

The NHS logo, consisting of the letters 'NHS' in white on a blue rectangular background.

*National Institute for
Health Research*

**NIHR Collaboration for Leadership
in Applied Health Care
(CLAHRC) West Midlands
Annual Report Year 3
April 2016 – March 2017**



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People sometimes ask me *“what is so special about CLAHRC?”*

Reviewing the successes of CLAHRC West Midlands over the last year is a powerful reminder of what can happen when researchers and practitioners have the time and space to talk to one another and to translate their ideas into practice. The unique structure of CLAHRC WM, with its emphasis on flexibility and innovation, has proved once again that cutting-edge research can have real, immediate benefits for patients and for the NHS. This last year has seen collaborations develop and strengthen, with new partnerships forged as organisations work together to deliver patient care for a whole range of conditions.

The launch of the 0-25 Youth Mental Health model in Birmingham is just one example of the excellent work we have achieved: it shows how conventional structures can be overturned to make way for fresh perspectives and innovative solutions, even in areas notoriously difficult to manage. The initiative will offer improved health care for over 1 million people in the West Midlands and its impact continues – another area has already adopted the model, while two more have expressed significant interest.

Such revolutionary change in service provision is underpinned by wide consultation and we have ensured that Public and Patient Involvement and Engagement is at the heart of our activities. Building on Keele University’s ten years of successful PPI/E knowledge and experience, there are now advisors working across the partner institutions developing networks to address both individual medical conditions and patients’ overall experience of the health services. Importantly, most of our PPI/E Advisors are involved in service improvement, not just in research.

Just as patient experience supports the development of research questions, so academic evaluation of research outcomes is one of our core strengths. Once again, CLAHRC WM researchers have excelled in their ability to target high-impact journals and to showcase their work across a variety of platforms. Our research is far-reaching in its influence – it is informing government policy on mental health; it is helping to shape NICE guidelines on ways to manage back pain and antenatal care; and it is providing advice and information for the National Screening Committee and Public Health England. We are also working closely with the West Midlands Academic Health Science Network.

None of this would be possible without the dedication and commitment of the multi-faceted team that constitutes CLAHRC WM, but equally without the distinctive structure of CLAHRC WM the research would not have such significant or extensive influence. It is the combination of academic expertise, engagement with patients and the public, and a willingness to address often complex and difficult areas of service provision that makes CLAHRC WM such a formidable and successful collaboration.

Prof Richard Lilford

*Director of the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care West Midlands (CLAHRC WM);
Chair in Public Health, University of Warwick.*



Our Themes

4 Service Themes

- Maternity & Child Health (1)
- Youth Mental Health (2)
- Prevention & Detection of Diseases (3)
- Chronic Diseases (4)

2 Cross-Cutting Themes

- Implementation & Organisational Studies (5)
- Research Methods (6)
- Other**
 - Legacy and CLAHRC-BBC Pilot
 - Central CLAHRC team

£12,454,913
External Funding

152
Publications



204
Projects

12
BITEs

£3,004,535
Matched Funding (Implementation)



91
Students

14
Advisors

90
Staff

£1,774,672
Matched Funding (Research)

