CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST

Report of: Mr R C Pearson, Medical Director
Paper prepared by: Mr R C Pearson, Medical Director
Date of paper: 27 June 2013
Subject: Redesignation of the MAHSC

Purpose of Report: Indicate which by □
- Information to note ✓
- Support
- Resolution
- Approval

Consideration of Risk against Key Priorities
Re designation as the MAHSC supports our national profile as a leading research Trust/University partnership. A loss of the MAHSC designation would have a negative impact on our reputation as a nationally known research organisation and could potentially affect our opportunities for further growth in our research capabilities.

Recommendations
This paper is for the Board to note the contents of the report and progress to date.

Background:
Further to the paper presented in May 2013, the Preliminary Qualifying Questionnaire (PQQ) outlining Manchester’s application was submitted by the deadline of 31st May 2013. Led by the Dean, Ian Jacobs, this work was supported by all current MAHSC partners, with strong input from CMFT Exec Team and the R&I Division.

AHSCs characteristics will include:
- strategic alignment of NHS provider and university objectives;
- the highest volume, critical mass and world-class excellence in basic medical research;
- the ability to translate findings from basic research into excellent translational, clinical and applied research across a range of interests;
- ability to translate scientific advances into patient benefit, in order to improve patient care and healthcare delivery;
- excellence in patient care;
- excellence in health education;
- strong partnership governance;
- strong clinical informatics platform to underpin the delivery of AHSC objectives;
Agenda Item 8.2

- strong track record of, and capacity for, productive research collaborations with the life sciences industry and contribution to economic growth;
- strong patient and public involvement and engagement.

The completed PQQ is attached below for reference. It is worthy of note that in the analysis of Highly Cited Publications (HCPs) commissioned by CMFT and later expanded to include all MAHSC partners (section 4), the output of HCPs by the partnership improved substantially over the three time periods subject to analysis. Within this, CMFT performance improved by over 50%, an outstanding achievement and a reflection of the investments made by the Trust and the University of Manchester over the last 6 years. CMFT remains the strongest performer within MAHSC NHS partners.

Next steps:

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<td>1</td>
<td>12th April 2013</td>
<td>Invitation to submit Pre-Qualifying Questionnaire (PQQ)</td>
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<td>published by Department of Health</td>
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<td>31st May 2013</td>
<td>Deadline for receipt of Pre-Qualifying Questionnaires</td>
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<td>Designation Panel identifies a shortlist of partnerships which,</td>
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<td>eligibility to submit full applications.</td>
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<td>Late September 2013</td>
<td>Deadline for receipt of full applications.</td>
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<td>6</td>
<td>October/November 2013</td>
<td>Designation panel reviews full applications and interviews</td>
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<td>shortlisted NHS provider/university partnerships before making</td>
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<td>November/December 2013</td>
<td>Department of Health confirms selected AHSCs.</td>
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<td>8</td>
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<td>New designation for selected AHSCs.</td>
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To note: The MAHSC Roadshow at CMFT is on 4th July starting at 1pm in the Core Technology Facility opposite Nowgen. This is an opportunity for the University and CMFT to showcase achievements and programmes of work within and across MAHSC.

Recommendation: The AHSC PQQ is presented for information.
ACADEMIC HEALTH SCIENCE CENTRES

PRE-QUALIFYING QUESTIONNAIRE

Note: The accompanying “Academic Health Science Centres - Invitation to Submit Pre-qualifying Questionnaire” contains essential guidance on the information you need to provide when completing this proforma.

Please adhere to the page limits stated within each box. Only information submitted up to this page limit can be assessed. Please do not alter the margins of this proforma.

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

All fields must be completed.

Please insert your unique Reference Number into the Footer space provided.

1. DETAILS OF THE PROPOSED ACADEMIC HEALTH SCIENCE CENTRE (AHSC)

Name of the English NHS Provider/University Partnership:

Manchester Academic Health Science Centre (MAHSC)

Name, email and telephone number of the Lead Contact for the proposed AHSC:

Note: This will be the contact for all correspondence relating to this application.
Professor Ian Jacobs
Director MAHSC
Vice President, University of Manchester
Dean of the Faculty of Medical and Human Sciences, The University of Manchester
ian.jacobs@manchester.ac.uk
Tel: 0161 306 0639

Please list the members of the partnership involved in the proposed AHSC:

MAHSC is a federation of seven partners, each founding institutions, legally embodied in a company limited by guarantee (CLG) established in July 2008. Our partners employ more than 36,000 staff and have an annual turnover of £2.6bn. We care for a regional population of 3 million, with some of the greatest health needs in the UK, and make a contribution globally through research, education, healthcare and knowledge transfer. We are:

- The University of Manchester
- Central Manchester University Hospitals NHS Foundation Trust
- Manchester Mental Health and Social Care Trust
- Salford CCG (formerly NHS Salford) as lead representative for GM CCGs
- Salford Royal NHS Foundation Trust
- The Christie NHS Foundation Trust
- University Hospital of South Manchester NHS Foundation Trust

A glossary of abbreviations used throughout this application can be viewed by clicking here
2. STRATEGIC PARTNERSHIP (2 pages)

Please provide a brief overview of the NHS provider/university partnership which will support the proposed AHSC, to include the following:

- Details of the members of the partnership, including names of NHS Provider(s) and university(ies) involved;
- The track record of the partnership in aligning strategic objectives and working together to deliver these;
- Track record of aligning high quality research, health education and patient care;
- Three examples of added value gained from the strategic alignment of NHS provider/university partnership and the resultant achievements.
Section 2 – Strategic Partnership: Distinctive features of our partnership

- At the heart of a city region recognised as one of England’s top two biomedical clusters
- The largest clinical academic campus in Europe with highest clinical trials recruitment in England
- Extensive NIHR and DH funded facilities, including: NIHR Manchester Musculoskeletal Biomedical Research Unit (BRU); NIHR Patient Safety Translational Research Centre for Primary Care; NIHR Collaboration for Leadership in Applied Health Research and Care for Greater Manchester (CLAHRC); NIHR/Wellcome Trust CMFT Clinical Research Facility including Manchester Children’s Clinical Research Facility; NIHR Christie Clinical Research Facility; NIHR University Hospital South Manchester Clinical Research Facility; NIHR accredited Clinical Trials Unit; NIHR/CRUK Experimental Cancer Medicine Centre; NIHR Translational Research Partnerships: NIHR Hyperacute Stroke Research Unit; Musculoskeletal and Inflammatory and Respiratory Diseases; NIHR mental Health Research Network (UoM joint co-ordinating centre); and the Personal Social Services Research Unit (PSSRU)

2.1. The MAHSC Partners

Our partners have been working closely together for more than a decade. In this time we have transformed interactions between our University and the health service, and established a culture across MAHSC in which research and innovation are central to the mission of each organisation. MAHSC works by uniting the strengths of our partners, through: (a) a clear focus on the disease areas in which we have demonstrated real ability to make a difference; (b) significant and selective investment in enabling infrastructure; (c) an internationally competitive academic and clinical workforce; and (d) engagement with a broad healthcare environment where innovation can be implemented and patient benefit measured.

