TNF drug monitoring and cholinesterase phenotyping/genotyping, fertility and endocrine markers. She has a strong background in translating new technology/tests into routine clinical practice and introduced anti-TNF testing into routine clinical practice as the first UK centre.

Abstract
Introduction of biologic drugs, specifically targeting TNFα, has revolutionised the treatment in immune-mediated inflammatory diseases. Genetically engineered anti-TNFα antibody constructs now constitute one of the heaviest medicinal expenditures in many countries (~£10 -15 K/patient). NICE guidance makes recommendations about the use of biologic drugs in Rheumatology, Dermatology and Gastroenterology based on clinical and cost-effectiveness.

Notes

Infectious diseases and transplantation

Chair: Dr Siobhan O'Shea

Chair: Infectious diseases and transplantation

Dr Siobhan O'Shea

Biography
Principal Clinical Scientist, Infection Sciences, Virology Section, GSTS Pathology, Guy's and St Thomas' NHS Foundation Trust.

Specialist Interests: HIV, rubella, molecular diagnostics, antenatal screening, Point of Care Testing.

Dr Siobhan O'Shea started her career in virology in 1974 studying the pathogenesis and immune responses to rubella virus and rubella vaccines together with development and evaluation of techniques for rubella diagnosis. She has been engaged in HIV research and diagnostics since 1992. Her research work has focused primarily on HIV infection among women and children and aspects relating to anti-retroviral drug resistance. Current research projects, all of which have an emphasis on development of techniques for translation into clinical practice, include the significance of minority variants of drug resistant HIV, HIV activity in the genital tract and enhancing uptake of HIV testing in hospital and community settings. She has contributed to updating the UK Infectious Diseases in Pregnancy Screening Programme and contributed to the British HIV Association and Children's HIV Association Guidelines on management of HIV infection in pregnant women.

Introduction
Personalised Medicine is all about the potential impact of an individual's genetic background on the risk of developing a disease, how the disease is likely to progress and their likely response to treatment. The fields of infectious disease and transplantation, together with oncology, have been leading the way in a more customised approach to patient care. In this session we will be hearing about how therapeutic drug monitoring can be used to guide TKI therapies, emerging technologies in virology and patient specific approach to challenging renal transplantation cases.

Therapeutic drug monitoring of triazole antifungal drugs

12:00 Prof Robert Flanagan

Biography

Prof Bob Flanagan is Consultant Clinical Scientist and Director, Toxicology Unit, King's College Hospital NHS Foundation Trust. He has published over 200 scientific papers and four books. Particular interests have been analytical methods especially GC and HPLC, treatment of mental illness especially as regards use of antipsychotics, notably clozapine, treatment of cancer, especially in respect of the use of tyrosine kinase inhibitors such as imatinib, and the diagnosis of substance abuse, especially misuse of volatiles such as butane. He leads on toxicology training for the Association for Clinical Biochemistry and regularly advises medical professionals, police, coroners, and prosecution and defence lawyers on toxicological issues. He has also acted as a consultant to the United Nations Office for Drugs and Crime and to the World Health Organization, most recently in Serbia/Kosovo. He is President of the British Academy of Forensic Sciences.

Abstract

Development of invasive fungal infections (IFIs) in patients being treated for haematological malignancies is associated with increased morbidity and mortality. Due to the difficulty in diagnosing IFIs, prevention and treatment by targeted antifungal therapy has become a major goal in high-risk patients. The triazole antifungals fluconazole, itraconazole, posaconazole, and voriconazole are thought to act by inhibiting lanosterol 14-α-demethylase, leading to an accumulation of toxic methylated intermediates and thence fungal cell death. The second generation antifungals posaconazole and voriconazole have greater affinity for 14-α-demethylase as compared with older drugs, but they also have an increased inhibitory effect on drug metabolising enzymes such as CYP 3A4 and thus a greater propensity to cause drug-drug interactions. Moreover, it has been reported that voriconazole plasma concentrations in individuals prescribed the same dose may vary up to 100-fold. Therapeutic drug monitoring (TDM) is the measurement of the plasma concentrations of drug and pharmacologically active metabolites attained during therapy. TDM of triazole antifungals, especially itraconazole and its metabolite hydroxyitraconazole, posaconazole, and voriconazole has been suggested in order to monitor adherence, optimise dosage, and minimise the risks of toxicity and of drug-drug interactions.