23
News Blogs



1,603
Subscribers

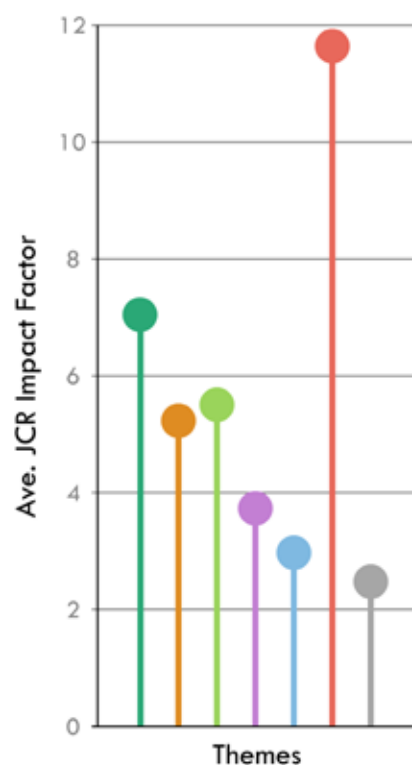
102
Tweets

1,612
Twitter Followers

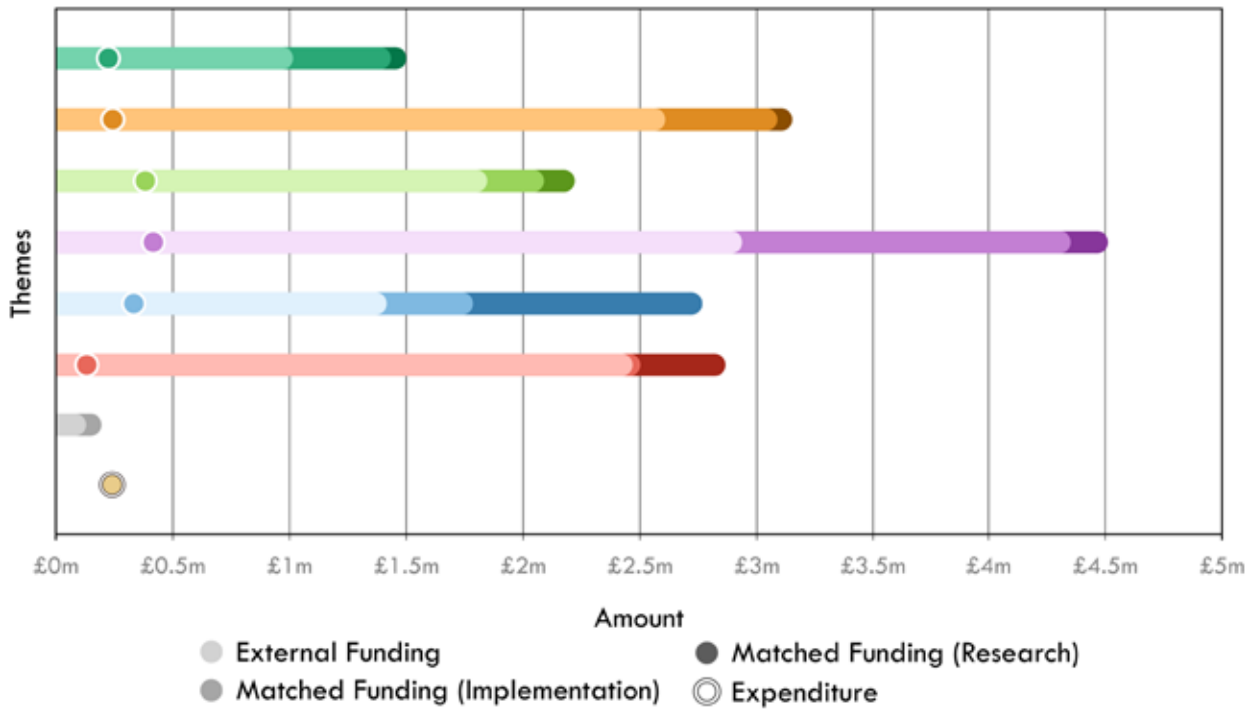
58,991
Twitter Impressions

£2,000,000
Expenditure

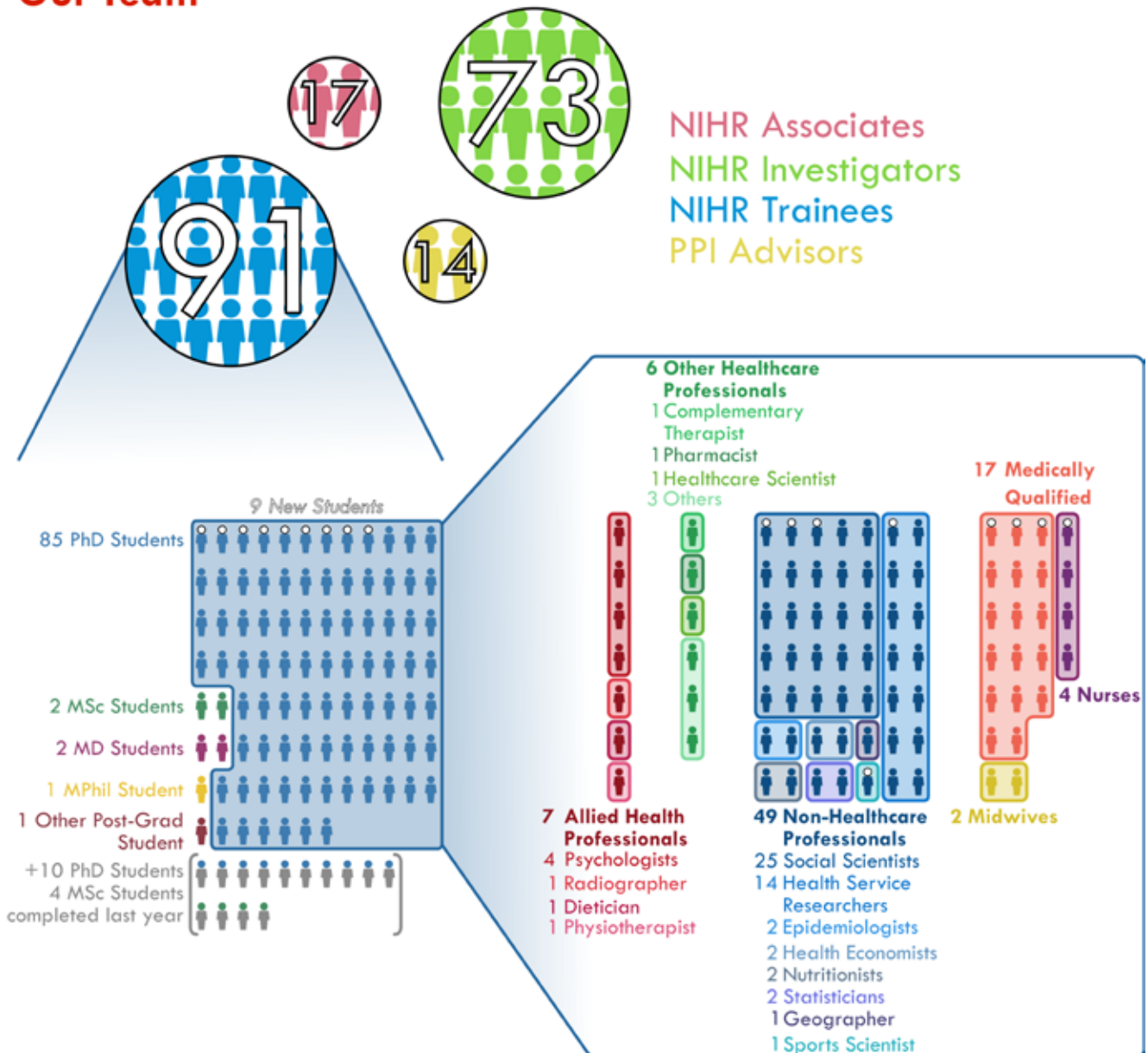
Our Outputs



Our Funding



Our Team



Overview of Activities

There are a number of strategic and intellectual principles that run throughout CLAHRC WM that determine how we approach all of our projects, evaluations and collaborations. One of the primary principles is that everything we do should be a triumvirate between clinicians, patients and academics. To this end we continue to make progress within and beyond CLAHRC WM to improve the voice of patients in setting the agenda for research, and co-producing both the intervention and the implementation approach. Accordingly we have highlighted our work around Patient and Public Involvement and Engagement (PPI/E) as one of our three top achievements for 2016-17 (page 9). Whilst we always aim to achieve more, we believe we are making significant headway in ensuring that patients and the public can contribute as equal partners to the research agenda within CLAHRC WM, and our appointment of a PPI/E Lead has allowed us to significantly accelerate our progress (pages 44-45).

Another primary principle for CLAHRC WM is the use of the **IDEaL Framework** to Identify, Develop, Evaluate and Lead research across our network of stakeholders. We believe that we demonstrate all aspects of this model across our themes, as can be seen in the individual theme reports and our strategic objectives below.

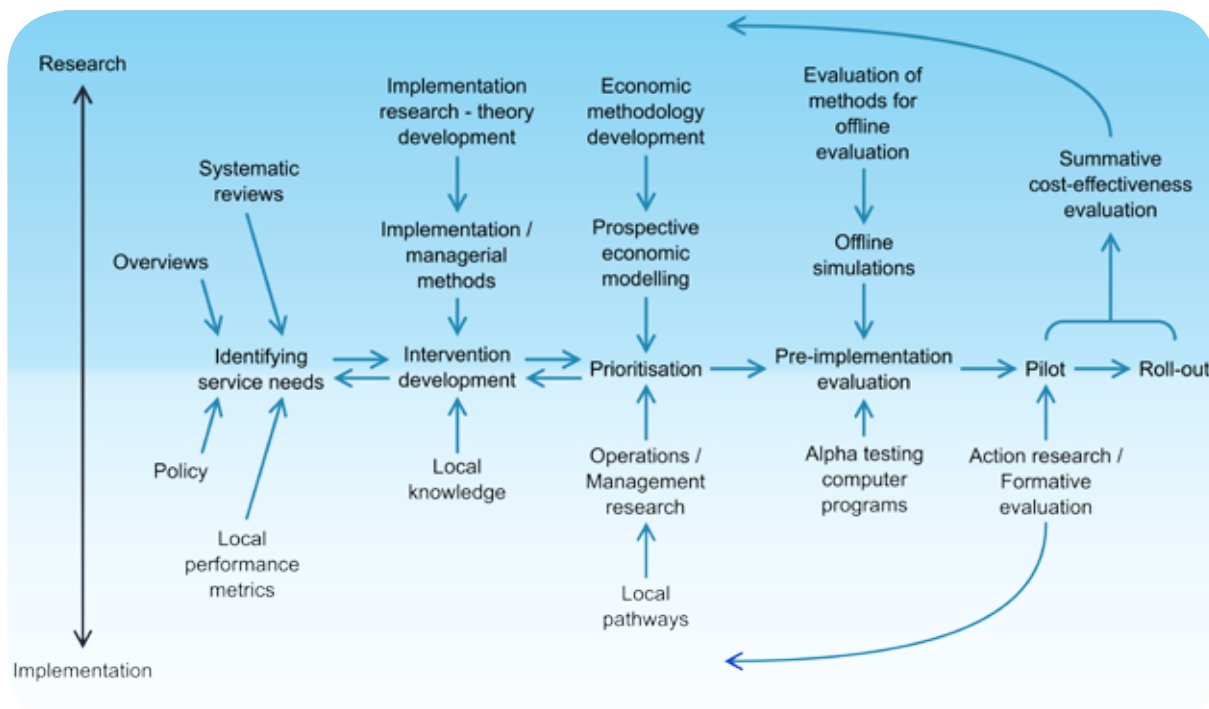
Short-term objectives to identify and develop projects:

- We have continued our extensive programme of systematic reviews across a broad range of service areas, analysing policy and working with local partners to identify gaps in knowledge relevant to service delivery.
- Our co-production model between clinicians, patients and academics has strengthened, and our drive to stay true to this model is crucial to our continued success and deepening engagement. It ensures that we research what is needed by both clinicians and patients, as well as identifying areas of intellectual need.
- Linked to this, the expansion of our programme of embedded posts (page 47) helps ensure a direct connection with the frontline of service delivery to ensure that issues identified can be brought quickly to academic agenda.

Examples of these objectives being met within our themes include:

- The **Place of Birth and Birmingham Symptom specific Triage System** developed by our **Maternity and Child Health theme (1)**, in conjunction with clinical staff and patients at Birmingham Women’s Hospital (pages 12-13).
- The **0-25 youth mental health service** in Birmingham, which stems from research undertaken by our previous CLAHRC and that has now been continued by our **Youth Mental Health theme (2)**. This work is of national significance and features as one of our impact case studies (page 20).

The IDEaL Framework



- Our **Prevention and Detection of Diseases theme (3)** has strong links with Local Authority and Public Health partners and, at the request of our Local Authority partners, we have started implementing and evaluating the **Healthy Dads, Healthy Kids** programme (pages 24-25).
- The **Safer Provision and Care Excellence** programme was identified as a service need and patient safety issue by the West Midlands Patient Safety Collaborative. They also identified that implementation and evaluation expertise was needed in order to measure the effectiveness of the programme – this led them to engage us as their evaluation partner (page 29).

Medium-term objectives to evaluate:

- We have completed, or are undertaking, a wide range of pilot and feasibility studies to test service interventions within the environment of service delivery, ensuring that they are fit for purpose and to allow their future adoption at scale and pace in conjunction with partners, such as the West Midlands Academic Health Science Network.
- The results from these studies provide proof-of-concept for larger scale studies or full grant applications. We have a very strong track record in converting our studies to full-scale grant applications, as can be seen from our grant income, totalling £12.45m.
- Our status as a preferred or regular supplier of information and evaluation to organisations, such as the National Institute for Health and Care Excellence, the National Screening Committee, and Public Health England, is testament to our regional, national and international reputation.

The work within our themes demonstrates our evaluative expertise, as exemplified by:

- Our **Maternity and Child Health theme (1)** are delivering the only local evaluation of the implementation of the **Better Births National Maternity Review** (page 13).
- Our **Youth Mental Health theme (2)** are evaluating the implementation of the new **0-25 youth mental health service** in Birmingham (page 20).
- Our **Prevention and Detection of Diseases theme (3)** hold a number of agreements to provide advice and evaluative support to a number of national bodies.
- Our **Chronic Diseases theme (4)** conducted an umbrella review of systematic reviews on integrated care, which has significant service delivery implications, as many healthcare systems attempt to integrate care, in line with recommendations from Sustainability and Transformation Plans (STPs).

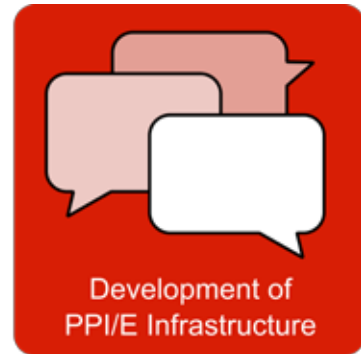
Long-term objectives to lead:

- We continue to develop capacity development through our network of **embedded posts** (page 47). These provide a visible and relevant presence for research and evaluation within service delivery, and act as a conduit to diffuse knowledge through our **Leadership and Diffusion Fellows** (page 46).
- We continue to influence policy and decision-making at national level, for example advising the Cabinet Office on **Behaviour Change Theory** (pages 34-35).
- We have offered leadership within both the CLAHRC and NIHR national programmes. For example, we have led a national stream of work on behalf of the CLAHRC Directors on the **Health Economics of Service Delivery**, which culminated in a workshop that brought together 25 of the leading national experts in this field; and have undertaken an initial exercise on horizon scanning of **future health challenges**, constraints and enablers. We have also undertaken a piece of work looking at the adoption of **Health Technology Assessments reports**, initially to see if there are opportunities for implementation within CLAHRCs, but this has grown and we are now taking this forward with senior representatives from the NIHR Evaluation Trials and Studies Coordinating Centre and the wider NIHR. Further meetings are planned with cross-CLAHRC collaboration with the intention that we put together a formal protocol for a larger scale exercise.

Leadership can be seen across all four service themes:

- Our **Maternity and Child Health theme (1)** have led the creation of a **Research Midwives Forum** (page 13) to improve coordination of research and make the region more attractive for trials and industry.
- Our **Youth Mental Health theme (2)** are advising the Cabinet Office on the **Five Year Forward View** for Mental Health, having already inspired the redesign of youth mental health services in the West Midlands (page 18).
- Our **Prevention and Detection of Diseases theme (3)** are leading research that is changing the way **national screening programmes** are delivered in England (pages 24-25).
- Our **Chronic Diseases theme (4)** have designed and implemented the **STarTBack programme** (page 31), which has been adopted regionally, nationally and internationally.