Our success in bringing together the elements of the academic health science mission is exemplified in the construction, at the heart of our clinical academic campus, of a £500m PFI hospital development which embeds state of the art laboratory space within a clinical and educational setting. The creation of this translational facility has enabled the first large-scale use of next generation sequencing in the NHS for inherited disorders and the establishment of the largest centre in the UK for inherited metabolic disease.

a) University: The University of Manchester (UoM) has pioneered innovations in research, education and clinical care since 1874, when Manchester Medical School was established as the first English medical school outside London. Today the University stands 7th in Europe and 40th worldwide (Shanghai Jiao Tong). In the 2008 Research Assessment Exercise (RAE) UoM was 1st for cancer, dentistry, nursing and midwifery, 2nd in power across UoAs in medical, life and health sciences, and 3rd in research power across all UoAs.

(b) Acute Hospital Trusts: Central Manchester University Hospitals NHS Foundation Trust (CMFT) has a turnover of £850m pa and treats >1m patients pa. CMFT partners the UoM in the NIHR BRU in Musculoskeletal Medicine and the Wellcome Trust Clinical Research Facility (CRF); Salford Royal NHS Foundation Trust (SRFT) includes the major e-health resource infrastructure of SRFT, with access to 1st and 2nd care records. SRFT is home to NHS Quest and hosts the Greater Manchester Academic Health Science Network (GM AHSN); University Hospital of South Manchester NHS Foundation Trust (UHSM) treats >570k patients pa and hosts regional centres for breast cancer and respiratory research, as well as the NIHR Greater Manchester Comprehensive Local Research Network. The hospital is a major centre for cardiac care including cardiopulmonary transplantation.

(c) Specialist Hospital Trusts: The Christie NHS Foundation Trust (Christie) is the largest cancer centre in Europe and the first in the UK to be officially accredited as a comprehensive cancer centre. A national specialist provider, the Christie has one of the largest early phase trials units worldwide and has been selected by the Department of Health (DH) to host and operate one of two national proton beam therapy units; Manchester Mental Health and Social Care Trust (MMHISCT) has secured the 2nd highest NIHR Research funding of all mental health trusts nationally and was recently recognised as providing the safest mental health care in the North West.

(d) Primary Care: Salford Clinical Commissioning Group (SCCG), established in April 2013, continues the primary care link to MAHSC established by Salford PCT, including the continued operation of the Greater Manchester Primary Care Research Governance Partnership (ReGroup) and eHealth linkage to SRFT.

2.2. Track record of aligning strategic objectives and working together via MAHSC
Since 2009, MAHSC has been the catalyst for strategic alignment across the discovery-care continuum in Manchester. Our structure enables the partners to work together on six Domains (Fig 1) which link to the University, via six Institutes with the same titles, and to the NHS via the newly licensed GM AHSN. The themes of the GMCLRN are now also aligned with MAHSC’s Domains. Each Domain brings together research, education and clinical care across MAHSC and is chaired by one of the partner NHS Trust CEOs.

The impact of this model on research, education, health and economic development is significant: see 2.3. There have also been important developments in key infrastructure to ensure integration across the partnership including the establishment of a MAHSC Research Office, a MAHSC Clinical Trials Unit, and an Experimental Medicine Board linking our three CRFs, as well as the integration of academic and clinical academic training through MAHSC. This highly enabling environment facilitates GMCLRN’s position as the highest recruiter to clinical trials of any region over the last five years. 30% of commercial trials in England now take place in our Network. Through MAHSC a range of cross Faculty and Trust integrated platforms in genetics, metabolomics and proteomics (see Human Development in 3.5) and imaging have been developed.

The integrated asset base linked by MAHSC makes a major contribution to the impact of the North West as one of the country’s two most successful biohealth clusters. Despite the economic climate, our regional cluster contributes more than £1.6bn pa to the economy representing a growth of over £300m (19%) from 2002 to 2009. Companies have increased by 86% in the last 10 years, with three-quarters of those companies located in GM, delivering a 17% increase in employees since 2010 (independent analysis by Bionow® 2012).

2.3. Examples of added value from strategic alignment in MAHSC

a) Informatics: MAHSC has a strong history of translating computer science theory and software engineering into eHealth innovations exemplified recently by the successful MRC Centre in eHealth bid and NorthWest eHealth (NWeH). Our partnership includes the first fully e-enabled NHS Trust in England, with an eHealth records infrastructure providing access to >500,000 patient records across 1st and 2nd care. FARSITE (Population Health and Implementation Domain) is a safe and secure software system developed within MAHSC which interrogates anonymised medical records to identify people eligible for research trials, making it easier for NHS researchers and GP practices to work together on clinical research. FARSITE benefits the set-up and recruitment of clinical trials, and has become an important tool for researchers, boosting clinical trial performance. The Salford Lung Study (Inflammation and Repair Domain) is the largest commercial trial in the UK (£36m). It is unique being the first time a large, prospective, real-world trial has been conducted with a pre-license medicine, across a large population in a single geographic setting. Using NWeHs informatics capability and Salford’s ehealth records, trial outcomes and clinical safety are measured in real-time, opening up a new global market for clinical trials led from Manchester.

b) MAHSC Cancer Domain: The MAHSC partnership has allowed us to develop an integrated research, education and clinical capacity in cancer. This includes: the Manchester Cancer Research Centre (MCRC), linking the cancer research activities of each partner Trust with the Paterson Institute, the Institute of Cancer Sciences, and Cancer Research UK (CRUK); Manchester Cancer Services, providing leadership and a co-ordinated response to commissioner specification for cancer care, to deliver greater synergies with research, education and teaching and innovation by concentrating specialist services in fewer centres; and eight commercial alliances including a £3.1m biomarker alliance with Astra Zeneca (AZ).

c) MAHSC Inflammation and Repair Domain: This Domain has harnessed the research power of UoM to the translational/clinical strength of three NHS partners to develop the Manchester Collaborative Centre for Inflammation Research (MCCIR), a £15m precompetitive venture, funded jointly by AZ, GSK, and UoM. MAHSC partners have developed world-class collaborations between our clinical and academic teams linking the NIHR CRFs, the Musculoskeletal BRU, and the Arthritis UK (ARUK) Centre, and play a leading role nationally in NIHR Arthritis and Respiratory Translational Research Partnerships. This integrated activity has resulted in: i) basic research discoveries in biological therapies for psoriasis which are accepted practice in management of severe disease, and the development of a pioneering concept for a biopsychosocial approach to psoriasis management; ii) studies in RA prevention and treatment optimisation for novel biologic treatments driven by ARUK funded research in epidemiology and genetics (also supported by the MRC Stratified Medicine Initiative); and iii) a worldwide, step change in respiratory care, targeting
novel therapies to specific sub-groups of asthma and COPD patients, with safe completion of >250 studies, the first testing of novel CFC-free inhalers, and leadership on global guidelines for management of airways diseases.

Building on the strong foundations provided by the strategic alignment across MAHSC, Section 3 outlines our plans for the next five years.

3. ACADEMIC HEALTH SCIENCE CENTRE PROPOSAL (3 pages)

Please provide a brief overview of the strategy and vision for the proposed AHSC, to include the following:

- The goals, vision and purpose of the proposed AHSC for the five year period including key deliverables;
- A brief overview of the strategy to align research, health education and patient care within the proposed AHSC;
- Overview of the strategic objectives for the proposed AHSC, over the five years of designation, including for example specific themes or work programmes of focus;
- The AHSC partnership model and the role of each partner;
- Details of the proposed partnership leaders and leadership arrangements;
- How the partners will work together to deliver the goals of the AHSC;
- A description of the proposed governance arrangements;
- Evidence that the proposed AHSC is nested within an AHSN, and will have active engagement with other AHSNs nationally.
3.1. MAHSC Vision: Our vision is to work together to improve the health and wellbeing of people locally, regionally, nationally and internationally, by establishing MAHSC as a leading world centre for the translation of innovative research and education into better patient outcomes. Our partners are leaders in their fields individually, but our collaboration is driven by the recognition that we can achieve much more by working together in a structured AHSC.