Notes

Emerging technologies in virology

12:20 Dr Malur Sudhanva

Biography
Consultant Virologist at South London Specialist Virology Centre, GSTS-KingsPath, King's College Hospital and Hon. Consultant virologist at Rare and Imported Pathogens Laboratory (RIPL), Public Health England Microbiological Services, Porton Down, Salisbury.

Dr Malur Sudhanva did his medical graduation (MBBS) in India in 1996 followed by MD in Microbiology in 1996. He specialised in virology in West of Scotland Specialist Virology Centre, Glasgow, UK and Special Pathogens Unit, Johannesburg, South Africa leading to FRCPath in virology in 2003.

He has been a Consultant Virologist at King's College Hospital, London since 2004 where he has co-led the transition of the laboratory to molecular diagnostics and automation of all processes. His role includes evaluation and implementation of both in-house and commercial assays.

At RIPL, PHE Porton Down, he has co-led development of more than 20 molecular assays for imported pathogens and automation of the serology. He is one of the on-call consultants for UK Imported Fever Service since its inception in June 2012.

Abstract
This talk will focus on human viral diagnostics starting with a summary of technologies available currently which can be implemented to achieve better efficiency within the laboratory system. This is followed by recent developments in both diagnostic serology and molecular virology. Technologies like TaqMan® Array Card, droplet digital PCR, extreme PCR, Abbott PLEX-ID and possible use of NGS will be discussed along with the limitations and logistics of incorporating these within a clinical virology setup.

Notes

A patient specific approach to HLA antibody incompatible renal transplantation

12:40 Dr Olivia Shaw

Biography

Dr Olivia Shaw is a Clinical Scientist, who has been working in the Clinical Transplantation Laboratory at Guy's Hospital since 1998. Over the past 15 years, she initially completed the British Society of Histocompatibility and Immunogenetics (BSHI) diploma and an MSc in Medical Immunology, both of which culminated in her state registration as a Clinical Scientist. Dr Shaw was offered a full time job with the Clinical Transplantation Lab and since progressed to Head of the Serology Section, completing both part I of the Royal College of Pathologists examinations and more recently her Doctorate.

Interests include the role of HLA specific antibody in solid organ, and more recently stem cell transplantation, with a particular focus on facilitating transplantation across HLA specific antibody barriers in patients who would otherwise be unlikely to receive a transplant.

Abstract

Since 1968 the presence of antibody specific to donor presented HLA has been thought to be a contraindication to transplantation and presents a major barrier to both deceased and living donor transplants. In recent years a number of strategies have been developed to overcome this barrier involving removal of the antibody to a level deemed safe to transplant. The outcomes of these transplants vary widely and to date there has been no rationale as to which will be successful and which not. Often treatment to remove antibodies is initiated with no indication as to when and if a transplant will be possible, leading to long and costly treatment periods with no reward of a transplant. A testing strategy has been developed to identify which patients will benefit from antibody removal, and, if so, how much would be required to allow transplantation to proceed - tailoring the treatment to each donor and recipient pair. To date, the team at Guy's has assessed 151 pairs of which 27 have proceeded to transplant. Dr Shaw will present their testing strategy and the outcome data collected.

Notes

Oncology

Chair: Dr Khalid Tobal

Chair: Oncology

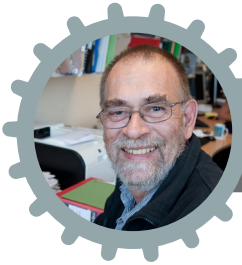
Dr Khalid Tobal

Biography
Consultant Clinical Scientist/Honorary Senior Lecturer (KCL) Head of the Molecular Oncology Unit GSTS Pathology Guy's and St Thomas' NHS Foundation Trust.

With nearly 30 years of experience in cancer diagnostics and molecular investigations, Dr Khalid Tobal has more than 40 publications in prestigious journals, many of which involve the development and investigation of new diagnostics assays for various cancers. He has given more than 100 presentations in national and international meetings on cancer molecular diagnostics and acted as referee for a number of high impact journals.

Dr Tobal has led a number of molecular diagnostics units in different NHS trusts and been instrumental in the development of a large number of molecular diagnostics assays for haematological and solid cancers. He is a member of the European Leukaemia Network and the ICC/KHP R&D group.