Top Achievements:



1. *The Launch of the 0-25 Youth Mental Health Model in Birmingham*

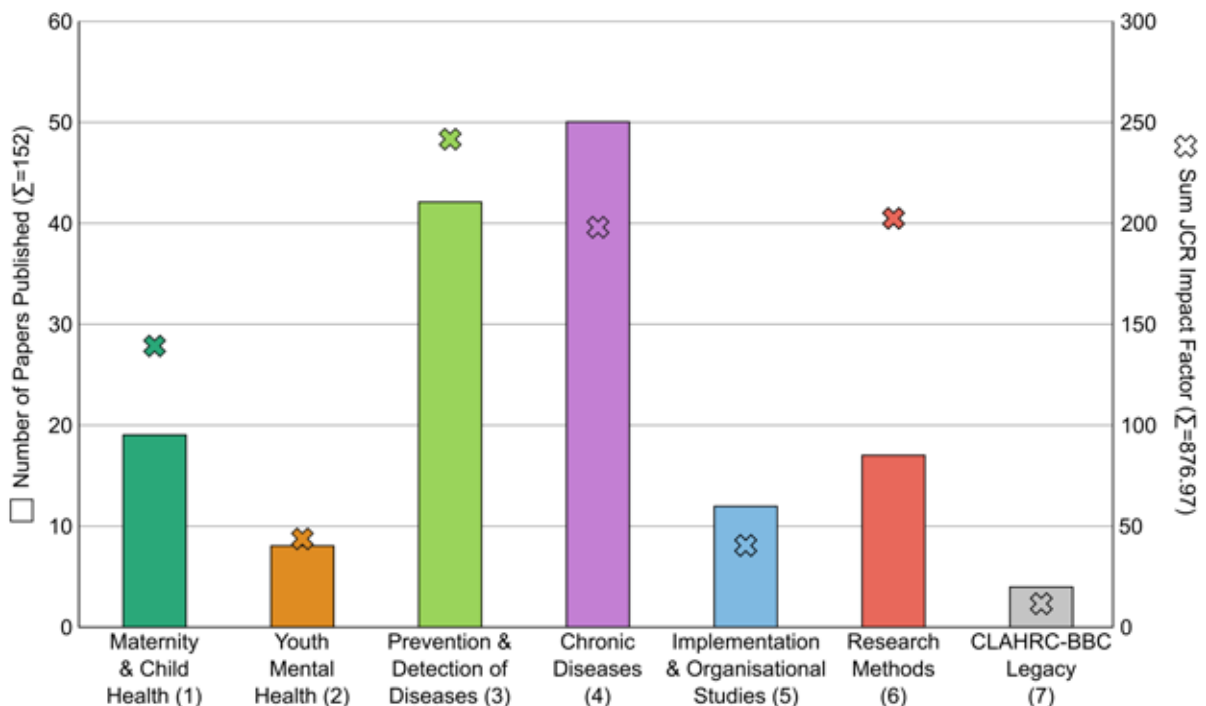
On 1st April 2016, **Forward Thinking Birmingham (FTB)** came into effect as the new service provider for mental health services for those aged 0-25 in Birmingham. This represented a change in service for over one million residents of the West Midlands; change stemming directly from our research. This was celebrated by our '**Shout Out for Youth Mental Health**' event in June 2016, which was led by young people and service users and opened by the Rt Hon. Norman Lamb MP. A session within the day was specifically aimed at commissioners interested in reconfiguring their services in a similar way. This led to the Telford and Wrekin area of the Midlands re-tendering for their services to deliver a 0-25 service, with our representatives acting as expert advisors, delivering service change affecting a further 500,000 people in our region. There is also significant interest from the Coventry and Warwickshire region to deliver services using this model. We believe that the journey of research, co-production of a service model, implementation, and evaluation, with regional and national impact, can act as a blueprint for how CLAHRCs should work (page 20).

We expect to see early findings from the evaluation later in 2017 and look forward to presenting these in the next annual report.

2. *Academic Outputs*

We highlighted our academic outputs in our previous annual report as we felt we had a particularly productive and high-quality output, publishing 153 peer-reviewed papers. This year we have built further on that success, and so highlight it again. We have published **152 papers** during 2016-17, replicating last year's productivity, whilst the total impact factor of the journals our papers have been published in has increased from 507 to 877, including six papers in the Lancet (Impact Factor 46.12), one in JAMA (IF 37.68), and five in the BMJ (IF 19.97), as well as five in other journals with an IF over ten, and 20 in other journals with an IF over six. Overall our publications have been published in journals with an average **Impact Factor of 5.77**.

In addition to this, our in-year award for **grant income** has increased from £9.8 million in 2015-16, to £12.45 million this year, again representing a



significant step-up. We continue to support a thriving cadre of 91 students (85 PhD, 6 other) and offer a variety of opportunities and training for this group to come together across our stakeholder academic institutions (pages 46-47). We are also pleased to support NIHR fellowship faculty and NIHR training advocates within CLAHRC WM. We continue to try and disseminate our academic content to a wide audience, including clinical and non-clinical staff in the NHS and Local Authorities through our Leadership and Diffusion Fellows (page 46); a general audience through our CLAHRC WM News Blog; and the wider public through our 'Method Matters' initiative and our contribution to the library of CLAHRC BITEs.

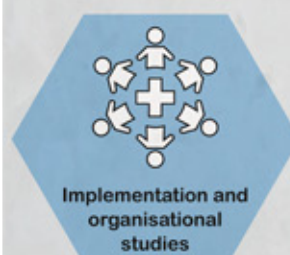
3. *Development of our PPI/E Infrastructure and Links*

Building on existing relationships and developing new networks has been a major achievement in the last year. Through our recruitment/selection processes, we appointed 14 PPI/E Advisors who are involved in PPI/E structures in the services and already shaping health services. At the start of the research journey, this ensures that our research is relevant to needs of patients and the public in the services, while at the end, our Advisors help to ensure research evidence transforms services. We maximise the benefits of the networks of our Advisors to recruit members of the public to become involved and participate in our research and also to share our research findings.

We have invested significant resources to build relationships with groups involving patients and the public in our partner institutions. Each institution has different mechanisms for involving the public in research, and our PPI/E Lead has ensured that PPI/E is embedded in these structures. Keele University celebrated ten years of successful PPI/E in 2016, while the Universities of Birmingham and Warwick are developing their PPI/E structures. Our PPI/E Lead is part of the discussion around these developments and aims to ensure that evolving structures are aligned to values and principles of PPI/E, as promoted by NIHR INVOLVE.

We have also been working with organisations and condition-specific groups that involve patients and the public in research in local NHS services. The PPI/E Lead was involved in developing the role description and recruiting a PPI/E Lead at University Hospitals Birmingham, our host partner. This new, strategic post will lead and support PPI/E in the Trust and will ensure PPI/E in research has a high profile. A strong working relationship with this post will ensure that our PPI/E is linked directly to research priorities in the Trust.

CLAHRC WM Themes





Theme 1: Maternity and Child Health

Lead: Prof Christine MacArthur
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19
Papers

41
Projects

£1,019,175
External funding

£482,458
Matched funding

£229,051
Expenditure

Research Highlights:

An experience-based co-design study was used to improve the care pathway for women who request Caesarean section.^[12]

An RCT that tested the effectiveness of a computer alert programme to assist midwives and obstetricians in interpreting cardiotocograms (CTGs) when used to monitor the heart rates of babies during labour, found that it did not reduce the number of serious complications in babies.^[1]

A multi-centre RCT showed that pelvic floor muscle training can lead to a reduction in prolapse symptoms up to at least 12 years after childbirth.^[8]

A retrospective cohort study, in collaboration with the **Prevention and Detection of Diseases theme (3)**, examining prescription rates of adrenaline auto-injectors (Epipens) for children in UK general practice highlighted a need for rational prescribing (see also page 24).^[39]

A systematic review and thematic synthesis that considered the experiences of parents with a child with chronic illness as they transition into adulthood, found that a lack of transitional healthcare and differences between paediatric and adult services served as barriers to effective transition.^[10]

**Implementation Highlights:**

The Place of Birth (POB) intervention package will be rolled out to two maternity units later in 2017. The intervention has been designed to improve the discussions that midwives have with women about their options for where to give birth, and the evaluation will focus on the knowledge of midwives and their confidence. We have issued four licence agreements relating to the implementation of this package, with further licences expected to be signed early in the upcoming financial year.

The Birmingham Symptom specific Triage System (BSOTS) has now been implemented at four units in the West Midlands. Monash Medical Centre in Australia plans to implement the system later in 2017, with the intention to roll-out the tool across the state of Victoria if the trial is a success. We are working with a software company to develop an interactive electronic version of the system with support from the University of Birmingham and MidTech.

The Listening To You project, in collaboration with staff at the Birmingham Children's Hospital (BCH) and Aston University, developed and piloted an innovative approach to listening, incorporating and responding to parental concerns regarding their child's condition when in hospital, leading to a communications bundle now in use at the hospital.

Strategy Initiated, New Activity and Major Grants:

A number of new projects are being developed in response to the knowledge needs of the service:

The Birmingham and Solihull United Maternity and Newborn Partnership (BUMP) gained Early Adopter funding from NHS England to implement the Better Births National Maternity Review. We will be evaluating the implementation, led by Dr Beck Taylor (BUMP was the only site of seven nationally to cost formal evaluation into their bid).

We have engaged with the NHS England Team leading the national transformation programme, and developed a plan for national evaluation, though we await a formal call for an evaluation programme.

We have initiated a mixed methods evaluation of Magnolia House, a new facility at BCH to support families and staff who are coping with 'bad news' situations or bereavement.

We have been awarded a £141k grant from the Marie Curie Research Grants scheme for a multi-perspective qualitative study to understand the impact of the Child and Young Person's Advance Care Plan (CYPACP), led by Dr Karen Shaw.