3.2. MAHSC Purpose: The purpose of MAHSC is to realise the full potential of our academic-healthcare and wealth creation capabilities, to generate real benefits for people in Greater Manchester, the UK and worldwide.

3.3 MAHSC Goals: The MAHSC partners are committed to goals, which will enable us to work beyond the parameters of our individual organisations to deliver a shared vision and common purpose by:

- Conducting the highest quality basic science, translational and clinical research
- Delivering outstanding healthcare to the people of Greater Manchester and beyond.
- Disseminating innovation in research, technology and care nationally and internationally.
- Educating in all aspects of health science, healthcare, healthcare management and biomedicine.
- Increasing and enhancing partnerships with the commercial sector.
- Making a major contribution to innovation, enterprise and economic development.
- Attracting the best national and international health researchers and healthcare workers.

3.4. MAHSC Partnership Model and Governance: Established in 2004, the Greater Manchester Research Alliance led to the formation of MAHSC in 2008 and our formal designation as an AHSC in 2009. Our partnership structure, summarised in Figure 2, includes a number of distinctive features:

- MAHSC is Chaired by the CEO of Manchester City Council, Sir Howard Bernstein;
- MAHSC’s Board of Governors allows us to integrate the translational research and innovation potential of the partners;
- MAHSC’s organisational structure mandates direct and energetic engagement by the Chief Executives of the partner NHS organisations, each of them providing personal leadership to one of six Domains to ensure integration of research, education and clinical activity. This level of involvement at the highest level of the partnership is proving highly effective and is a unique aspect of the Manchester AHSC, made possible through our size and the inclusive nature of our partnership constitution, which spans primary care through general hospitals to specialist care.

Further integration and alignment is achieved in each Domain through an Academic Lead, the Director of the relevant University Institute and a Clinical Lead who links with the GM AHSN.

3.5. Overview of MAHSC strategy to align research, health education and patient care, including specific themes, work programmes and deliverables

The maturity of our strategy to align research, education and patient care is evident in the adoption of common themes and priorities across the constituent elements of our clinical-academic partnership. Further developments in our governance structure will enhance our ability to move rapidly and effectively as a partnership. Our high level strategic aims to achieve excellence in research, education, and excellence in clinical care are summarised at the top of sections 4, 5 and 6. Highlights from the work programmes being delivered by MAHSC’s Domains are set out below. All of these work programmes will benefit from the roll out of our sophisticated health informatics expertise over the next five years.
**CANCER DOMAIN**

We aim to be one of the **top five Integrated Cancer Systems** globally, exceeding the Improving Outcomes Guidance standards and delivering world-class outcomes for patients so that by 2020 more than two thirds of newly diagnosed patients will live for more than five years. This will be achieved by focusing on the development and implementation of personalised medicine. **We will:** i) develop Manchester Cancer (see 2.3) to implement transformational changes in the way that services are delivered; ii) rationalise and align specialist services with leading academic centres; iii) increase the synergy and integration of care delivery with research and education and use this to improve the translation of experimental discoveries into clinical tools; iv) increase the scale of research by doubling the number of clinical academics by 2020; v) implement findings from existing studies to improve the services and outcomes for patients, for instance the PROCAS study (50,000 patients) will inform national decision making on the delivery of breast cancer screening and gene testing; vi) move academic advances in immunotherapy and radioimmunotherapy from the laboratory to the clinic; vii) establish one of the two UK centres for proton beam therapy.

**CARDIOVASCULAR DOMAIN**

We aim to deliver fully integrated specialist services in cardiac, vascular and stroke medicine and surgery to the population of Greater Manchester. Target molecules, medical technology and clinical interventions already identified or developed by MAHSC will be translated into patient care, contributing to a substantial reduction in mortality from stroke, MI and heart failure in our population by 2019. **We will:** i) roll out a new device for community screening for AF, reducing rate of under-diagnosis (and thus stroke rate); ii) develop biological pacemakers, initially in a large animal model with translation within five years; iii) develop molecular targets already identified by our group (PMCA4-RASSF-Hippo signaling pathway) to early clinical studies in heart failure patients; iv) by 2019, complete a phase III trial of a novel agent in SAH and be on track to deliver a phase III trial in ischaemic stroke; v) implement an integrated (“sequence to stethoscope”) genetiic cardiology service based on next-generation sequencing for all families with inherited heart diseases.

**HUMAN DEVELOPMENT DOMAIN**

We aim to link gene discovery programmes with the first next generation sequencing genetic testing platform for NHS patients, discovering novel approaches and insights in rare diseases, pregnancy complications and chronic diseases including diabetes. **We will:** i) establish the MAHSC Centre for Genomic Diagnostics and Innovation as a centre of excellence and a major national focus for advances in laboratory genetic testing ii) implement further diagnostic and therapeutic programmes that apply metabolomics and systems approaches to complex diseases through our Centre for Advanced Discovery and Experimental Therapeutics (CADET); iii) develop personalised medicine approaches (utilising our expertise in placental function) in women with pregnancy complications such as stillbirth and fetal growth restriction through the Tommy’s Maternal and Fetal Health Research Centre, achieving a 50% reduction in the number of stillbirths over the next five years (currently 3.5/1000 births in the UK); iv) introduce enhanced routine screening for complications of diabetes across Greater Manchester by 2019 (with the NIHR CLAHRC).

**INFLAMMATION AND REPAIR DOMAIN**

We aim to deliver a stratified and targeted approach to the management of patients with inflammatory diseases and injury, enhancing therapeutic efficacy and safety, and improving patient survival and quality of life. **We will:** i) identify novel pathways and molecules from our basic science and pre-clinical platforms in UoM (including MCCIR); ii) achieve rapid translation into humans with inflammatory diseases through early PoC work in relevant disease cohorts, in our two NIHR CRFs, and in collaboration with the TRP/TRCs; iii) stratify patients to maximise efficacy/safety of targeted therapies (NIHR MSK BRU, MRC programme in RA, psoriasis, asthma); iv) enhance delivery for patient benefit through new-build centres in dermatology, allergy, and early lung cancer diagnosis; v) develop novel approaches to repair and rehabilitation, with modular academic and practical training through a new collaborative orthopaedic centre.

**MENTAL HEALTH DOMAIN**

We aim to build on our strengths in mobile health technology, informatics and research into brain and behaviour to deliver significant improvements in mental and physical health outcomes for people with mental illness, providing national leadership for m-health innovations in mental health. **We will:** i) exceed national ambitions for diagnosis and support for people with dementia, through our work with NHS North West and the Manchester Dementia Partnership; ii) develop and implement standards for improved access to physical healthcare services for mental health service users (with the NIHR CLAHRC); iii) improve healthy living in people with mental illness, contributing to reduced mortality and morbidity rates due to avoidable ill health from cardiovascular disease; iv) implement innovative mobile health support for recovery of people with serious mental illness, to achieve reduced readmission rates and improved symptom control, working with the MAHSC m-health Ecosystem, HeRC and NIHR CLAHRC.
POPULATION HEALTH AND IMPLEMENTATION

We aim to improve population health and reduce inequalities through a) high quality research and education utilising our expertise in e-Health and b) by providing expertise to support translation activity across the MAHSC partnership. We will: i) work with healthcare policy makers, providers and patients to develop ways to improve access to care, experience of care and quality of care across all MAHSC Domains; ii) increase knowledge about the factors which underpin disease causation, progression and response to treatment applying epidemiology approaches to the analysis of databases which link clinical, biological and environmental information; iii) forge strategic alliances across academia, industry and the NHS to mobilise knowledge from research for patient benefit (with the NIHR CLAHRC); iv) work with policy makers, providers and patients to develop and test ways to reduce patient harm, working in partnership with the NIHR Patient Safety Translational Research Centre and through national leadership of NHS Quest; v) build leadership capacity in service improvement and support the implementation of evidence-based care, working with the GM AHSN and NIHR GM CLAHRC.

