



Department
of Health

**DEPARTMENT OF HEALTH DESIGNATED
ACADEMIC HEALTH SCIENCE CENTRE
(IMPERIAL COLLEGE AHSC)**

2014/15 ANNUAL REPORT

Imperial College Academic Health Science Centre

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Signed :

Professor Jonathan Weber
AHSC Director and Vice Dean Faculty of Medicine

2. OVERVIEW OF ACTIVITIES (no more than 4 pages)

Please provide a brief overview of activities for your AHSC for 2014/15 financial year, addressing the following points:

- **progress with further aligning the strategic objectives of the NHS provider(s) and university(ies) in order to harness and integrate world-class research, excellence in health education and excellence in patient care;**
- **a summary of the progress against the specific short, medium and long-term objectives as detailed in your full stage application, and a brief summary of progress made in each of the approved themes / work programmes for the AHSC as detailed in the full application;**
- **summary of the AHSC's contribution to economic growth and the economy, including through partnerships with industry;**
- **progress on the development and delivery of an appropriate e-Health informatics platform;**
- **an overview of any significant developments or issues associated with the leadership, strategy and governance arrangements which might impact on the delivery of the aims and objectives of your AHSC.**

Imperial College AHSC Structure:

In 2014, a review of the **AHSC Structure (Figure 1) and strategy** took place with the aim of further aligning the strategic objectives of Imperial College and Imperial College Healthcare NHS Trust (ICHNT). Additional Joint Executive Group sub-committees were established with specific year 1 deliverables, many of which have been achieved:

AHSC Strategy Group: this group, comprises the Faculty of Medicine (FoM) Vice Deans, with the ICHNT Medical Director, Director of Nursing, Director of Strategy and Divisional Directors, to develop a 5 year AHSC joint clinical academic recruitment strategy and joint investment fund to reinforce clinical academic specialties, with focus on the Hammersmith Hospital/Imperial West campus.

AHSC HR Committee: comprising FoM and ICHNT Director of HR, Medical Director, FoM Faculty Operating Officer and AHSC Director, to harmonise the joint appraisal system, align the revalidation of clinical academics and update NHS Contracts to encapsulate the AHSC IP and inventor reward scheme.

AHSC Research Informatics Committee: this group comprises IT leads from FoM and ICHNT, the Caldicott Guardian, the BRC and academic groups to create a roadmap for research using NHS data, implement a single governance process for research access to NHS data, introduce a data sharing agreement (completed) and establish information governance for NHS data in the College

AHSC Education and Training Committee established and invested in the co-ordinating infrastructure for clinical academic training, with a new Clinical Academic Training Office (CATO, lead Prof Jeremy Levy) and a non-medical Clinical Academic Training group (CAT – lead Prof Christine Norton)

AHSC Research Committee has been restructured to include additional members from **allied health professionals and nursing**.

All AHSC sub-committees and groups now have **additional appropriate cross institutional membership** to ensure the integration of research, health education and training with patient care.

Figure 1



The **AHSC strategy** is currently focussed on the following programmes with an emphasis on forging linkages as appropriate between them: **Antimicrobial resistance (AMR):** position consolidated to impact on policy, centre launching 2015; **Genome Medicine Centre:** transformational project launched 2014 in conjunction with Royal Marsden, Royal Brompton and Chelwest hospitals, with opportunity to extend study across entire Imperial College Healthcare Partners (ICHP) network; **Health informatics:** Data framework signed; **Clinical Academic Training:** CATO Office established with senior appointments made, Wellcome Trust Clinical PhD application submitted, New Genomic Medicine MSc awarded, targets for NIHR PhDs, Lecturers, Senior Lecturers in place, a 1 year Research Fellowship Scheme established to attract non-medical clinical staff at ICHT to undertake research, call launched for clinical training fellowships to work across CRICK founding institutes; **European Institute of Innovation and Technology Health (EIT Health):** plans in place to exploit new opportunities for clinical innovation in place arising from this major new partnership led by Imperial College promoting innovation and entrepreneurship in healthy living and active ageing across Europe, in collaboration with industry and academic partners; **Redevelopment of the estate:** guided by the wider service change programme for North West London, *Shaping a Healthier Future*

Since AHSC designation, April 2014 there have been a number of **key governance and leadership changes**, impacting positively on the delivery of Imperial AHSC aims and objectives. **Senior leadership** has altered in terms of structure with the creation of a dedicated Imperial College cross-Faculty Vice-President (Health) role at Imperial College (Prof Dermot Kelleher), which will coordinate multi-disciplinary approaches to health improvement and drive more effective partnering. As a consequence of this new structure, Professor Gavin Screaton has been appointed Dean of the Faculty of Medicine and Professor Jonathan Weber has been appointed AHSC Director from October 2014. Professor Alice Gast joined Imperial College as President in August 2014, replacing Prof Sir Keith O’Nions and Dr Tracey Batten was appointed Chief Executive Officer of ICHNT in April 2014, replacing Mark Davies.