Leadership:

Dr Sara Kenyon has been awarded a University of Birmingham professorship in recognition of her leadership in midwifery and maternity research.

Examples of Impacts on Health & Wealth:

Sites implementing BSOTS have signed licence agreements to protect the intellectual property relating to the triage tool and the associated bespoke training material, and there is potential for additional licence agreements if the trial at Monash Medical Centre (see above) is successful.

We hope that the Midwives Research Forum (which brings together research midwives from across the West Midlands to encourage engagement and collaboration, and builds capacity for applied health research across trusts) will lead to improved recruitment to trials.

Progress, achievements and challenges against objectives:

The **short-term objectives** have been delivered through:

- Continued development of the maternity triage system.
- Completion of the first phase of fieldwork to evaluate an e-prescribing system in paediatrics.
- Beginning fieldwork on assessing the implementation of CYPACP.

The **medium-term objective** to undertake evaluation of funder innovation has been delivered through:

- Evaluation of the implementation of the BUMP Maternity Transformation.
- Evaluation of the PoB package and continuing implementation programme.
- Completion of a national study for early discharge of infant admissions to hospital.

The **long-term objective** to disseminate work is being achieved through academic papers, forum meetings and events. Our child health research was presented at a national CLAHRC network meeting.





OASIS – Obstetric Anal Sphincter Injuries

CLAHRC WM supported Sara Webb, one of our Leadership and Diffusion Fellows, in her application to obtain an NIHR Clinical Doctoral Research Fellowship. She was successfully awarded this to develop research in to perineal trauma, particularly Obstetric Anal Sphincter Injuries (OASIS). Sara has developed a 'one stop' OASIS service where pregnant women who have suffered this type of injury before can attend, along with the post-natal treatment of those with the injury.^[16, 17] In clinic, women can receive a full clinical examination and endoanal ultrasound with immediate results. Counselling can then be offered as to the outcome or to the most appropriate method of birth. This is the only clinic of its type in the UK and provides an extremely efficient and effective service for women who often otherwise receive a very fragmented or incomplete care pathway, or in some cases, do not receive appropriate treatment for their condition. Earlier this year, the OASIS service was short-listed for a Nursing Times award. The Research Midwives Forum (established in the region through CLAHRC WM) also assisted with development of the ideas for the service and provided peer-to-peer support.

Following publication of an article on the service in the British Medical Journal (2014) we were contacted by a midwife from Hospital General de Granollers in Barcelona, Spain. This midwife came and undertook a three month placement with Sara, and has, with the support of CLAHRC WM, subsequently set up a similar Multi Disciplinary Team (MDT) clinic in Barcelona. We have also offered support with developing a clinical-academic career path, as this is a new concept within midwifery and maternity care

in Spain. We funded a reciprocal visit for Sara to visit the hospital in Spain to promote the model and run training for 80 midwives and obstetricians from across the Catalonia region and the wider MDT clinic in delivering the service. We are also supporting the development of an international, multi-site grant application to evaluate the implementation of the service.

Sara is working with the NHS Maternity Transformation Initiative to make these services available more widely across the West Midlands. The development of an international, multi-site grant application is underway to evaluate the service. Two further hospitals in Spain have now approached Sara and CLAHRC WM, as they wish to implement the service following its successful deployment in Barcelona. We plan to invite staff from both hospitals to visit the UK to see the service in operation here later in 2017.





Theme 2: Youth Mental Health

Lead: Prof Max Birchwood
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8

Papers

15

Projects

£2,614,872

External funding

£544,804

Matched funding

£247,958

Expenditure

Research Highlights:

We are working with two GP surgeries and Forward Thinking Birmingham (FTB) to research the best method(s) to manage eating disorders at each stage of the referral pathway.

We have successfully replicated findings from the classic Patton study, identifying young people who are at high risk of transition to eating disorders.

We have submitted a protocol for a scoping review of the literature regarding self-harm and suicide in primary school aged children with Dr Danai Bem, a systematic reviewer at University of Birmingham.

Implementation Highlights:

The team have led regional change in the reform of youth mental health services, which has resulted in the commissioning of a new 0-25 service in Birmingham. Prof Max Birchwood is now advising Shropshire & South Staffordshire CCG (page 20), with a similar service also in discussion for Coventry & Warwickshire.

Inspired by the reconfiguration of services in Birmingham, the 0-25 model is also being implemented in Norwich, Oxford and Liverpool.

**Strategy Initiated, New Activity and Major Grants:**

Prof Max Birchwood, Prof Swaran Singh and Prof Graeme Currie are leading discussions with the UK Government Cabinet Office to develop and promote youth mental health policy in concordance with the “*Five Year Forward View for Mental Health*”, complementing the Prime Minister’s recent commitment to transformation of child and youth mental health.

Prof Singh and Prof Birchwood have played a central role in the West Midlands Partnership in Mental Health, chaired by the Rt Hon. Norman Lamb MP, with a specific focus on service transformation in youth mental health.

In collaboration with the West Midlands Academic Health Science Network (WMAHSN) we are focusing on prevention and early detection of mental health in Birmingham, combining public health, local authority and NHS interfaces.

Our new NIHR Global Health Award brings our research on psychosis detection and management to bear on the challenges for early psychosis detection and management in India.

Leadership:

The research team successfully transferred employment from Birmingham and Solihull Mental Health NHS Foundation Trust to the University of Warwick, due to key changes in the delivery of Child and Adolescent Mental Health Service (CAMHS) in Birmingham.

Examples of Impacts on Health & Wealth:

See point two of long-term objectives below.

Progress, achievements and challenges against objectives:

Short-Term:

- Establishment of a Centre for Mental Health Research and Wellbeing to act as the engine of public mental health innovation within the WMAHSN.
- The implementation of pilot trials of two interventions on eating disorders and promoting resilience for looked after children in care.
- The successful implementation of a youth mental health dissemination event, Shout Out for Youth Mental Health (SOYMH) (page 20).

Medium-Term:

- The Long term conditions, Young people and Network Communication (LYNC) study, led by Prof Singh, concludes soon and we are planning a full application to conduct a pilot study
- Dr Katie Chisholm, a CLAHRC WM PhD student, successfully completed her PhD on a randomised trial to improve mental health awareness and help-seeking in schools, which was published in the BMJ Open.^[21]
- A current PhD student is conducting research into anxiety and resilience in young children transitioning from primary to secondary school.

- We are currently in the process of applying for ethics for analysis of eating disorder care pathways, in collaboration with FTB and two GP surgeries in Birmingham and Solihull.
- The roll-out of SOYMH events in Shropshire & South Staffordshire and Coventry & Warwickshire;

Long-Term:

- Following collaboration with the **Prevention and Detection of Diseases theme (3)** we are considering implementation of a primary care-based system, using a Mindfulness App, to transform the delivery of care for young people at risk of depression.
- We have advanced our objective to implement school-based screening for emerging mental health problems, by completing an eating disorder screening trial using online methodology in conjunction with our industry partner Vision360. This study will provide the foundation for the design and development of a definitive cluster RCT across three sites.
- Implementation of an RCT of a Peer Support Programme to improve resilience in vulnerable young people, particularly from migrant groups, transitioning from primary to secondary school.



0-25 Youth Mental Health Service

In April 2016 the 0-25 youth mental health service Forward Thinking Birmingham was launched in Birmingham, underpinned by our research and that of our predecessor CLAHRC Birmingham and the Black Country. This service delivers an evidence based approach for 1 million people in the West Midlands. Following on from this, a second 0-25 service in the West Midlands, in the Telford and Wrekin region (population 500,000), will launch in 2017, for which we are acting as an expert advisor on implementation. A similar reconfiguration is planned for the Coventry area (population 345,000), which we are also seeking to support. We were successful in our bid for the evaluation contract for the new service in Birmingham and so will be able to bring together our experience of research, implementation and service evaluation across the youth mental health 0-25 model.

As part of the launch of the 0-25 service in Birmingham, we held a highly successful dissemination and engagement event in June 2016, *Shout out for Youth Mental Health*. This showcased and disseminated the findings of the research, offered advice to commissioners looking to reconfigure their services in this way, and enabled us to engage more widely with stakeholders and the public around our research and implementation. The event also featured a dedicated workshop for commissioners where they could discuss the practical barriers to commissioning and implementing a 0-25 service with the team that had commissioned and overseen the change in Birmingham. The event had local, regional and national impact, with the Rt Hon. Luciana Berger MP sending a message of support for the event, and a keynote speech by the Rt Hon. Norman Lamb MP, one of the most active parliamentarians on issues

relating to mental health. We hope that this, along with national delegates who attended the day, will keep our work visible on the national policy and implementation agenda.

CLAHRC WM researchers were responsible for organising the day, with the assistance of the CLAHRC WM central team and significant input from the public and patient representatives from the **Youth Mental Health theme (2)**. The funding for the event also came from CLAHRC WM resources, along with the various research projects and presentation posters showcased on the day. The speakers for the day were drawn from our strong links with our service delivery partners in the region and we would have struggled to achieve anything like this level of engagement without the vehicle of the CLAHRC.

This model continues to attract national interest and is informing change across the country. The contract for the delivery of a 0-25 model in Telford and Wrekin has now been signed and we are planning a similar 'Shout Out' engagement event with them. We are also planning a similar event with Coventry to try and promote the adoption of the model there, drawing on our practical experience gained through our two implementation sites, and the early research findings from the evaluation of the Birmingham model later in 2017.