3.6 Other strategic relationships

a) AHSNs: MAHSC’s leadership team has been closely involved in the development of the GM AHSN, facilitated by the involvement of David Dalton, CEO SRFT as the Accountable Officer for the GM AHSN. A MoU has been approved by the MAHSC Board and will be adopted by the GM AHSN Board when licensing is complete. The GM AHSN will provide national leadership for patient safety and health informatics, and is a favoured partner for TSB/NHS England SBRI funds. MAHSC’s Director of Business Development provides leadership to the GM AHSN on industry engagement and facilitated the establishment of a pan-Manchester industry advisory panel for the GM AHSN. MAHSC and the GM AHSN initiated and jointly hosted a discussion event about the relationship between AHSCs and AHSNs for national stakeholders, in conjunction with the NHS Confederation, Universities UK, the Young Foundation, and the AHSN Forum, in January 2013. Further such joint events will take place over the next five years. MAHSC has also led the development of the NHSA (Northern Health Science Alliance), which brings together the universities and largest teaching hospitals from 8 centres across the North of England and provides a forum for linking their AHSNs.

b) Collaborations: MAHSC has productive research collaborations in place with many of the top 100 Universities world-wide. International and strategic partnerships include MoUs with the Peking University Health Science Centre (Beijing), Hitachi (Japan) and NICE (including international links) alongside the MCCIR (GSK and AstraZeneca) and technology programmes with both CIMIT (Partners) and MIT in Boston. MAHSC has developed productive relationships with the other English AHSCs, and through MIMIT (Manchester: Integrating Medicine and Innovative Technology) provides leadership for a joint AHSC initiative negotiating and leveraging investment from the National Innovation Centre and ARUK to address unmet patient needs as well as clinical priorities of universal importance such as the reduction of hospital acquired infection and enhancement of functional independence.

3.7 Management and Governance

Chair of the Board of Governors: Sir Howard Bernstein, Chief Executive of Manchester City Council.
Director: Professor Ian Jacobs, Vice President, UoM Dean of the Faculty of Medical/Human Sciences, UoM.
Clinical Director: Professor Alistair Burns, Professor of Old Age Psychiatry and Vice Dean for Clinical Affairs UoM, Hon Consultant Old Age Psychiatry MMHSCT, National Clinical Director for Dementia in England.
Research Director: Professor Colin Sibley, Director of the Tommy’s Charity, Maternal and Fetal Health Research Centre (MFHRC) in Manchester and Professor of Child Health and Physiology, UoM.
Chief Operating Officer: Dr Linda Magee OBE, Chair, GM Health is Our Business Group.
Executive Governors: Caroline Shaw Chief Executive, The Christie NHS Foundation Trust (Domain Chair, Cancer). David Dalton, Salford Royal NHS Foundation Trust (Domain Chair, Population Health and Implementation). Mike Deegan Chief Executive, Central Manchester University Hospitals NHS Foundation Trust (Domain Chair, Inflammation and Repair, and Co-Chair, Cardiovascular). Karen James, Acting Chief Executive, University Hospital of South Manchester NHS Foundation Trust (Domain Chair, Human Growth and Development, and Co-Chair, Cardiovascular). Michelle Moran, Chief Executive, Manchester Mental Health and Social Care Trust (Domain Chair, Mental Health). Alan Campbell, Salford Clinical Commissioning Group (formerly NHS Salford) as representative for GM CCGs. Professor Martin Humphries, Vice President UoM and Dean of the Faculty of Life Sciences, lead representative for the University.
4. VOLUME, CRITICAL MASS AND WORLD-CLASS EXCELLENCE IN BASIC MEDICAL RESEARCH AND THE ABILITY TO TRANSLATE FINDINGS INTO EXCELLENT TRANSLATIONAL, CLINICAL AND APPLIED RESEARCH ACROSS A RANGE OF INTERESTS (3 pages)

Please provide evidence of appropriate track record and capacity in research and translation to clinical and applied research, to include the following:

- An overview of the partnership’s volume and critical mass of excellent world-class basic medical research;
- Evidence that the partnership has a track record and the ability to translate discoveries from basic research into world-class early translational, clinical and applied health research across a range of interests;
- Evidence that the partnership has a track record of translating findings from research in disciplines such as engineering, computer science and material science, and integrating these into excellent translational, clinical and applied research for patient benefit in order to improve health and healthcare delivery;
- Details of how the research excellence of the proposed AHSC will strengthen the partnership’s ability to translate research into improved patient care across a range of interests, including how this will support the proposed strategic objectives of the AHSC;
- Three examples which display the partnership’s translation of world-class excellent basic research into excellent translational, clinical and applied health research leading to excellent patient care and patient outcomes.
Section 4 - Research: Distinctive features of our partnership

- Ranked 2nd nationally for Life, Medical and Health UoAs (1-13) in RAE 2008 and linked with powerful engineering, physical and life sciences (UoM was 3rd in overall ‘Research power’ RAE 2008);
- Most successful CLRN in England, supporting outstanding track record of MAHSC partners on clinical trials: largest early phase clinical trials unit worldwide (Christie); largest commercial study in the UK (the GSK sponsored Salford Lung Study).
- Innovative precompetitive research initiative in inflammation research jointly with GSK and AZ (MCCIR)
- MIMIT is the UK’s only affiliate of CIMIT®, Boston USA.
- Over £220m of third party investments attracted into UMI® spin-out companies: more than 300 licenses concluded since 2004.
- UOM has the largest number of industry partnerships of any university in the UK (APBI 2012).

Our high-level goal is to realise the full translational research potential of the link between the strength of UoM basic science and our NHS R&D capacity, forged by the MAHSC Domains, to deliver both health improvement and wealth creation.

4.1 Overview of volume and critical mass of world-class basic medical research

UoM, one of the largest universities in the UK, with >10,500 staff, >40,000 students, has invested >£750m in state-of-the-art buildings and translational research infrastructure since 2004. Total UoM income (2011/12) was >£800M and total external research funding >£270M. In the life, medical and health sciences UoM has >750 academic staff, 1400 researchers and >3000 postgraduate students. It is in the top 5 Universities for UK Research Council income (1st for BBSRC, 7th for MRC funding) and for UK Charities (2nd for CRUK). In RAE 2008, UoM submitted in 53 Units of Assessment (more than any other University) and ranked 3rd in the UK for Research Power. Independent analysis of RAE 2008 data (Research Fortnight) ranked UoM medical disciplines 5th overall. Our basic biomedical research strength is underpinned by world-class life/physical sciences (e.g. 2010 Physics Nobel Prize to Geim and Novoselov, for discovery of graphene).