Introduction
The diagnosis and treatment of cancers is one of the most high profile, expensive areas of modern healthcare, attracting the highest levels of research and product development investment. Cancer treatment protocols are being redefined by the availability of more effective pharmacological agents targeting specific genetic mutations. Molecular diagnostics is enabling selection of specific treatment pathways associated with the best clinical and economic outcomes, and the stratification of patients to a defined protocol based upon the genetic signature of the specific tumour. Therapies can be targeted to those who are most likely to respond and benefit, and in patients who are not likely to benefit from a particular treatment, the unnecessary risks of side effects can be minimised. In this session we are introduced to current applications of these technology developments, and their impact on personalised treatment for cancer patients.



Fluoropyrimidine pharmacogenetics

14:00 Dr Tony Marinaki

Biography
Dr Tony Marinaki joined the Purine Research Laboratory in 1999. His interests are inherited disorders of purine and pyrimidine metabolism and pharmacogenetics. He has published widely in these fields. Current research focuses on the pharmacogenetics of azathioprine, the fluoropyrimidines and platinum drugs.

The association between thiopurine methyltransferase and severe toxicity to thiopurine drugs is the classic example of pharmacogenetics in clinical practice. The association between dihydropyrimidine deficiency and fatal toxicity to fluoropyrimidine drugs used for the treatment of solid cancers has been known since 1985, but testing has not entered into widespread routine clinical practice.

Abstract
We have identified a panel of clinically useful pharmacogenetic markers predicting severe toxicity to fluoropyrimidine therapy. Testing for DPYD variants associated with severe toxicity has been brought into the diagnostic service. The evidence in the literature, and our data, suggest that patients should be tested prior to the start of therapy. Those patients with variant DPYD genotypes may benefit from reduced dose therapy.

Notes

Application of genetics to support personalised medicine

14:20 Dr Colin Spraggs

Biography
Senior Director, Genetics, Quantitative Sciences, GlaxoSmithKline Research & Development, Stevenage, UK.

Dr Colin Spraggs holds a BSc (Hons) in Pharmacology (University of Leeds) and a PhD in Physiology & Pharmacology (CNAA/sponsored by University of Cambridge and Glaxo Group Research). He has extensive pharmaceutical R&D experience in discovery pharmacology, clinical development and clinical genetics. His current research activities are in the field of pharmacogenetics, using genetic variation and clinical trial data to characterise patients in terms of drug response (safety and efficacy) and provide more precision to target therapies to the most appropriate patients.

Abstract
The advancement of DNA sequencing technologies enables application of genetics to study causes of disease, identify molecular targets for drug intervention and characterise patient response to treatments. This has led Pharma to apply genetic technologies to support medicine discovery and development and towards personalised, or more accurately precision, targeting of medicines to the patient groups who will receive most benefit. This talk will describe examples of the application of genetics for drug target support and patient stratification. Pharmacogenetic examples will include HLA associations for drug-induced adverse effects and drug metabolism variant associations for drug efficacy. The challenges of clinical translation will be discussed.

Notes

Tyrosine kinase inhibitors: The role of therapeutic drug monitoring

14:50 Prof Robert Flanagan

Biography

Prof Bob Flanagan is Consultant Clinical Scientist and Director, Toxicology Unit, King's College Hospital NHS Foundation Trust. He has published over 200 scientific papers and four books. Particular interests have been analytical methods especially GC and HPLC, treatment of mental illness especially as regards use of antipsychotics, notably clozapine, treatment of cancer, especially in respect of the use of tyrosine kinase inhibitors such as imatinib, and the diagnosis of substance abuse, especially misuse of volatiles such as butane. He leads on toxicology training for the Association for Clinical Biochemistry and regularly advises medical professionals, police, coroners, and prosecution and defence lawyers on toxicological issues. He has also acted as a consultant to the United Nations Office for Drugs and Crime and to the World Health Organization, most recently in Serbia/Kosovo. He is President of the British Academy of Forensic Sciences.

Abstract

The treatment of many malignancies has been improved in recent years by the introduction of molecular targeted therapies. A group of such targets are the tyrosine kinases, against which a number of inhibitors (tyrosine kinase inhibitors, TKIs) have been developed. Imatinib was the first successful TKI and revolutionised the treatment and prognosis of CML and GIST. Up to end-July 2012, 13 further TKIs had been approved for clinical use, and another 8 have since been licensed. All these agents are given orally and are substrates of a range of drug transporters and metabolising enzymes. In addition, some TKIs are capable of inhibiting their own transporters and metabolising enzymes, making their disposition and metabolism at steady-state unpredictable. A given dose can therefore give rise to markedly different plasma concentrations in different patients, favouring the selection of resistant clones in the case of subtherapeutic exposure, and increasing the risk of toxicity if dosage is excessive. Therapeutic drug monitoring (TDM) is the measurement of the plasma concentrations of drug and pharmacologically active metabolites attained during therapy. TDM is available for a steadily increasing range of TKIs and is likely to play an important role in guiding treatment as experience in the use of these drugs accumulates.