Representation of Imperial College AHSC in **Med-City and London/South-East developments agenda** has increased in 2014 with the inclusion of the ICHNT Medical Director at the London AHSC and AHSN Executive and the Imperial AHSC Joint Executive Group Chair as a member of the Med-City advisory board. Med-City launched April 2014 and is a collaboration between the Mayor of London and London's 3 AHSC's, Imperial College AHSC, King's Health Partners and UCL Partners to grow the life sciences cluster of London and the greater south east.

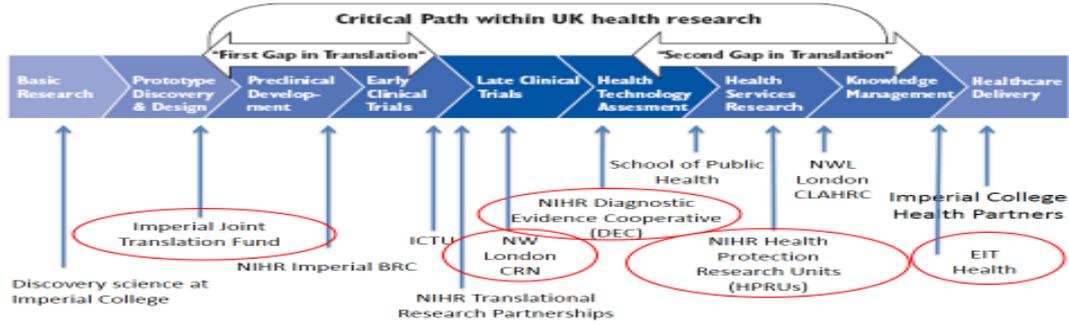
Translational Research:

Figure 2 presents a summary of **research highlights across the AHSC in 2014/15**. As well as specific examples of research progress with the potential to benefit patients, successes achieved in growing research capacity and capability and in developing collaborations across the NW London sector are included. Some specifics are covered in more detail throughout this report and **Figure 3** outlines how some of these new initiatives fit along the translational pathway.

Figure 2: Translational Research Initiative	Summary of award/structure
NIHR Imperial Biomedical Research Centre – mid-term review with a new structure developed	International mid-term review with a new structure developed (<i>detailed below under Institute for Translational Medicine and Therapeutics</i>)
Imperial Joint Translation Fund	Launched £1.3m fund with contributions from MRC, Wellcome Trust, EPSRC, Imperial Innovations, Royal Marsden Hospital and Chelsea and Westminster Hospital. ~20 projects p.a.
NW London Clinical Research Network (CRN)	Successful in a competitive process to host the network from 01 April 2014. £13m p.a. Currently supports the delivery of over 500 NIHR Portfolio research studies, 20,000+ recruited in 2014/15 of which ICHNT contributed almost 9000
NIHR Health Protection Research Units (HPRU)	Following a national competition Imperial AHSC was awarded 4 HPRUs worth £12 m over 5 years to provide centres of excellence in Respiratory Infection, Hospital acquired Infection, Infection Modelling and Environmental Public Health, all in partnership with Public Health England
NIHR Diagnostic Evidence Collaborative (DEC)	February 2015, Imperial AHSC was awarded the only DEC in London, £1m over 5 years, with the overall aim of to develop world-class methods, generate evidence and integrate <i>in vitro</i> diagnostics into clinical practice. Specific areas are Gut health, Respiratory diseases, Infectious diseases, Metabolic medicine, Cardiovascular diseases, Cancer
NHS Genome Medicine Centre (GMC) – Imperial College Health Partners NHS Genomic Centre	December 2014, ICHNT, supported by Imperial College Health Partners (IChP) was designated one of the 11 GMCs nationally, in a consortium led by the AHSC, with the Royal Marsden, Royal Brompton and ChelWest hospitals, in order to deliver the 100,000 genomes project (<i>detail below</i>).
HEFCE Research Excellence Framework (REF)	December 2014, release of results REF2014. Imperial College London ranked 3 rd nationally in %4*, and the FoM recorded its best ever performance, ranking 3 rd nationally for 4*, after Oxford and Cambridge.