MAHSC’s position in an exceptionally strong regional network dedicated to maximising growth opportunities through the LEP, business partnership, commercialisation of IP, via UMI® (our highly regarded University innovation group) and Trustech (our regional NHS innovation group hosted in CMFT). Aligned to the Corridor Manchester’s Life Sciences initiative (a partnership between CMFT, UoM and Manchester City Council and including Manchester Science Park) we provide extensive specialist biohealth accommodation. This includes UoM’s 150,000 sq m state-of-the-art incubator facilities soon to be complemented by CityLab (CMFT site) and Medipark, now in development adjacent to the UHSM site. Successes include Neutech Pharm, a spin out sold to Novartis for £305m, DxS, a spin in sold to Qiagen for £80m (which then set up their European Pharmacogenomics Centre in Manchester), and Epistem, a spin-out company, now listed and valued at £54m. In the last year Phagenesis (dysphagia), raised over £7m, and F2G (anti-fungals) $30m, from investors to support growth in Manchester.

4.2. A track record and ability to translate discoveries from basic research into world-class early translational, clinical and applied health research

Since the creation of the Greater Manchester Research Alliance in 2004 and of MAHSC in 2008 we have harnessed the combined strengths of our partners in MAHSC and across the region to help researchers take their ideas through the pipeline from basic science to healthcare delivery. MAHSC partners have funded or established (alone or jointly with external funders such as NIHR and the North West Development Agency): i) enabling technologies (omics facilities such as those in CADET and MIB; health and bioinformatics such as in NWeHealth; imaging e.g. Wolfson Molecular Imaging Centre); ii) Clinical Research Facilities (3 NIHR funded CRFs, MAHSC Clinical Trials Unit at Christie); and iii)
papilloma virus has moved from its role as a cervical screening test to the positive effects of vaccination against this virus

programme on co-morbidities (J Inv Derm, 2013;133:377-385) and development of new biologics (NEJM,

and we showed that it reduces pathological cardiac hypertrophy in a mouse model. PMCA4 inhibition for heart failure

has progressed along the translational pathway as far as a US patent filing. We have enhanced our translational capacity

relating to these molecules are in progress.  The first small molecule inhibitor of PMCA4 was identified in Manchester,

through our Institute of Cardiovascular Sciences with a commitment to investment in five senior clinical academic posts.

cardiac hypertrophy and remodeling, both critical processes in the development of heart failure.  Translational studies

through our Institute of Cardiovascular Sciences with a commitment to investment in five senior clinical academic posts.

We have identified 6 priority areas for research: melanoma, haemato-oncology, lung cancer, women’s cancers,

radiation therapy and personalised medicine. There is a track record of translating research into practice. Our researchers

established the international standard of care for biliary tract cancers: (NEJM 2010 362:1273). We demonstrated that

women who survive Hodgkin lymphoma have an increased risk of breast cancer following radiotherapy aged <36, (BJC

2009101:582) thus the national screening database was established. The RAPID trial showed that PET can be used to

direct need for radiotherapy in early stage Hodgkin lymphoma. Immunotherapy has moved from the laboratory to the

clinic using bespoke cell processing facilities developed jointly between the Christie and University. Novel radio-

immunotherapy combinations using monoclonal antibodies and irradiation have been developed. Research on human

papilloma virus has moved from its role as a cervical screening test to the positive effects of vaccination against this virus

on gynaecological cancers.

Cancer: We have identified 6 priority areas for research: melanoma, haemato-oncology, lung cancer, women’s cancers,
radiation therapy and personalised medicine. There is a track record of translating research into practice. Our researchers

established the international standard of care for biliary tract cancers: (NEJM 2010 362:1273). We demonstrated that

women who survive Hodgkin lymphoma have an increased risk of breast cancer following radiotherapy aged <36, (BJC

2009101:582) thus the national screening database was established. The RAPID trial showed that PET can be used to

direct need for radiotherapy in early stage Hodgkin lymphoma. Immunotherapy has moved from the laboratory to the

clinic using bespoke cell processing facilities developed jointly between the Christie and University. Novel radio-

immunotherapy combinations using monoclonal antibodies and irradiation have been developed. Research on human

papilloma virus has moved from its role as a cervical screening test to the positive effects of vaccination against this virus

on gynaecological cancers.

Cardiovascular: Basic research in Manchester identified the importance of several molecules including PMCA4

(Circulation, 2007;115:483), RASSF1A (Circulation, 2009;120:607), and PAK 1 (Circulation, 2011;124:2702), in

cardiac hypertrophy and remodeling, both critical processes in the development of heart failure. Translational studies

relating to these molecules are in progress. The first small molecule inhibitor of PMCA4 was identified in Manchester,

and we showed that it reduces pathological cardiac hypertrophy in a mouse model. PMCA4 inhibition for heart failure

has progressed along the translational pathway as far as a US patent filing. We have enhanced our translational capacity

through our Institute of Cardiovascular Sciences with a commitment to investment in five senior clinical academic posts.

Inflammation and Repair: This Domain harnesses the unique, pre-competitive discovery platform MCCIR, the NIHR
Manchester Musculoskeletal BRU and our ARUK Centre. Each research area supports world-leading patient cohorts

linked by biobanks. ARUK supported cohorts have identified genetic risk, targeted novel biologics, and enabled new

trials of prevention in patients at risk of RA. Psoriasis research is comprehensive hosting UK Biologics registry, NIHR

programme on co-morbidities (J Inv Derm, 2013;133:377-385) and development of new biologics (NEJM,

2010;362:118). Manchester Asthma and Allergy Cohort has identified the gene-environment interactions underlying

childhood asthma. Research in neurogastroenterology has resulted in treatment to prevent aspiration after stroke, widely

applied through Europe through spinout Phagenesis. The National Pulmonary Aspergillosis Centre has co-developed new

fungal diagnostics (Myconostica) and a new class of antifungal drugs (F2G).

Human Development: This domain harnesses discovery (CADET) and high-throughput translational platforms (in

Genomic Medicine) with laboratories embedded in the CMFT hospitals. Work has enhanced diagnostics for: rare diseases

though gene discovery (Nat Genet, 2013; 45, 295); breast cancer through population based approaches (PROCAS trial),

leading to NICE guidelines; and diabetes where confocal microscopy can assess diabetic neuropathic

complications (Diabetes Care, 2010;33,1792). The development of new research based clinics has led to novel

interventions for rare tumour predisposing conditions, for fetal growth restriction, and for lysosomal storage disorders

(CMFT was the main site for the trial of Aldurazyme as a therapy for mucopolysaccharide type I, leading to FDA and

EMEA approval).

Mental Health: Manchester has been at the forefront of fronto-temporal dementia (FTD) research, helping the

field harmonise its use of nomenclature for this disorder, enabling the discovery of the first gene for FTD and the

identification of other genes including our recent finding of a repeat expansion mutation in C9orf72 being the

most common genetic cause of FTD. We have achieved high levels of diagnostic accuracy meeting the

Government’s Dementia Strategy objectives of good quality early diagnosis. Our imaging platform has

highlighted the potential of FDG PET as a biomarker for early Alzheimer’s.

Population Health + Implementation: The Centre for Primary Care co-leads the DH Policy Research Unit for NHS
commissioning; leads the NIHR CLAHRC for Greater Manchester; and was recently awarded an NIHR Patient Safety
Translational Research Centre. Its research shaped the design of national systems of accreditation for general practices in

the UK and Europe, developed measures to assess patient experience of primary care used routinely in the NHS since

2004, and developed the methodologies used by NICE to design the quality indicators which underpin pay-for-

performance in general practice.

