

DEPARTMENT OF HEALTH DESIGNATED ACADEMIC HEALTH SCIENCE CENTRE (AHSC)

2015/16 ANNUAL REPORT

Note: Please note this form should be completed in font no smaller than 10-point Arial.

1. ACADEMIC HEALTH SCIENCE CENTRE DETAILS

Name of the Department of Health Academic Health Science Centre:

UCLPartners

Contact details of the DH AHSC lead to whom any queries and feedback on this Annual Report will be referred:

Name: Professor David Lomas

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

Please provide a brief overview of activities for your AHSC for 2015/16 financial year, addressing the following points:

Progress with further aligning the strategic objectives of the NHS providers and universities to harness and integrate world-class research, excellence in health education and patient care

Over 2015/16, our AHSC has continued to increase alignment through our six 'Academic Medical Centres' (AMCs) in the areas of i) Neuroscience, ii) Child Health, iii) Cancer, iv) Eyes and Vision, v) Infection, Immunology and Inflammation, and vi) Cardiovascular. Crucially, these also map onto the NIHR Biomedical Research Centres (BRCs) that fall within UCLPartners (GOSH-UCL Institute of Child Health, UCLH-UCL, Moorfields-UCL Institute of Ophthalmology, Barts-QMUL London School of Medicine and Dentistry). Our BRCs provide critical mass and resource from which to enable our AMC translational strategies. Each AMC is also engaged in a programme of strategic capital development to build truly joint NHS-academic facilities to undertake world-leading biomedical research and patient care. These projects require a fundamental cultural commitment to partnership working at all levels of the organisations involved.

Our AHSC also has also established a cross-cutting Personalised Medicine domain, which is a crossdisciplinary community that harnesses the breadth and depth of relevant research across UCLPartners, and supports the delivery of innovative patient-targeted medicines and therapies. This year the domain has supported the AHSCs successful participation in the North Thames NHS Genomic Medicine Centre and Genomics England Clinical Interpretation Partnership domains (GeCIPs), seven of which are led by UCLPartners researchers. Recognising the importance of training and development, the Domain also launched an Early Careers Network (ECN) in December 2015, which provides a platform for mentoring, careers advice and the dissemination of information about training, funding and job opportunities.

The six AMCs are further supplemented by a crosscutting Populations and Lifelong Health Domain. Notable

progress includes development of a cohort research strategy to improve synergy across the numerous population and clinical cohorts across UCLPartners. UCL and LSHTM have also worked in partnership to submit an application for renewal of the Wellcome Trust Major Overseas Programme funding for the Africa Centre for Health and Population Studies, which carries out research on population and health issues affecting the rural population in KwaZulu-Natal, South Africa.

At an operational level, alignment is enabled through the 6 AMC Boards, Chaired by the AMC Programme Directors, which bring together colleagues from the relevant NHS Trusts and University partners, BRC/Us, AHSN, CLAHRC, informatics, education and care, to enable a collaborative approach and ensure sharing of best practice. The AMC Programme Directors also meet bi-monthly under the Chairmanship of the UCLPartners Academic Director, and provide quarterly progress reports to the AHSC Board (which involves the Chief Executives/VPs of each of the 8 AHSC partners), chaired by the UCLPartners Managing Director.

Summary of progress against specific short, medium and long-term objectives in full application

Research:

Short term:

(i) Develop metrics: The AHSC commissioned a metrics analysis from Elsevier's 'SciVal' at the outset of its 5 year term, from which to benchmark progress. Over 2015/16 it has also drawn on metrics provided by RAND for the BRC accreditation process to supplement this understanding.

(ii) Create crosscutting initiatives: Established with dedicated leadership and coordination support in Population and Lifelong Health, Informatics and Personalised Medicine.

(iii) Enhance AMC Programme coordination: A team of research coordinators, partnership and project coordinators and industry partnership managers provide support to the AHSC.

(iv) Exploit 'Therapeutic Innovation Networks': Working closely with the BRC, we have piloted the first 'Therapeutic Innovation Network' in 'Gene, cell and regenerative therapies', supported by the Translational Research Office and chaired by Prof Adrian Thrasher. The objective of Therapeutic Innovation Networks is to bring together collective capability in each of the key modalities (small molecules, biologics etc.), to develop the community and promote a more coordinated understanding of our collective strength to industry.