JOIN US ON:
TUESDAY
7 JUNE 16
MACE BIRMINGHAM
Cannon Hill Park, B12 9QH

With Guest Speaker:
Rt Hon Norman Lamb MP

To register interest, click the link:
www.shoutoutfymh.eventbrite.co.uk
For enquiries: shoutoutfymh@warwick.ac.uk
Follow us: @ShoutOutFYMh

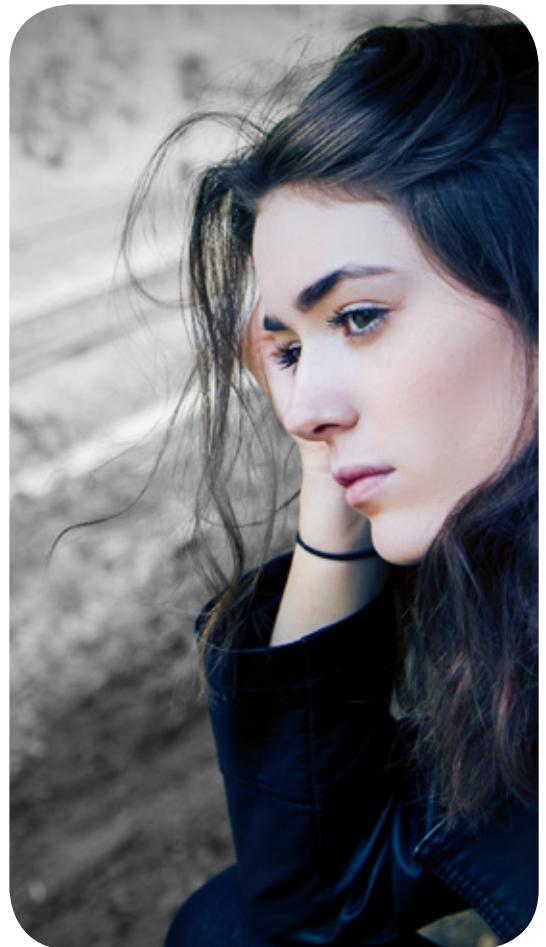
SHOUT OUT FOR YOUTH MENTAL HEALTH

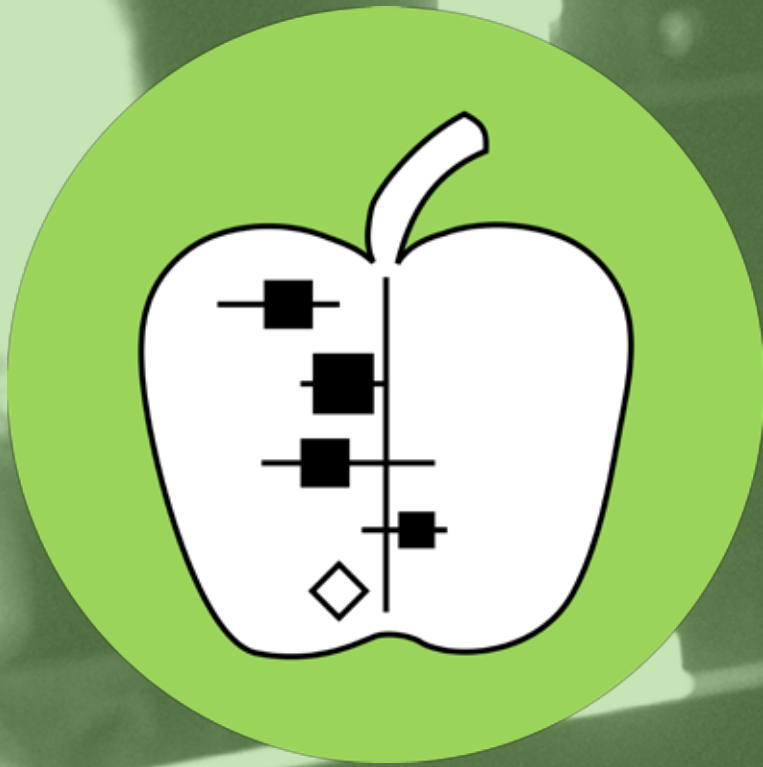
'Early intervention in youth mental health is key to improving the lives of young people.'

Are you:

- Someone who wants to learn about the latest science in early detection of mental ill health in young people?
- A young person or carer that wants to shape the radical transformation of services in Birmingham and the West Midlands?
- A commissioner who wants information about the transformation of youth mental health services in Birmingham and the West Midlands?

Forward Thinking Birmingham
National Institute for Health Research
LOTTERY FUNDED





Theme 3: Prevention and Detection of Diseases

Lead: Prof Aileen Clarke
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42

Papers

57

Projects

£1,851,783

External funding

£371,920

Matched funding

£387,627

Expenditure

Research Highlights:

A randomised controlled trial, Changing case Order to Optimise patterns of Performance in mammography Screening (CO-OPS), led by Dr Sian Taylor-Phillips, was published in JAMA ^[63] and as an NIHR signal. The study looked at what effect changing the order in which screening mammograms are looked at had on rates of breast cancer detection. Whilst there was no overall effect from the change in film reading pattern, it led to significant changes in practise amongst the 46 specialist breast care centres that took part in the study – many centres have continued with the reverse-reading approach, believing that it may offer benefits that the study did not detect.

The theme have established new partnerships with Public Health England (PHE) with one completed project, one current ongoing project, and a contract to be a preferred supplier for evidence synthesis/ reviews and evaluations.

The electronic Frailty Index (eFI) project to identify frailty using existing primary care data developed by Yorkshire and Humber CLAHRC, and validated by our theme, won a Royal College of Physicians Excellence in Patient Care award in March 2017.

Two additional local authorities have joined CLAHRC WM in the last year in order to implement and help us evaluate the Healthy Dads, Healthy Kids feasibility study.

We contributed to the publication of the first cross-CLAHRC BITE with CLAHRC Oxford looking at heart failure survival rates. ^[62]

Our paper on adrenaline auto-injector pens (Epipens) received a high Altmetric score (top 5%). ^[39]

**Implementation Highlights:**

Previously we undertook a systematic review and meta-analysis of Non-Invasive Pre-natal Testing (NIPT), a novel technique to detect specific genetic disorders (Down, Edwards and Patau syndrome) in the unborn children of pregnant women during their first trimester (Taylor-Phillips, et al. 2016). Our work showed that NIPT has a much higher degree of accuracy than traditional methods, with fewer false positives. Following a recommendation to support NIPT from the National Screening Committee (NSC), NIPT has now been approved for detecting Down syndrome, and will be used during 2018.

On behalf of the NSC we have also examined the evidence for a universal antenatal culture-based screening for maternal Group B Streptococcus (GBS) carriage to prevent early-onset GBS disease (Seedat, et al. 2016). Although uncommon this can lead to invasive GBS in babies, which can have severe, long lasting complications or can result in death. Our study recommended that screening for the condition should not be introduced due to the low accuracy of the test, which would result in the overwhelming majority of women testing positive being subject to unnecessary treatment. It was therefore not clear whether the programme would cause more harm than benefit. Current NICE guidelines are due for review, and our research underpins the recommendation of the NSC that screening should only be offered for women with high risk-factors. This work also featured in the NIHR 10@10 document.

We held a stakeholder event that was attended by eight independent stakeholders, including local authorities and national bodies, such as the NHS. We also ran a one day masterclass on health screening in conjunction with the NSC at Warwick, which was oversubscribed within days. We objectively measured

understanding pre- and post-event, and this was shown to have markedly improve.

Our work on dietary fibre for the primary prevention of cardiovascular disease was written up as an NIHR Signal by the NIHR Dissemination Centre.

Strategies Initiated, New Activity and Major Grants:

The theme has strengthened the relationship with the UK NSC, which has amplified systematic review capacity and maximised the impact of research activities on policy and practice.

Prof Tom Marshall has been awarded £320k by the British Heart Foundation to provide statistics on heart disease and risk factors.

Dr Sian Taylor-Phillips has been awarded £572k as a career development fellowship to develop new national evidence review methods for evaluating changes to UK screening programmes.

Dr Kate Jolly has received an NIHR Programme for Applied Research grant of £64k for the Rehabilitation Enablement in Chronic Heart Failure (REACH HF) study in conjunction with CLAHRC South West Peninsula.

Other awards include a PHE Knowledge mobilisation project and PHE behavioural interventions to improve the NHS food environment.

Leadership:

Prof Aileen Clarke (theme lead) has been appointed as President of the Society of Social Medicine.

Examples of Impacts on Health & Wealth:

Provided evidence to the NSC on whether to screen for GBS in pregnancy and recommended that it did not meet the criteria. Based on our report UK NSC policy, and government policy is being announced in April 2017.

Provided evidence to the UK NSC on whether to screen for tyrosinaemia type 1 on the newborn blood spot test. This will lead to follow-on research based on the evidence gaps we identified.

Advised NICE on multiple sclerosis, drugs for multiple myeloma and non-small cell lung cancer, and undertook a number of other Single Technology Appraisals for NICE.

Provided advice and evidence to support NICE guidance on diagnostic tests for gastrointestinal disease (report to HTA submitted).

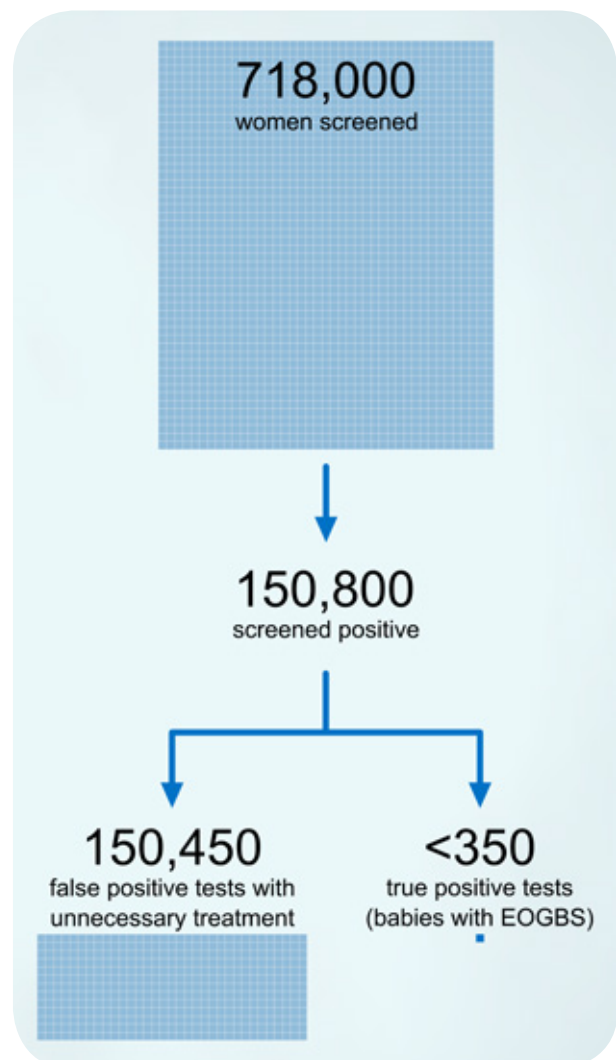
Progress, achievements and challenges against objectives:

The **short-term objectives** have all been achieved as detailed in previous annual reports. In addition, we continue to maintain and develop a prevention and detection network across the region, alongside close links to the NSC.