4.3. Partnership has a track record of translating findings from research in disciplines such as engineering,

computer science and material science, and integrating these into excellent translational, clinical and applied

research for patient benefit

Our resource spans engineering, physical, life, social science, business and education, medical and health sciences across
4.4. How the research excellence of the proposed AHSC will strengthen the partnership’s ability to translate research into improved patient care

MAHSC has developed considerable experience of managing our portfolio of research facilities and assets. Over the next five years we will leverage this experience and utilise developments in the partnership, to enable a further step change in the quality and quantity of our experimental medicine research, placing our partnership on a par with the best in the world for increasing translation through the research pipeline to improved patient care. We will do this by:

i) Harnessing the strengths of our enabling technologies, supported by award of an MRC Centre in eHealth;

ii) Further developing the translational ability of the MAHSC Domains through our powerful trials infrastructure, which includes £12.5m NIHR funding for three MAHSC CRFs (providing an extensive pan-Manchester experimental medicine capability with annual patient visits >23,000 and including the WT Children’s CRF named NIHR/ABPI Clinical Research Site of the Year 2013). We will consolidate our partnerships with hosted contract research organisations such as ICON plc and the Medicines Evaluation Unit;

iii) Supporting the design, management and governance of clinical trials through the NIHR-registered MAHSC CTU at the Christie;

iv) Delivering implementation science programmes in each Domain through the GM AHSN, building on the experience of the GM CLAHRC;

v) Engaging and involving patients and the public, building on the nationally recognised expertise of the Nowgen Centre at CMFT and on the experience gained through the Salford Citizen Scientist programme.

4.5. Three examples of effective translation.

We have selected one broad topic and two more specialist topics as examples of effective translation:

**Cardiovascular - Stroke:** The discovery that interleukin-1 receptor antagonist (IL-1Ra, the naturally occurring blocker of interleukin-1) reduces brain damage in experimental stroke was made at UoM (Brain Res Bull, 1992;29:243). We have since demonstrated the wider therapeutic potential of IL-1Ra in brain disease and its safety (JNNP, 2005; 76:1366) and had results verified by independent groups (Nature Rev Immunol, 2005; 5: 629). Phase 2 clinical studies of IL-1Rα in both stroke and subarachnoid haemorrhage are now underway with plans for phase 3 clinical effectiveness studies. Results from this will inform the next steps for clinical trials. Mathematical and simulation expertise has provided insights into the mechanisms underlying atrial fibrillation, suggesting new approaches to diagnosis and intervention; this new knowledge will be used to inform new clinical trials.

**Inflammation / Repair - Allergy:** In our unselected birth cohort (Manchester Asthma and Allergy Study) we showed that 11% of 8 year old children in the general population are sensitised to peanut based on standard allergy diagnostic tests (skin tests and specific IgE to peanut extract). However, only ~2% are truly allergic to peanut as confirmed by oral peanut challenge test (J Allergy Clin Immunol, 2010;125:191-7). Current methods of assessing peanut allergy thus generate needless anxiety: 4/5 children potentially receive a false positive diagnosis of peanut allergy. We demonstrated that the IgE response to the major peanut allergen Ara-h-2 is more predictive of true peanut allergy (100% sensitivity and 96% specificity) than currently used skin or blood tests (J Allergy Clin Immunol (2011); 127:684-85). This component-based diagnostic is now available in clinical practice, as the new gold standard (Curr Opin Allergy Clin Immunol, 2011;11:222-8).

**Human Development - Lysosomal storage diseases:** We characterised molecular and clinical manifestations of fatal childhood lysosomal storage diseases and facilitated development of novel treatments from the 1990’s (PNAS, 1996; 93: 2025). New treatments for lysosomal diseases include home drug treatment, the first gene therapy trial for lysosomal disease, reduced mortality and broadened scope of haemopoietic stem cell transplantation and novel drugs for these diseases. As a result >10 of these diseases are now treatable, improving both longevity and quality of life for 696
A description of the existing excellent patient care, including:

- Details, and relevant evidence of the NHS provider partners’ excellence in delivering patient care within the local community and the wider NHS landscape;
- How excellence in research and health education will together support excellence in patient care and delivery of the best patient outcomes.
Section 5 – Clinical Care: Distinctive features of our partnership

- Leading nationally in quality and safety of patient care.
- Excellence in patient care in specialist areas including cancer, stroke and mental health.
- Commissioning of a proton beam development by DH to be based at the Christie.

Our high level goals are to translate findings into practice to deliver better patient outcomes nationally and internationally. Priority areas for the next five years for each MAHSC Domain have been identified, to support achievement of the five high level national outcomes for the NHS. We will provide clinical leadership through the MAHSC Domains across all of our care settings, extending through the GM AHSN.

5.1. NHS provider partner’s excellence in delivering patient care

MAHSC drives better outcomes for patients by enabling healthcare organisations to access the benefits of research and innovation. The clinical delivery elements of the GM AHSN are a seamless extension of MAHSC’s six clinical domains, under the same clinical leadership. Our NHS partners provide a full spectrum of Community, Primary, Secondary and Tertiary services to the populations of Greater Manchester (3m) and the Northwest (5m). In addition, a significant number of nationally commissioned highly specialised services are provided on a supra-regional or national basis. Our population has some of the greatest burdens of ill health and deprivation in England (Health Profile 2012), living longer with ill health and dying younger. Despite this burden of disease, our risk-adjusted outcomes are collectively better than the national benchmark. Collaborative working across MAHSC partners and with AHSN Trusts, has delivered substantial improvements in outcomes for patients with major trauma (CMFT, SRFT, UHSM), with better than expected outcomes (unexpected survivors [TARN]), in the provision of stroke care (23% improved outcomes), in the management of adults with an acute abdomen (National Guidance) and through the Manchester Cancer Provider Board.

Central Manchester University Hospitals FT (CMFT): comprises two general and four Specialist Hospitals. CMFT provides a wide range of general and specialist services, along with nationally commissioned services for both adults and children including pancreas (including islet cell), transplantation neurofibromatosis, Congenital Hyperinsulinism, and Lysosomal Storage Disease (children). The Trust has performed within national norms for mortality outcomes, and by April 2012 had reduced the HSMR in the recently acquired Trafford group of hospitals from being an outlier to well within national confidence limits. CMFT has won a number of national awards in patient care: DH Innovation Challenge and NICE Shared Learning award (home dialysis training programme); HSJ ‘Improving Care with Technology’ award (Patientrack - track and alert on physiological measurement); All-Party Parliamentary Group Maternity Services Awards. CMFT sits at the top of its cluster group for incidents reported, and has NHSLA Level 3 accreditation for both general and maternity services. In 2012/13 CMFT reduced C.diff infection by 11%, met the full year target for A&E performance (250,000 attendances), implemented CHIRPS and Enhanced Recovery pathways, and reduced cardiac arrest calls by 5%.