Medium term:

(i) Secondments/satellites with Francis Crick Institute: We have appointed the first Clinician scientist to the Crick (Prof Ak Reddy) and successfully participated in two annual recruitment rounds for Crick 'attachments' (i.e. applications for UCL staff secondments, satellites and sabbaticals at the Crick).

Longer term:

(i) Forge links with Oxford and Cambridge: In 2015, UCL, Oxford and Cambridge became part of the ARUK Drug Discovery Alliance, which has seen the establishment of an ARUK Drug Discovery Institute at each institution, charged with working collaboratively in dementia research. We also continue to build links with Oxford and Cambridge through MedCity and the Stevenage Bioscience Catalyst (Cambridge),

(*ii*) Establish an international partnership per AMC: The AMCs are progressing partnerships with centres with complementary strengths e.g. Neuroscience with the Neuroscience Center Zürich which in late 2015 launched a dedicated seed funding call for joint research programmes; Infection Immunology and Inflammation with University of Zurich and Duke-NUS Medical School; Child Health via international external advisory boards for both the GOSH/ICH BRC (Chair: David Williams, Boston Children's Hospital) and UCL Institute of Child Health (Chair: Kathryn North, Director, Murdoch Childrens Research Institute). (*iii*) Achieve world-class outputs in all AMCs: See AMC Programme progress below.

Education:

Short term:

(i) Progress clinical PhD programmes: UCL has a Wellcome Trust funded clinical PhD programme and has led the development of the NIHR BRC/Francis Crick Institute Clinical Training Fellowships Scheme. We have also set up a national PhD exchange programme for NIHR infrastructure.

(*ii*) Establish UCLPartners Quality Improvement (QI) Fellows: During 2015/16 we set up the UCLPartners Improvement Fellows Programme. The cohort of 22 was selected in January 2016 following an open, competitive process, and come from a range of backgrounds (nursing, medicine, finance, social care, local government, improvement and general management). The aim is to create a network of people who will support each other and their organisations in their improvement work, delivering better results for patients and populations. We also revised our training during 2015/16 and ran sessions in the UCLPartners Model for Improvement including introduction to QI (236 attendees) and demand for these sessions continues to rise. We have also started mapping attendees across the UCLPartners geography and following up with those that have received training to see how we can further develop motivated individuals.

Medium term:

(i) Undergraduate programmes to accommodate 'precision medicine' and introduction of multi-professional modular Masters (e.g. genomics, mol. pathology, bioinformatics): AMC leads are actively encouraging the

embedding of personalised medicine in programmes (e.g. the Applied Medical Sciences BSc). (ii) Roll out Academic Careers Office: ongoing.

Longer term:

(i) Research awareness and critical appraisal skills permeate education programmes: In progress.

Care Quality:

Short term:

(i) Adoption and promulgation of quality scorecard: During 2015/16, UCLPartners reviewed its utilisation of scorecards. Subsequently we chose to adopt the LIFE web platform, designed to assist and empower frontline health and social care staff in running safety and quality improvement projects. The benefits are a) it empowers frontline staff to deliver improvements in services, b) the vision is to use LIFE across the country to support primary, secondary and acute care, and c) unlike existing systems, LIFE brings together the whole improvement methodology, is easy to use, and allows staff to collaborate in a shared environment. We are working with a number of organisations that are interested in LIFE and will be rolling this out during 2016/17.

(ii) Develop systematic application of best practice PPI: UCLPartners has established a network for Involvement and Engagement Leads across the AHSC to support systematic application of best practice. Over 160 staff are involved and more than 60 external organisations are providing advice and guidance on improving practice. We have continued to work with the NIHR National Director for Public Participation and Engagement in Research on this, who is now hosted at UCL.

(iii) Forge close links with CLAHRC to inform research agenda: Close links are established via the AHSC Population and Lifelong health Programme and CLAHRC representation on key AMC steering groups.