Notes

Patient selection for kinase inhibition in cancer

15:10 Dr James Spicer

Biography

Dr James Spicer is Reader at King's College London, and Consultant in Medical Oncology at Guy's and St Thomas' Hospitals. He has a degree in biochemistry from Oxford, and qualified in medicine at the University of London. He went on to postgraduate training at a number of London teaching hospitals and the Royal Marsden, and obtained a PhD in cancer biology from the Institute of Cancer Research in London.

Dr Spicer set up and runs the Cancer Early Phase Trials programme at Guy's & St Thomas' Hospitals. He is co-lead of the King's Experimental Cancer Medicine Centre. His clinical and research interests also include the care of patients with lung cancer, mesothelioma and other thoracic malignancies, and clinical trials in these diseases. He is Clinical Lead for all oncology trial activities in the hospital. His interests include Phase 1 trials, novel immunotherapies, pharmacogenetics and molecular diagnostics.

Abstract

Advances in the understanding of cancer biology have driven the identification of new targets and the development of specific therapies directed against them. Examples include drugs directed against ligands, receptors, intracellular signalling components.
Binding of growth factor ligands to the ErbB receptor family causes dimerisation of the receptors, forming homo- or heterodimers. This stimulates their tyrosine kinase activity, initiating intracellular signalling cascades. The central role of both EGFR and HER2 in the development of many malignancies explains the considerable clinical impact of therapies targeting these two receptors. The past two decades have seen the development of both monoclonal antibodies and tyrosine kinase inhibitors specific for ErbB family members. Erlotinib and gefitinib are small molecule reversible inhibitors with selectivity for the intracellular tyrosine kinase domain of EGFR. These orally bioavailable drugs prevent ATP binding and autophosphorylation of the EGFR tyrosine kinase. Trials in unselected patient populations resulted in limited response rates and modest improvement in overall survival in comparison with placebo. Further analyses of responses to these drugs reported variations in efficacy according to molecular biomarkers, in particular activating mutations in EGFR. Thus molecular analysis has the potential to predict response to EGFR inhibitors.
Other kinase inhibitors are approved for use in tumours associated with HER2 and other members of the ErbB receptor family, BRAF, and fusion kinases resulting from translocation of ALK. Selection of the correct patient subsets for treatment with these agents is therefore a clinical priority.

Notes

An introduction to Guy's and St Thomas' Charity

15:40 Oliver Smith

Biography
Oliver Smith joined Guy's and St Thomas' Charity in November 2010 in the newly created role of Director of Strategy and Innovation and is responsible for the design and implementation of the Charity's strategy. He works closely with the Charity's partners to develop and deliver programmes that will improve health and healthcare for the local population and service users.

He was the head of the Government's tobacco control team at the beginning of 2009 and focused on successfully taking new tobacco legislation through Parliament, and the development of the previous Government's tobacco control strategy "A Smokefree Future". Under the last Government he also worked in the Cross-Government Obesity Unit, where he led the writing of the strategy Healthy Weight, Healthy Lives, and was a Strategy Adviser in the Department of Health's Strategy Unit, where his work included the development of health reform and the Department's efficiency programme within the 2007 Comprehensive Spending Review.

Prior to working in the Department of Health, Oliver was a Policy Adviser within the Prime Minister's Strategy Unit, involved in projects on energy, policing, and housing amongst many others. He has also worked as a consultant for OC&C Strategy Consultants.

Abstract
An introduction to Guy's and St Thomas' Charity. The presentation will address the Charity's history, current strategy, funding priorities, and how to apply for funding.

Notes

Summing up

16:00 Tony Sackville

We would like to extend our sincere thanks to all the speakers at this 2nd Innovation Academy Symposium, and to other members of the wider team who have made this event possible, including (but not limited to) Tony Marinaki and Denise Oblein. We are also grateful for the collaborative and financial contributions of our sponsors.

We would particularly like to thank all who attended today, and we look forward to seeing you at the next Innovation Academy event in June 2014.

To register your interest in the next Innovation Academy event, please contact us using the details below:

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