Salford Royal Foundation Trust (SRFT): provides a wide range of tertiary services including National Centres for Intestinal Failure and Lysosomal Storage Disease (Adults). SRFT provides: regional neurosciences services; a nationally adopted hub and spoke model in dermatology; specialist endocrinology services (recognised by NICE as an example of best practice for diabetes care); and multidisciplinary obesity care. SRFT leads a comprehensive stroke service for GM and is a partner in the GM Major Trauma Collaborative delivering trauma centre provision for patients with head and spine injuries. SRFT has a national reputation as a leader in Quality Improvement with a focus on four key areas: reducing mortality, reducing harm; improving the reliability of care delivery; and patient experience. As a result, SRFT consistently reports one of the lowest mortality rates in the NHS (best in the North of England) and has recently reduced the mortality of patients admitted as an emergency over the weekend by 22%. SRFT has delivered 98% “Harm Free Care” using the NHS Safety Thermometer. The Trust’s record of delivering high quality services has been recognised by many National bodies: NHSLA Level 3 accreditation was re-awarded in 2013; HSJ Patient Safety Award for “Changing Culture” (2012). The Trust was the rated as the Best Acute Trust 2012 in the NHS staff survey. 90% of patients rate their care at SRFT as good or excellent.

The Christie NHS Foundation Trust is the largest cancer centre in Europe and has been caring for patients and pioneering cancer research breakthroughs for over 100 years. Treating more than 40,000 patients each year, the Christie is the first UK centre to be accredited by the Organisation of European Cancer Institutes as a comprehensive cancer centre. The Christie is a national specialist centre with 25% of the patients treated attending from all areas of the country. The Christie has a good patient safety culture and is regarded by the National Patient Safety Agency as a high reporting, low risk organisation with a position at the top of the cluster of specialist Trusts for incident reporting. The Christie holds NHSLA Level 3 risk management standards and is a leader in patient experience demonstrated in the national patient
surveys as excellent. In 2012 the Christie performed better than other trusts and achieved the highest score in the hospital and ward, doctors and operations and procedures sections; reported as being the best Trust in the country for maintaining the privacy and dignity of patients. Survival rates are consistently high with 90 day survival following radical radiotherapy >95% consistently for the past 12 months, major surgery >99% in this period and 30 day survival following chemotherapy >98%. In addition there have been no incidents of wrong route chemotherapy and better than expected critical care outcomes (ICNARC). This and extremely low infection rates, contribute to a 97% fully compliant quality and risk profile, with a very low risk of non compliance as assessed by the CQC.

Salford Clinical Commissioning Group (SCCG): (established 04/2013) is one of the successor organisations to Salford Teaching Primary Care Trust, the original primary care partner of MAHSC, and a founding member of GM Primary Care Research Governance Partnership (ReGroup), a partnership between the Association of GM CCGs for research governance approval for primary care researchers. SCCG aims to be one of the leading research-active CCGs in the country. Concentrating on improving outcomes in primary care by integrating research and care delivery and working closely with the GM CLARHC, SCCG has pioneered innovation in heart failure, chronic kidney disease and early diabetes. SCCG was instrumental in redesigning the Salford sexual health system (for which it won a Nursing Times award), for cardiac rehabilitation (Health Service Journal award) and it has increased the MMR immunisation rate in the local orthodox Jewish community to national levels.

University Hospital of South Manchester (UHSM): has specialist expertise in cardiology and cardiothoracic surgery, heart and lung transplantation, respiratory medicine, burns and plastics, cancer and breast care services. The Nightingale Breast Centre provides diagnosis and screening for 150,000 women and has the first breast cancer prevention centre in Europe. UHSM hosts the North West Heart and Lung Centres, the latter is nationally recognised for tertiary respiratory disease including asthma, allergy, COPD, lung infections and lung cancer. UHSM’s track record in excellent patient care includes: pioneering 24/7 consultant-led services with a culture of transparency on cardiac outcomes, acknowledged nationally by DH and RCS; gold standard award from the Royal Society for the Prevention of Accidents for health and safety work; Britain’s Greenest Hospital, with carbon emissions reduced 35 per cent; winner 2013 Nurse of the Year award; rated triple ‘excellent’ in the annual PEAT inspections with top results in patient surveys; and training Dining Companion volunteers to assist at mealtimes, ensuring that patients are properly nourished.

Manchester Mental Health and Social Care Trust (MMHSCT): is one of only five integrated mental health and social care trusts in the UK. The Trust leads mental health for both MAHSC and the City Council’s Strategic Health & Wellbeing Board and is the lead provider of healthcare services for HM Prison in Manchester. MMHSCT achieved the highest score in the latest NHS national patient survey in terms of listening to, and involving, service users about their own care. The digital patient stories are seen as best practice exemplars supporting the de-stigmatisation agenda. MMHSCT also achieved the highest score for delivering harm-free care for inpatients, the award of national demonstrator site status for recovery and ‘centre of excellence’ status for the Individual Placement Scheme. The Trust has opened a Recovery College and Medical Education Centre, hosts five NIHR Senior Investigators, two NHSE National Clinical Directors and one NIHR Research Fellow. It secured £10.7m in research funding in 2011/12.

5.2. Linking research and education with clinical care to improve patient outcomes

We have achieved effective links from basic science to translational research through to clinical trials and on to clinical practice through our Domain structure (see Fig. 1). Academic leadership for each Domain is provided by the Academic Directors of the Faculty Institutes, who work closely with the Domain chairs (NHS CEs) and Domain Clinical Leads. How we achieve integration of research and clinical care is explained in section 4, and the contribution of our educational mission to achieve excellence in patient care is explained with examples in section 6. Our work on placental dysfunction provides an illustration of our model. Placental dysfunction is an important cause of pregnancy complications, including pre-eclampsia and fetal growth restriction. A programme of discovery spanning two decades has led to improved diagnosis, therapeutic innovation and the development of the Manchester Placenta Clinic (which embodies a large scale referral system and management model). This has led to a measurable clinical difference to patients and at the same time has trained future generations of medical students, scientists, nurses, midwives, obstetricians and clinical academics. Many other examples of the linkage of research, education and clinical care can be found in each of our Domains and are at the core of our AHSC.
6. EXCELLENCE IN HEALTH EDUCATION (2 pages)

A description of the existing excellence in health education and training including:

- Details of the partnership arrangements in place with the Local Education and Training Board;
- An overview and relevant evidence of the partnership’s excellence in providing, and delivering, undergraduate and post graduate health education and training across all related healthcare disciplines leading to improved patient care and outcomes;
- Details of how the integrated research and clinical environment adds benefit and value by providing an optimal health education environment;
- Evidence of education and training literature published in leading national/international journals.
**Section 6 – Education and Training: Distinctive features of our partnership**

- Largest UK Medical School with 2,170 medical students.
- Major UK centre for the education of healthcare professionals in terms of scale and breadth. 450 doctors, 70 dentists, 160 pharmacists and 550 nurses, midwives and allied health professionals graduated in 2012.
- Host of the Manchester Academy for Healthcare Scientist Education, a NW hub for implementation of ‘Modernising Scientific Careers’.
- The first Nursing and Midwifery School to run a nursing degree in England (1969), ranked between 1st and 4th in UK university league tables and the highest ranked School of Pharmacy school in the world (QS rankings).
- Manchester Business School will deliver two new programmes (approx. value £35m) for the NHS Leadership Academy, benefiting up to 25,000 NHS staff as part of the largest ever NHS leadership programme.
- Pioneer of mobile e-learning for medical, dental and social work students.

**Our high level goals** are: to enhance the standards of education across all our healthcare programmes through stringent quality assurance processes; to embed research, innovation and leadership training into all our education programmes from undergraduate (UG) to postgraduate (PG) specialty levels; and to support the development of our clinical academic workforce across all professions.