(iv) Establish national networks in areas of specialist expertise (e.g. rare diseases); We continue to progress the Zayed Centre for Research into Rare Disease in Children, a new national Institute that will allow us to more accurately diagnose, treat and cure children with rare conditions, also shortlisted to host a Wellcome Trust Centre for Rare Disease. We are also developing a bid for the national Dementia Research Institute. (v) Partner in Commonwealth's 'CommonHealth' initiative: Online initiative announced in February 2015.

Medium term:

(i) Introduce health informatics to subserve major integrated pathways aligned with AMCs: UCLPartners were commissioned by NHS England to help develop a new digital maturity assessment model. The new tool was launched in November 2015 and has been completed by 250 acute, community, mental health and ambulance trusts across the country. Results are now published on MyNHS and are being used by local health economies when developing their local digital roadmaps.

Longer term:

(i) Achieve demonstrable improvement each AMC: See below/

A brief summary of progress made in each approved AHSC programme as detailed in full application: Cardiovascular AMC:

- A joint academic strategy has been developed and plans are progressing for a new Joint Translational Cardiovascular Institute (JTCI) between QMUL and UCL. The JTCI is being created to deliver an internationally leading translational academic strategy to accelerate diagnostic and therapeutic innovation originating from our universities into cardiovascular clinical care for the benefit of patients. JTCI will bring together world-leading faculty from the William Harvey Research Institute at QMUL with pioneering clinician-scientists from the UCL Institute of Cardiovascular Science. A site has been identified for a devices facility and a bid for £10.2m has been submitted to support this match-funded by Bart's Charity.
- The Barts Heart Centre was opened in May 2015, based at the new £400m St. Bartholomew's Hospital in the heart of the City of London. This state-of-the art heart centre brings specialist cardiovascular services and research with many co-located academics and clinical teams from three hospitals under one roof. providing a tremendous translational research environment, with over 80,000 patient episodes per year. Following the successful opening of the Bart's Heart Centre, NICOR (National Institute for Cardiovascular Outcomes Research) has also relocated to the new campus. NICOR helps the NHS, the government and regulatory bodies improve guality of care by checking that the care received by heart disease patients meets good practice standards. Being located on the Barts Heart Centre campus will ensure closer alignment with cardiovascular clinicians and access to more data.

Child health AMC:

- The new 'Zayed Centre for Research into Rare Disease in Children', was officially named at a ceremony held on September 28 2015. The Centre for Research is a partnership between Great Ormond Street Hospital (GOSH), UCL and the Great Ormond Street Hospital Children's Charity. It will bring hundreds of clinicians and researchers together under one roof to drive forward new treatments and cures for children with rare diseases. Once completed, it will welcome approximately 400 academics and clinical staff and feature over 150 laboratory bench positions. The outpatient facility will accommodate more than 200 patients and accompanying family members at any one time. The facility is scheduled to open in 2018.
- The AMC has agreed a shared strategic vision (GOSH, GOSH Children's Charity, and UCL).

- Three child health programmes have gained EU Horizon 2020 funding (Gaspar, de Coppi, and Mole).
- The AMC is also building translational research programmes across the AHSN, CLARHC, LCRN e.g.in epilepsy (Prof Helen Cross and Prof Monica Lakhanpaul).

Cancer AMC:

- The AMC is developing a proposal for a Cancer Research UK Major Centre, involving engagement with CRUK, across UCLPartners, and with external partners, including Francis Crick Institute.
- The AMC is developing a Paediatric Cancer strategy with the Child Health programme, including facilitating cancer patient recruitment to Genomics England in collaboration with GOSH.
- It has also successfully progressed the Chair of Radiation Oncology appointment pivotal to UCLH-UCL engagement with Proton Beam Therapy.
- A Joint Stem Cell Workshop involving UCL, QMUL and the Francis Crick Institute was held in March 16. *Eyes and Vision AMC:*
- The London Project to Cure Blindness has treated the first patient with embryonic stem cell surgery to reverse vision loss caused by wet age-related macular degeneration (wet-AMD). The Project aims to bring stem cell therapy for retinal diseases to the clinic as rapidly as possible. The first patient was recruited at Moorfields Eye Hospital for the Phase I/II study within the national benchmark of 70-days.
- A collaboration has been established with Google Deepmind to analyse >1m optical coherence tomography images, which are cross-section images of the retina. Google Deepmind Health collaborates with frontline clinicians to develop technology that helps improve patient care by providing an artificial intelligence platform that uses algorithms capable of learning from data.