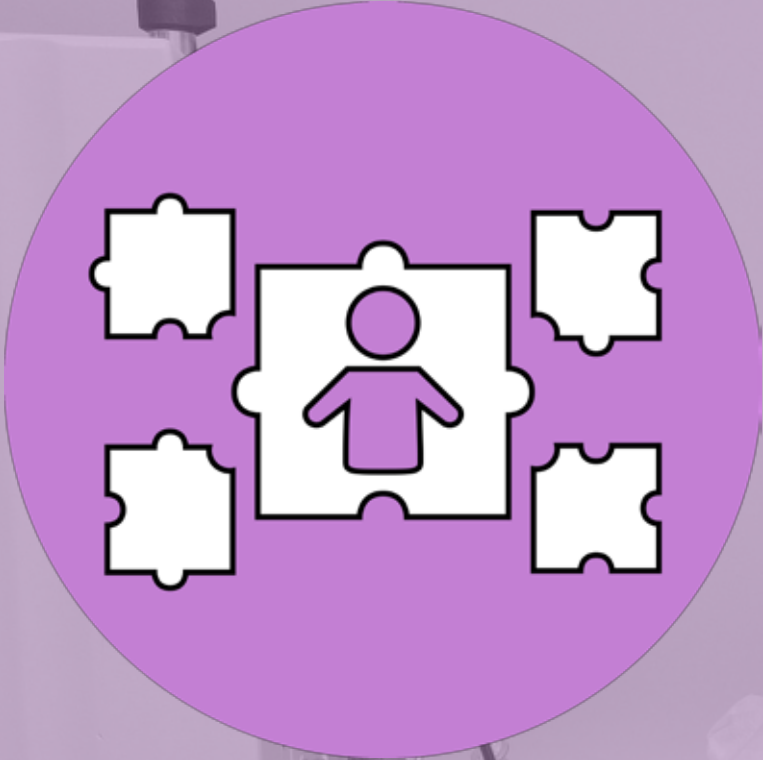
The **medium-term objective** to deliver three RCTs is nearly achieved with two complete and the third near completion. Two new studies are under development, one of which will look at the relative effectiveness of interventions for cardiovascular disease using novel methods.

The theme have progressed well with the **long-term objective** to complete RCTs and reviews for widespread dissemination, as demonstrated by our examples of impacts. National reach has also been achieved through our work with the NSC and NICE.

Additional objectives include further team capacity development, with the team attending ten conferences and 23 training workshops in 2016, and working with two University of Warwick spin-out companies (Warwick Sport and Warwick Eating) to develop obesity and physical activity projects.



Screening for GBS in Pregnancy



Theme 4: Chronic Diseases

Lead: Prof Jon Glasby
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50
Papers

34
Projects

£2,941,612
External funding

£1,572,252
Matched funding

£420,694
Expenditure

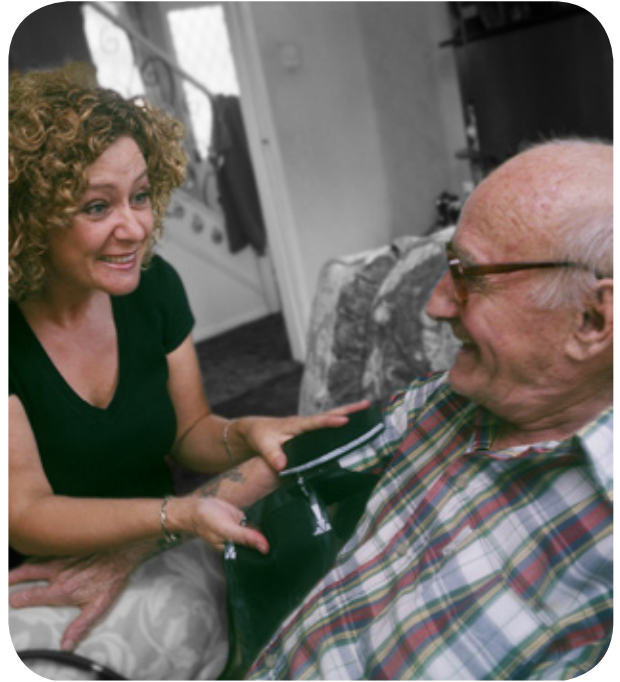
Research Highlights:

The systematic review of systematic reviews of integrated care has proved influential both in terms of its academic and implementation value.^[80] Since publication in November 2016 the paper has been downloaded over 1,000 times. The findings relating to quality of life have been accepted for publication in Health and Quality of Life Outcomes (in press).

An abstract on the prevalence of distress for patients with End Stage Renal Disease (ESRD) has been accepted for presentation at the British Renal Society annual conference in April 2017.

A £100,000 NIHR Programme Development grant to develop an education-based intervention to improve the care of older people with multi-morbidity commenced in December 2016, between the Universities of Warwick, Birmingham, Keele and Plymouth.

Early findings from the Heartlands Elderly Care, Trauma and Ongoing Recovery (HECTOR) project were presented at the 2017 International Trauma Conference.



Implementation Highlights:

The STarTBack screening tool (page 31) continues to widen its impact both nationally and internationally in conjunction with other key stakeholders, and was adopted in the latest revision of the NICE guidelines for lower back pain [NG59, 2016].

A further 15 licence agreements have been signed for the continued roll-out of the STarTBack programme.

A second hospital has changed its approach to ESRD disease patients as a result of our research, with a more standardised approach to screening of patients being adopted and subsequently more consistent patient pathway.

A hospital in Wisconsin, USA is using the Patient Issues for their ESRD patients having seen the publication of our findings in Clinical Kidney Journal.
^[110]

We have used our ESRD studies to contribute to the review of NICE guidelines for the condition.

The ENHANCE study (an integrated approach to management of long-term conditions) has been selected to feature in an Arthritis Research UK publication of case studies of good practice in treating patients with multi-morbidity.

Strategies Initiated, New Activity and Major Grants:

We have been awarded £158k by the West Midlands Patient Safety Collaborative, in collaboration with the West Midlands Academic Health Sciences Network (WMAHSN), to evaluate the Safer Provision and Care Excellence (SPACE) programme. This is an initiative across 35 care homes and two CCGs, to provide training to care home staff and managers with the aim of reducing adverse events. We are evaluating the impact human factors may have and the patient safety training. Baseline data collection is now complete and a protocol for the study has been published.^[81]

Leadership:

Prof Christian Mallen (Keele University) (Deputy Director) was successfully nominated for a Fellowship by distinction through the Faculty for Public Health.

Examples of Impacts on Health & Wealth:

We continue to work with the EMIS Group and INPS to embed functionality within the main GP information and management systems. This allows the STarTBack and ENHANCE frameworks to be used easily and for appropriate data to be captured during consultations, thus increasing their reach and adoption across primary care.

There have been significant impacts in relation to the STarTBack trial and we continue to work with a number of companies through licence agreements to implement the model, including British Airways (occupational health team), AXA PPP, and Group Healthcare in the USA.

Many of the Vanguards and Multi-speciality Care Providers are working to implement new models of care, but with a limited amount of evidence. We completed an umbrella review of the reviews on the effective elements of integrated care. As a result of our study, we were contacted by Capita – one of the largest private providers in the UK who work with a number of Vanguard sites to assist with implementing integration – and gave a presentation to their Commissioning Director on our findings, so a more evidence-based approach could be adopted by the company.

Progress, achievements and challenges against objectives:

Short-term:

- The systematic review of reviews of integrated care has been published ^[80] with a further publication to come.
- The analysis of the LACE tool to predict the risk of patient readmission following discharge is now complete and has been submitted for publication.
- An evaluation of the impact on the wider health and social care system of Coventry and Rugby CCGs GP access scheme has been completed.
- The pilot stepped wedge trial of the ENHANCE study has now been completed and data analysis is underway.

Medium-term:

- The Supported Integrated Discharge study, which looks at integrated discharge for patients admitted as an emergency with a projected length of stay of over 14 days, has been submitted for ethical approval and is anticipated to begin recruiting in June 2017.
- The evaluation of the MyHealth patient platform to provide remote consultations for liver patients has been submitted for ethical approval and is anticipated to begin recruitment in July 2017.
- A qualitative evaluation of the OPAL frail elderly admission avoidance service at University Hospital Birmingham NHS Foundation Trust has been completed (page 30). Initial findings have been presented back to the service and the formal write-up of results is ongoing.

Long-term:

- Further findings from the ESRD studies will be published later in 2017.
- Abstracts for the ENHANCE study have been accepted for the British Society for Rheumatology conference, EULAR annual European congress of Rheumatology, and the Society for Academic Primary Care.



OPAL – Older Persons Assessment and Liaison

One of our partner NHS Trust runs an Older Persons Assessment and Liaison (OPAL) team that was set up to rapidly assess patients in the Emergency Department to avoid admission, and to enable rapid discharge from the Clinical Decision Unit to prevent short-term admissions becoming long stays. Whilst the service was well-established there was a feeling that it was not operating optimally, so through one of our embedded posts, the service lead approached CLAHRC WM to complete a full evaluation. After discussion, it was felt that a smaller, qualitative-based piece of work would be more appropriate which, whilst not large enough to be viable for a grant application, we were ideally placed to undertake.