### 6.1. Partnership with Health Education North West (HE NW)

MAHSC has been central to the authorisation of both HE NW (the NW LETB and former NHS NW). MAHSC’s academic and clinical representation on the LETB enables direct input into local and regional workforce planning and education commissioning. The many educational contracts that existed between the MAHSC partners and NHS NW will continue under HE NW ensuring annual commissions of UG healthcare trainees and placements for pre-registration programmes. Contractual arrangements include each MAHSC partner being bound by a Learning and Development Agreement that includes robust Quality Assurance processes for UG and PG, medical and non-medical healthcare education. MAHSC has led the development of the GM Deans’ Forum that co-ordinates and promotes excellence in the delivery of UG, PG and continuing professional education for healthcare professionals across GM. In addition, MAHSC hosts the Work-based Education Facilitator Network which is responsible for the delivery of work-based education for NW Trainee Practitioners and the Clinical Placement Network which is responsible for identifying and quality assuring clinical educational placements for all NW non-medical UG health professionals.

### 6.2. Excellence in education and training to improve patient care and outcomes

MAHSC’s education and training strategy recognises that major improvements to patient care require the concerted action of interdiscipliary teams of highly trained healthcare professionals as skilled practitioners, researchers, innovators and leaders. MAHSC is unique in the UK in the scale and breadth of its provision of UG, PG and continuing professional development (CPD) programmes across all healthcare professions. MAHSC’s UG cohort of more than 6000 registered students includes medicine, dentistry, healthcare science, midwifery, nursing, pharmacy, psychological sciences, optometry and allied health professions. MAHSC’s widening participation initiatives ensure that recruitment to our UG programmes consistently exceeds all Office for Fair Access benchmark targets. Of our current population of almost 2200 PG healthcare students, ~1500 are engaged in MSc programmes that are accredited and/or provide higher specialist training and >700 are undertaking masters or doctoral programmes. Our externally funded, interdisciplinary 4-year doctoral training schemes are specifically designed to address areas of clinical and translational importance and are delivered collaboratively within the University, e.g. Engineering (Tissue Engineering & Nanoscience), Humanities (Global Health & Humanitarian and Conflict Response), Computer Science (Medical Imaging, Systems Biology, Bioinformatics & Health Informatics), Life Sciences (Neuroscience) and the Business School (Service Improvement). All PG students and early career researchers benefit from structured training workshops covering key research skills that are co-ordinated by the Faculty Training Team and with part funding from an MRC Centenary Award. The high quality of this training led to the Faculty being awarded the prestigious RCUK funded North West hub of the Vitae programme with responsibility for early career research training across the NW. MAHSC offers an extensive array of CPD opportunities to build and enhance the skills of its staff and the broader NHS workforce. An exemplar of this is the renewal of the NHS contract for the Centre for Pharmacy Postgraduate Education, which provides CPD to the 60,000 community, hospital and specialist pharmacists and technicians providing NHS services in England. Further, the Maguire Communication Skills Training Unit, is an international leader in the development of communication skills and its portfolio of training opportunities specifically promote multidisciplinary care. Recognising the need for leadership training to support service change and drive innovation MAHSC links closely with the NW Leadership Academy and is represented on the NW Leadership Board. The Health Management Group of the Manchester Business School delivers the academic component of the NW Medical Leadership programme and offers PG and CPD programmes in Health and Public Management and Leadership and Service Improvement for Clinical Leadership Fellows across all healthcare professions. MAHSC’s
recently launched programme ‘Improvement Science for Clinical Academics’ provides practical support and training for implementation of an improvement project within a MAHSC Domain. The academic component of this programme will be delivered via the modular Masters of Public Health Programme, thereby disseminating concepts of Improvement Science to the broader NHS workforce. MAHSC actively supports Athena SWAN. The Faculty of Life Sciences holds a silver award, and the University as a whole holds a bronze award.

6.3. Integrated Health Education Environment

The integration between education, research and clinical care through MAHSC ensures our students are taught by qualified educationalists, practising clinicians and active researchers within high grade and specialist learning environments. The educational objectives of our programmes are integrated with early clinical experience, opportunities for research and innovation from the outset, underpinned by an ethos of patient focussed care. Notably, on average 30% of our UG medical students intercalate on PG research programmes. As much of the training that our clinical students receive is within hospital and community settings, iPads have been issued to all medical and dental students in their clinical years allowing instant communication with tutors and direct access to library services and electronic course resources. Since this launch, bespoke iBooks have been designed and novel assessment and feedback methodologies introduced which place MAHSC at the forefront of mobile learning innovation. Engagement of students with these initiatives is reflected in a >15% increase in student satisfaction in areas of ‘feedback’ and ‘course management’. The Medical School was identified by the GMC as having the highest number of areas of good educational practice of all schools in their 2012 survey. Since 2009 our partnership has delivered a strategy to improve student experience and capitalise on the excellent learning opportunities available in our primary, secondary and highly specialist care settings. The impact of this work can be seen in the improvement in internal student satisfaction scores for year group cohorts of our medical students (Fig. 4). We expect this achievement to be apparent through a >80% satisfaction rating in the National Student Survey by 2015 and 90% by 2017. MAHSC’s infrastructure and expertise in integrated education and training led to its designation as a DoH ‘Early Adopter Site’ for implementation of Modernising Scientific Careers (MSC) for Healthcare Scientists and the securing of national tenders to deliver MSC programmes. In partnership with HEIs across GM MAHSC now hosts the

Manchester Academy of Healthcare Scientist Education which co-ordinates regional delivery and development of MSC programmes that integrate HEI based education, hospital based training and research placements. The integration between Research Institutes within UoM and the Clinical Domains of MAHSC along with close collaboration with HE NW provides an ideal environment for the development and growth of Integrated Clinical Academic Training (ICAT). MAHSC ICAT programmes for Doctors and Dentists are highly rated by NIHR in terms of their management and trainee achievement. NIHR funded Academic Clinical Fellow and Clinical Lecturer Medical and Dental posts are offered in 22 specialties that reflect both clinical and academic strength across MAHSC. With mentorship and close supervision, up to 70% of ACF’s progress onto PG research degrees and Clinical Lecturers to research fellowships or senior academic positions. MAHSC has also recently launched an initiative centred on the MAHSC Domains to ensure that our research trained Nurses, Midwives and Allied Health Professionals continue to develop as Clinical Researchers on return to their practice roles. UoM has invested £3m in the Faculty Fellowship Academy to support early career researchers in their applications for external funding and provide opportunities to undertake international research placements.

6.4. Education Scholarship: MAHSC is a leading centre of excellence in healthcare education scholarship. Since designation, MAHSC partners have published 210 healthcare education articles in peer-reviewed journals demonstrating specific expertise in communications education, problem based learning, assessment and portfolio learning: click here. MAHSC supports professional educational development through its Higher Education Academy (HEA) accredited New Academics Programme, MSc in Medical Education and PhD programmes in healthcare education research. The core aim of the recently established Faculty Education Academy is to support best academic practice in teaching and learning. Through its unique career track
Agenda Item 8.2

for healthcare focused educators, six teaching-oriented Chairs have been awarded in the past two years. In addition, seven of MAHSC’s educators have been awarded HEA National Teaching Fellowships, a number that exceeds that of any other healthcare institution.

If you have questions about the completion of this form please e-mail Jane Sinclair at jane.sinclair@nihr-ccf.org.uk.

This form must be submitted by 1:00pm on 31 May 2013.