• The AMC continues to progress the vision and plans for a joint UCL and Moorfields facility.

Infection, Immunity and Immunology AMC:

- The AMC has progressed the Institute of Immunity and Transplantation, a new facility for an international centre of excellence in immunology research at the Royal Free. The Institute is being developed in partnership between UCL, Royal Free London NHS Foundation Trust and the Royal Free Charity
- Planning permission has been awarded from Camden Council for the Bloomsbury Research Institute, a partnership facility between UCL and LSHTM for world-leading research into infectious disease.
- The AMC established a new TB Network, which secured NIHR HIC commitment and funding for initial roll out to standardise TB data collection across UCLPartners Trusts (Royal Free, Whittington, UCLH).
- Held successful Infection, Immunity and Inflammation Symposium in Oct 15 attended by 200+ delegates.
- Neuroscience AMC:
- The AMC has progressed the ARUK-UCL Drug Discovery Institute, which was awarded £10m from Alzheimer's Research UK in early 2015. The Institute is one of three within the ARUK Drug Discovery Alliance, working to accelerate the discovery of novel, effective therapeutics for Alzheimer's disease and other neurodegenerative diseases. The UCL institute is looking for targets that have been unexplored by the pharmaceutical industry, broadening our focus to novel proteins and pathways implicated in neurodegenerative diseases and drawing on academic expertise to find these.
- To support world-class dementia research, UCL has also secured a major philanthropic agreement with UK retailers Iceland, Asda, Morrisons, Waitrose, WHSmiths, Booths, Poundland and HSS Hire in a unique coalition, pledging funds from the new levy on single-use carrier bags.
- UCL has also launched a new MOOC (massive open online course) in Dementia, entitled 'The Many Faces of Dementia', which received over 10,000 registrations. The free course covers some of the key issues in dementia care and research through the eyes of people affected by the condition, and worldleading experts at UCL. It also reveals how research into the signs, stages, symptoms and causes of less common forms can bring us closer to the aim of defeating dementia.

Summary of the AHSC's contribution to economic growth, including partnerships with industry;

UCLPartners' focus on wealth generation has enabled significant successes over the past year:

- Launch of the £40 million Apollo Therapeutics Fund, which aims to significantly improve the speed and potential of university research being translated into novel medicines. The initiative is a collaboration between AstraZeneca, GlaxoSmithKline, Johnson & Johnson Innovation and the technology transfer offices of Imperial College London, UCL (University College London) and the University of Cambridge
- Two Syncona Immunotherapy companies have been successfully spun out (Freeline Therapeutics and Autolus). Syncona is an independent subsidiary of the Wellcome Trust and has invested £55m into Series A financing for the companies. Freeline Therapeutics will develop and commercialise gene therapies for bleeding and other debilitating disorders, while Autolus will focus on the development and commercialisation of next-generation engineered T-cell therapies for haematological and solid tumours.
- Athena Vision has been established, a new company focused on developing gene therapies for eye diseases based on research conducted at UCL. Athena has entered into a global partnership with MeiraGTx Ltd. to develop and commercialise Athena's ocular gene therapy programmes.

The Translational Research Office (TRO) continues to act as a catalyst for enterprise activity, working closely

with the technology transfer offices, notably UCLBusiness, and also developing links with the Francis Crick Institute. UCL also maintains a presence at the Stevenage Bioscience Catalyst, in collaboration with the University of Cambridge, supported by HEFCE Catalyst Funding and the UCLH BRC.

UCLPartners is also a founding partner in MedCity. Recent progress includes the commission of a new report to reveal the extent of demand for specialist business workspace for London's booming life sciences sector. The study reveals a need for >250,000ft² of space and makes 6 recommendations to meet demand.