We used our own funding, alongside matched funding from the Trust, to undertake 11 qualitative interviews with staff working within the service. Findings were then presented back to the service via a workshop and discussion. Several significant changes have already been implemented. These include creation of a single process map of the service to identify its reach; adoption of a universal screening process using a single tool and single method as the study identified significant variation in practice and application of screening; and the addition of a frailty index to create a two stage, multi-professional triage process that has significantly improved response time for patients. Without this evaluation the service would have likely continued unaltered in its current form.

Our existing track record of working with the Trust meant that there was mutual trust in the project that allowed it to take place more quickly than it otherwise might have done, while still delivering a robust and academic rigorous approach. They felt they could trust our expertise and we felt that we could undertake a frank evaluation, and that recommendations would be properly considered, even if they might be uncomfortable. Without the matched funding from the Trust it is unlikely that another funding source would have been identified in order to review the service.

STarTBack – Stratified care for lower Back pain

During 2016-17 we have achieved increased adoption of the STarTBack lower back pain guidelines.

The STarTBack tool matches patients to the most appropriate treatment for their condition. Whilst there are effective treatments for back pain, the use of clinical intuition alone often fails to match the patient to the optimal treatment package for their condition. The tool has been widely implemented across the greater Midlands area, and is now starting to be implemented on a significant scale nationally and internationally.

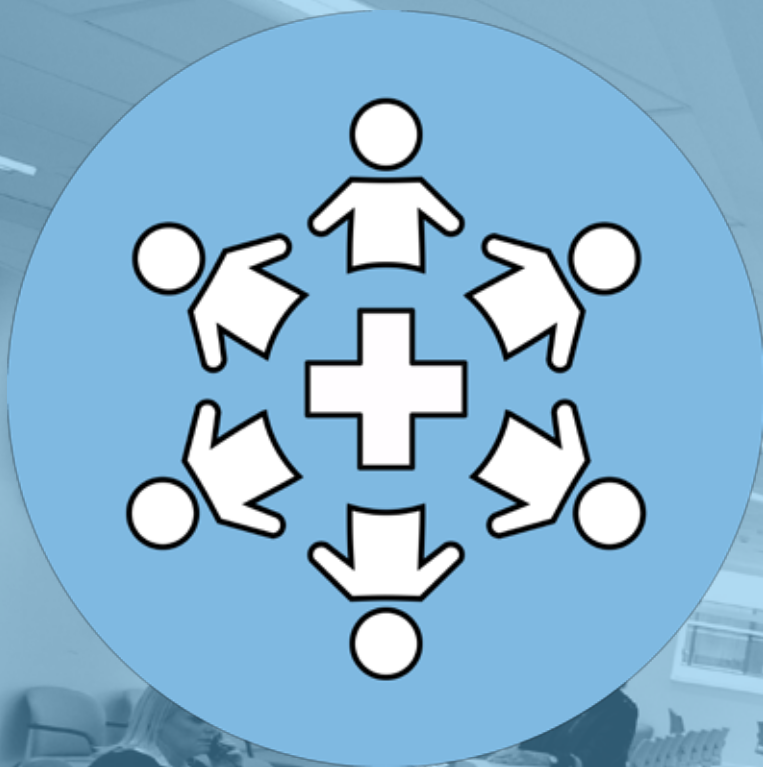
Some notable developments include:

- Adoption into national lower back pain guidelines, published by NICE in November 2016.
- Being embedded in to the Staffordshire Sustainability and Transformation Plan back pain pathway.
- Implementation of the tool within the greater Midlands region, with the West Midlands Academic Health Science Network (WMAHSN) assisting through engagement with 22 CCGs, and working in partnership with the other 12 national AHSNs to encourage national adoption.
- Implementation by a number of public and private sector providers nationally, and by a large private provider, Group Healthcare, in the USA, meaning it has now been implemented in six countries.

- Training of 39 physiotherapists in Ireland to implement the tool; and of 30 GPs in Telford through primary care workshops and sessions, held at the request of the Royal College of General Practitioners.
- Development of bespoke patient information through the Lay Involvement in the Mobilisation of Knowledge (LINK) group.
- Signing of an additional 15 licence agreements to use the tool.

We have provided important methodological advice regarding both evaluation and roll-out through the **Chronic Disease theme (4)** and programme steering committees, and through the input of our international advisors at our annual Scientific Advisory Group. We are also able to assist with implementation through our close partnership with the WMAHSN and with local service delivery organisations through our matched funding structures.





Theme 5: Implementation & Organisational Studies

Lead: Prof Graeme Currie
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← Outpatients Area 1
↑ Outpatients Area 2 & 3
→ Outpatients Area 4

↑ Ambulance
↑ Emergency
↑ Outpatient

Self check-in

12
Papers

28
Projects

£1,421,079
External funding

£1,351,683
Matched funding

£338,166
Expenditure

Research Highlights:

Fifteen papers have been published or are in press for ABS 4 or 4* journals, with a further five published or in press for ABS 3 ranked journals.

We highlight findings from work on the role of nurses as hybrid middle managers in the implementation of NICE guidance, Patient and Public Involvement, sustaining innovation, and integrated care. ^[121, 125]

We hosted a world café event on PPI/E in research implementation design.

Implementation Highlights:

We are offering evaluative support to the other themes on significant projects that may have wide-reaching policy and implementation impact. For example:

The BSOTS Maternity Triage system with the **Maternity and Child Health theme (1)** (page 12).

The evaluation of the commissioning process of 0-25 service with the **Youth Mental Health theme (2)** (page 20).

The HECTOR project on elderly care, trauma and ongoing recovery with the **Chronic Diseases theme (4)** (page 28).

Transformational strategy of Sandwell and West Birmingham Hospitals NHS Trust, focused upon digital healthcare, quality, and human resources associated with a new build hospital with the **Chronic Diseases theme (4)**.

Examples of Impacts on Health & Wealth:

We have developed an industry engagement strategy that has been significantly shaped by our activities and expertise, with a focus on professional services firms, and improving the academic rigour behind the widespread advice they offer to NHS organisations.

Through the launch of a Massive Online Open Course (MOOC), and development of a Masters programme we will target the future generation of managers within the NHS and develop their research knowledge and interest, which should provide reach and impact far beyond the lifespan of CLAHRC WM (page 46).

We are pioneering CLAHRC WM's efforts to increase the number of embedded posts (see page 47) shared between the NHS and academia to increase the absorptive capacity of organisations.





Strategies Initiated, New Activity and Major Grants:

We have played a key role in formulating the industry engagement strategy and accordingly have focused on continuing to improve collaboration with professional services firms, including an (unsuccessful) bid with GE Finnamore on transformational hospital intervention; and one pending with McKinsey on leadership education for CIOs. In addition we are in early stage collaboration with Kaiser Permanente in USA.

We were awarded a grant for £56k from Public Health England for knowledge dissemination for public health.

We received matched funding by local NHS partners for two embedded posts – a one year Research Fellow (£30k) and a three year Assistant Professor (£90k, co-funded).

Progress, achievements and challenges against objectives:

Short-term:

- To use Implementation Research Fellows (IRFs) from within our theme to support the four main service themes with evaluation that can be demonstrated through the evaluation mentioned in Implementation Highlights above.
- A two year behavioural science informed study of healthcare improvement has been funded by the Health Foundation and commenced in April 2016.
- Nine PhD projects are underway with data collection underpinned by the theoretical construct of 'Absorptive Capacity' (ACAP).

- Initial data collection and analysis is underway on an exploration of the roles and experiences of PPI/E Advisors within CLAHRC WM (page 45).

Medium-term:

- We have successfully identified a wide range of applied research studies in conjunction with NHS partners, and 13 protocols have been generated and peer-reviewed – fieldwork progresses well.
- The PhD projects and IRF protocols that have been developed will feed into the proposed evaluation of how absorptive capacity develops (or fails to develop) in health organisations using the ACAP psychometric tool to evaluate self-development.

Long-term:

- The implementation of projects undertaken thus far will give the required level of coverage to assess the spread of absorptive capacity across the CLAHRC WM footprint and beyond.



Theme 6: Research Methods

Lead: Prof Richard Lilford
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17

Papers

29

Projects

£2,475,649

External funding

£392,289

Matched funding

£135,517

Expenditure

Research Highlights:

We led a methodological work package on behalf of all CLAHRCs on integrating multiple sources of evidence. This was published by the NIHR [148] and presented at an international symposium.

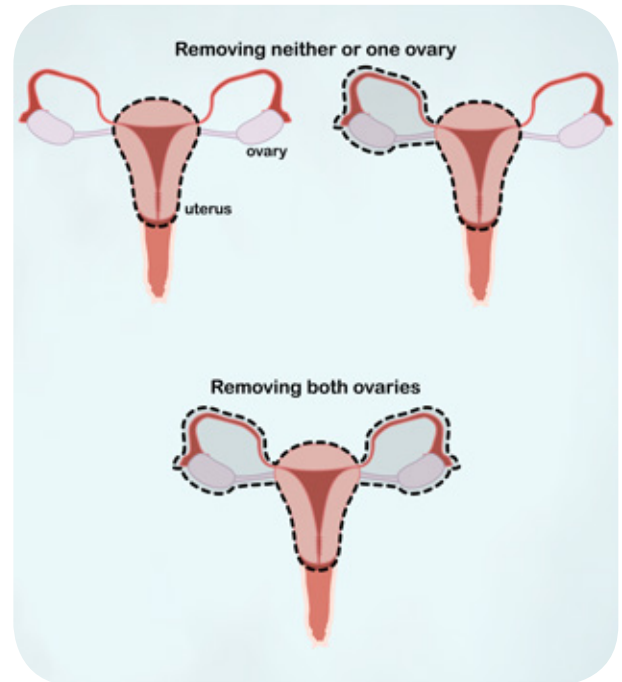
We explored use of databases for clinical and applied research on removal of all ovarian tissue vs. conserving ovarian tissue at the time of hysterectomy, which was published in the BMJ and was featured in numerous news outlets. [141]

Papers have been published in the Lancet on weekend specialist intensity and admission mortality in acute hospital trusts in England, [132] and a two paper special series on the health and welfare of people who live in slums. [135, 138]

Theme lead and CLAHRC WM Director Prof Richard Lilford was an invited speaker at the prestigious Brocher Summer Academy in Global and Population Health in Switzerland alongside Angus Deaton (Nobel Laureate) and Michael Marmot (President World Medical Association).