Figure 3

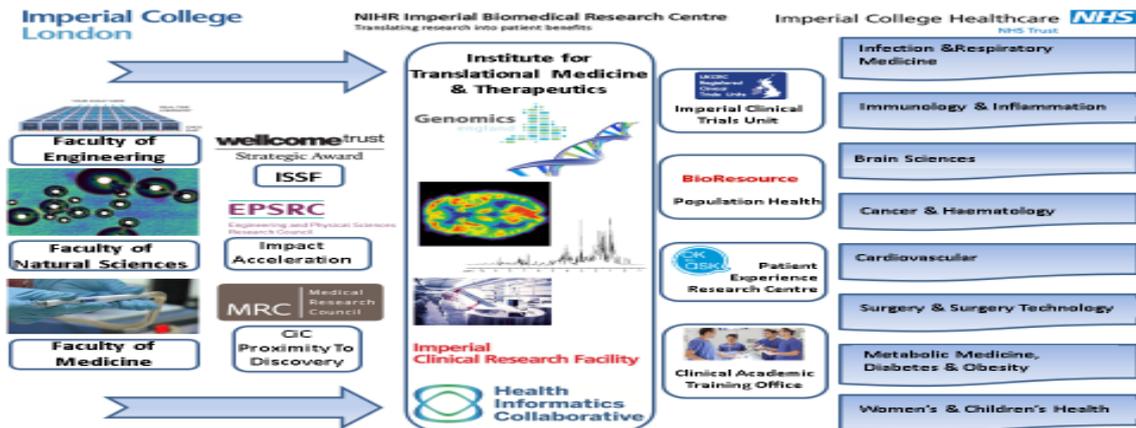
**Translational Research Infrastructure @ Imperial AHSC
new initiatives in 2014....**



A mid-term review of the **Imperial Biomedical Research Centre (BRC)** was undertaken with a review panel of international experts including the ICHNT Chief Executive to reflect on the progress of the Centre against objectives presented, performance of the BRC themes, consider current alignment of Themes and the AHSC Structure and areas of strategic interest. Following this international review, an optimum future configuration of disease themes and technology platforms was developed which reduced the overall themes from 15 to 8 (**Figure 4 below**):

The BRC cross cutting platforms of molecular phenotyping, bio-banking, imaging, informatics, genotyping and phase I and II clinical trials infrastructure have now been coalesced into The **Institute for Translational Medicine and Therapeutics (ITMAT)**. Launched March 2015, **Figure 4** represents the revised structure. ITMAT is the new cornerstone of the approach to translation and accelerates and manages the delivery of innovative, high quality, translational, clinical research and provides a source of expertise and advice to Theme Leaders and other researchers in the NIHR Imperial BRC. The application of “multi-omics” approaches to generate deep knowledge on individual patient biology, patient and population cohorts is pivotal to delivering the objectives of ITMAT. NIHR Imperial BRC has made **significant investment** to underpin the infrastructure and to resource multi-disciplinary clinical medicine at an unprecedented scale and depth. Through ITMAT, these endeavours are optimally coordinated to exploit the unique combination of expertise and access to ICHNT’s diverse patient population. Capabilities have been brought together into ITMAT to accelerate experimental research along the translational pathway into improvements in human health and economic benefit. An inaugural call for experimental proposals was announced April 2015 to exploit ITMAT’s core platform technologies. The aim is to promote and encourage the “pull-through” of discovery science from the Faculties of Medicine, Engineering and Natural Sciences within Imperial College London into potential application.

Figure 4



Research Excellence Framework

December 2014 saw the release of the results of the most recent Research Excellence Framework (REF) – the periodic national assessment of research quality and impact in UK universities. **REF’s new impact measure ranks Imperial’s research the highest of any university** – 94% of Clinical Medicine impact case studies were scored as 4*, 88% of case studies in Public Health, and 80% of case studies in Neuroscience scored 4* (“world leading”). Imperial College’s best ever performance, judged to have improved in every Unit of Assessment.

The original Centres for Translation Medicine (CTM’s) included in the original application have been **restructured as part of ITMAT**. The revised themes are outlined below with a brief outline of progress in each.