Progress on the development and delivery of an appropriate e-Health informatics platform;

Health informatics: UCLPartners works closely with the Farr Institute for Health Informatics Research. The Farr Institute London is developing a biomedical informatics platform linked across early and late stages of translation, which demonstrates scalability across disease programme areas. The Farr's e-Infrastructure research theme provides frameworks to underpin the safe and trusted use of data for patient benefit. Work programmes underway include: i) collaborative development of Trustworthy Research Environments that meet strict standards of research, data security and privacy, ii) new data analysis platforms, iii) dataset catalogue developments, iv) secure research communication networks.

The UCLH/UCL BRC has participated, alongside KCL, ICL, Oxford and Cambridge, in the NIHR Health Informatics Collaborative (HIC). The HIC aims to standardise clinical data collection and sharing for improving the quality and safety of care and for research for a limited number of designated medical themes. Through the HIC process, BRCs and their clinical partners have developed infrastructure and a collaborative community to extract data from clinical records systems, with standardised data models and policy frameworks to facilitate data sharing and research.

Subsequently the three London AHSCs and AHSNs have agreed to work together to build on their HIC experience to create a London-wide Trusted Research Environment (TRE), linked to the London node of the Farr Institute, to facilitate research over the whole London population. Working together in this way will create a uniquely valuable data set for a wide range of translational research opportunities while agreeing on governance and interoperability standards, and sharing the development and operation of infrastructure. The project will help individual AHSC/Ns in clinical monitoring and delivery and will provide larger, richer datasets for research carried out at BRCs. It will also support the construction of national clinical datasets through the Health and Social Care Information Service (HSCIC).

Work is also underway through the Healthy London Partnership to create a health information exchange for documenting, image and care plan exchange, which complements the existing projects in place within local digital footprints to develop integrated digital care records for health and social care. Integrated informatics for cancer services are being facilitated through the NHS Cancer Vanguard project.

Genomics: UCLPartners is a partner in Genomics England. Led by GOSH, six NHS trusts in north London have formed the North Thames Genomics Medicine Centre (NTGMC), which recruits patients to this pioneering study to support the delivery of more personalised diagnosis and targeted therapy for patients. Whilst slow to start recruiting to this challenging programme NTGMC have now recruited more than 2,000 of our target of 10,000 people with rare diseases. This is more than 27% of all the cases recruited nationally so far. We are about to start recruiting to the cancer arm of the programme.

UCLPartners also facilitated a Frontiers Meeting in Dec 2015 "Using UK Cancer Data for Maximum Research Impact and Patient Benefit" attracting 100 delegates from across NHS, academia, charities and funders to consider how to harness data to create a world-leading cancer intelligence system for the benefit of patients and populations, researchers and innovators, which is being taken forward through the cancer vanguard.

Digital health: The London AHSC/Ns have also collaborated on the launch of Digital Health London (<u>http://digitalhealth.london/</u>), which seeks to i) create and support networks to build on London's existing critical mass of digital health expertise, ii) identify digital solutions that meet the needs of patients and clinicians, iii) build the health outcomes and economic evidence-base of digital health, iv) support the collaborative development of an environment that meets the needs of the health system and industry.

Overview of any significant developments associated with the leadership, strategy and governance arrangements which might impact on the delivery of the aims and objectives of your AHSC.

While there is no anticipated impact to the delivery of the aims and objectives of the AHSC, as reported in April 2015, Professor Sir John Tooke retired from the role of UCLPartners Academic Director on 31st July 2015. His successor, Professor David Lomas, assumed the role on 1st August 2015.

This form must be submitted, by e-mail, no later than **1pm Friday 6 May 2016** to Jasmine Parkinson (jasmine.parkinson@nihr.ac.uk). Please feel free to provide any other information you wish (in a separate annex) that demonstrates the progress made with your AHSC in 2015/16.

The Annual Report aims to capture progress against the stated objectives, specific themes and work programmes as set out in your application, in order for the Department of Health to be able to understand the overall progress of the AHSCs. However, please note that we will not be providing feedback on the AHSC Annual Reports.

A signed copy of this report should be sent no later than **13 May 2016**, to:

Dr Jasmine Parkinson NIHR Central Commissioning Facility Grange House 15 Church Street Twickenham TW1 3NL