CTM – Restructured ITMAT Theme	Progress around translating into practice for the benefit of patients/impact
Surgery and Technology	I-Knife – Successfully adapted REINS technology for intelligent margin assessment

– <i>Surgery and Surgical Technology</i>	in breast cancer surgery. Preliminary data suggests technique provides results in a timeframe that is 3 orders of magnitude shorter.
Brain Sciences and Diseases – <i>Brain Sciences</i>	SESN3 discovered (and patents filed) as a novel target associated with chronic epilepsy and DNMT1 mutations identified as a basis for epileptic encephalopathies.
Infectious Diseases – <i>Infection & Respiratory Medicine</i>	TB diagnosis and monitoring service: role of bronchoscopy in relation to EBUS and bronchial culture and decision to tailor therapy, Participation in EU-funded PREPARE grant expected to lead to enhanced near-patient diagnostics for respiratory infection.
Inflammatory Diseases – <i>Immunology and Inflammation</i>	As a result of STOPAH trial, pentoxifylline is no longer being used for the treatment of alcoholic hepatitis. The new drug treatment options offer patients a once daily, all-oral, well tolerated regimen of just 8-12 weeks offering very high rates of cure.
Metabolic Medicine – <i>Metabolic Medicine, Diabetes & Obesity</i>	Development of the insulin propionate ester as a food ingredient has started. Phase 2 clinical trial in the NIHR/Wellcome Trust Clinical Research Facility, effects of kisspeptin in patients having IVF treatment and have shown in women with infertility that kisspeptin can be used safely and effectively in IVF treatment.
Population Health and Primary Care	Musculoskeletal calculator : Research in the theme has translated into a musculoskeletal prevalence calculator, now available as a practical tool, development of SIKL, a smartphone application that allows people with sickle cell disease to keep their medical records on their smartphone.

Patient and Public Involvement and Engagement (PPI/E)

The Imperial AHSC has focussed its' PPI/E activity around the Imperial Patient Experience Research Centre (PERC, Director Prof Helen Ward). PERC continues to lead on exemplar projects in PPI such as the "consent to contact" and "genomics and informatics". An AHSC patient panel has been established which meets monthly to address PPI/E issues. Through the Imperial College Health partners (ICHP) Research Committee, a cross-sectoral approach to PPI/E has been established, chaired by Prof Helen Ward. This is now allowing an aligned PPI/E strategy to be generated across all the NW London providers. There will be **opportunities in 2015 to align with the newly established Imperial Genome Medicine Centre, our four HPRUs and the DEC.**

Health Informatics

ICHNT has successfully implemented the first two phases of the **Cerner Patient Administration System (PAS)** and implemented the ED and theatre modules. Clinical documentation and electronic prescribing in gynaecology and geriatrics has been piloted and this last phase will be fully rolled out across the Trust during 15/16 with full electronic medical records expected by April 2016.

Following the **AHSC Data Sharing Agreement** governing the flow of routinely collected NHS data for research, the College has appointed a Director of Research Informatics (Prof Paul Elliott), with responsibility for information governance of NHS data in the College (ie, an academic Caldicott Guardian equivalent), to ensure that there is appropriate governance structures in place, and to coordinate IT training.

The **NIHR Health Informatics Consortium (NHIC)** has now established the sharing of routinely collected NHS data for research across five AHSCs, at Imperial, Oxford, Cambridge, UCL and Kings, in the clinical fields of renal transplantation (led by Kings), viral hepatitis (led by Oxford), ovarian cancer (led by Cambridge), acute coronary syndrome (Imperial) and critical care (UCL). Pseudonymised data are flowing to the research data warehouses at each of the lead organisations in every one of these five areas; for critical care, patient identifiable data are flowing to the Farr Safe Haven at UCL.

The AHSC will further integrate into the **Imperial College MRC MedBio informatics initiative** (Director, Prof Paul Elliott), and the new **Data Science Institute** (Director, Prof Yi-ke Guo), currently being built at Imperial West. **Genome Medicine Centre (GMC)**. Launched in April 2015, the Imperial GMC is a collaboration with the Royal Marsden Hospital, the Institute of Cancer Research, the Royal Brompton Hospital and the ChelWest Hospital, and will operate through Imperial College Health Partners (further demonstrating how the AHSC is tightly nested within the AHSN). It will lead in cancer and inherited rare diseases and is expected to deliver the Prime Minister's 100K Genomes initiative, before the end of 2017.

Contribution to economic growth and the economy. During 2014/15, Imperial AHSC continued to have a strong track record in contributing to economic growth and the economy: AHSC IP metrics for 2014-15 included 133 invention disclosures received, 16 new patent applications filed, 8 deals executed (includes licenses, option agreements, revenue share agreements) and 1 spinout formed. Co.Create was launched in March 2015 to help create and run new businesses based on deep science and technology. Options are available to students, staff and alumni to access incubation space, funding bodies, mentors, service providers and management for start-ups to ensure the best route forward is determined

This form must be submitted, by e-mail, no later than 1pm Thursday 7 May 2015 to Sonja Tesanovic (sonja.tesanovic@nihr-ccf.org.uk). Please feel free to provide any other information you wish (in a separate annex) that demonstrates the progress made with your AHSC in 2014/15.

A signed copy of this report should be sent no later than 14 May 2015, to:

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