Implementation Highlights:

A survey of hospital board papers across NHS and demonstrated that control charts were not widely or properly used, and we are working with three trusts to improve this (page 40).

**Examples of Impacts on Health & Wealth:**

Prof Lilford was a member of the Wachter Review reporting to the Secretary of State on Information Technology in NHS. This review resulted in policy changes, including 12 exemplar hospitals for the use of IT in healthcare.

Strategies Initiated, New Activity and Major Grants:

A two year project has commenced to study publication bias in health services delivery research following a £320k grant.

Dr Celia Taylor was commissioned by CLAHRC East Midlands to undertake an economic evaluation of the use of CKU specialist nurse-supported use of the IMPAKT software in General Practice (£25k).

We were awarded £100k by the NIHR to look at education and facilitation to improve clinical decisions and multidisciplinary team-working with older adults with multi-morbidity, which commenced in December.

The Medical Research Council (MRC) granted £143k to develop a selection tool for Community Health Workers in sub-Saharan Africa.

We were awarded £320k by NIHR Health Services & Delivery Research (HS&DR) to study publication bias in health services and delivery research.

We were awarded £850k to evaluate emergency care treatment plans for the Heart of England NHS Foundation Trust.

We received £17k (of a USD\$8m grant) from the Developing Excellence in Leadership, Training and Science (DELTA) Africa award, for work on

Consortium for Advanced Research Training in Africa+ (CARTA+).

We received £66k to evaluate the Musculoskeletal Competency Framework development and pilot implementation.

We received £95k (of a £660k grant) from the MRC to create a model to implement integrated, comprehensive, community-based health care for vulnerable communities in South Africa.

Prof Lilford and Nathalie Maillard (Head of Programme Delivery) have been actively involved in the Push the Pace initiative from the NIHR.

Awarded a grant by the West Midlands Patient Safety Collaborative to evaluate the impact of the Learning from Excellence patient safety initiative, and the use and impact of appreciative enquiry training offered to NHS staff.

Leadership:

Prof Lilford has featured in personality profiles in the British Medical Journal and Lancet.

Progress, achievements and challenges against objectives:

Short-term objectives:

We have provided methodological expertise and applied research support for the four service themes, including statistical support, systematic reviewing, health economic analysis, data analysis, modelling, and determining maximum benefits and cost-effectiveness thresholds. Projects included provision of emotional and psychological support for renal patients; Heartlands Elderly Care, Trauma & Ongoing Recovery project (HECTOR); High Intensity Specialist Led Acute Care (HiSLAC); service quality improvements in weekend services on preventable mortality and adverse events; logic models for patient safety interventions; and the impact of seven-day services in the NHS.

Medium-term objectives:

We are conducting methodological research on research methods, including:

- Several systematic reviews and meta-analyses on:
 - Health and economic consequences of patient-level adverse events, using results to estimate benefits of seven-day NHS services and evaluate HiSLAC and e-Prescribing.

- Publication bias in health services and delivery research (funded by a NIHR HS&DR grant).
- Conducting analysis on the effect of large sample sizes in biased RCTs and its practical consequences, arguing that large sample sizes exacerbate the problems of biases.
- Patient Experience and Reflective Learning (PEARL), funded by NIHR HS&DR.
- Improving clinical decisions and teamwork for patients with multi-morbidity in primary care through multidisciplinary education and facilitation funded through NIHR Programme Development Grant.
- Economic evaluation of the use of CKD specialist nurse-supported use of the IMPAKT software in General Practice (see above).

Long-term objectives:

To promote public engagement with applied science Prof Lilford took part in a filmed opening debate for the Social Medicine Annual Scientific Meeting in September 2016, which was published in the BMJ. ^[133] Prof Lilford also presented at the Royal Statistical Society on 'Integrating multiple sources of evidence to estimate co-effectiveness' in September 2016.

Our annual Scientific Advisory Group continues to allow us to export our learning to a wide range of international academic institutions and provides unique opportunities for collaboration on international projects.



Control Charts

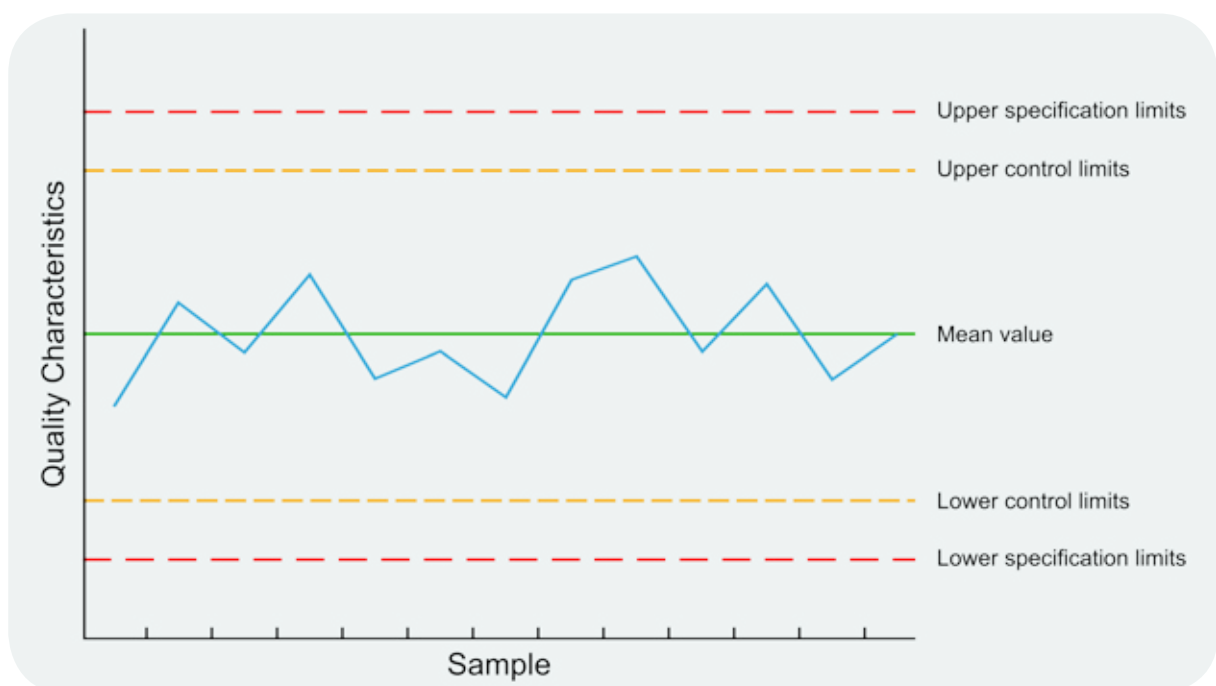
We obtained funding from the West Midlands Academic Health Science Network (WMAHSN) to look at the use of Statistical Process Control (SPC) charts by hospital boards. A highly rated paper was published, in conjunction with CLAHRC North West London showing they are seldom used despite evidence that they improve decision making (Schmidtke, et al. 2016). To establish the barriers to implementation we are working with three local trusts to begin to implement SPC methodology in their reporting structures. It is hoped that this scoping work will lay the foundation to generate a viable grant application.

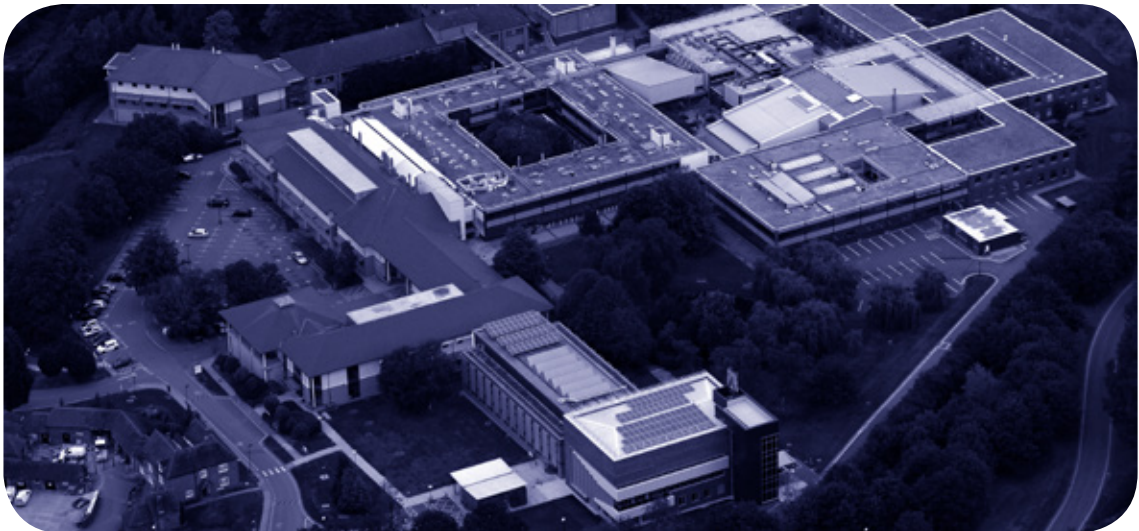
One barrier identified early on was a lack of awareness of SPC methodology amongst middle ranking managers. So Paul Bird, our Head of Programmes (Engagement), published a dissemination piece in the Health Services Journal, one of the main information sources for this group. This generated interest, including from the Head of Data Analytics at NHS Improvement who is keen to see increased use of SPC methodology nationally. We are now working collaboratively with NHS Improvement on the implementation of control chart methodology within the NHS, looking at how we can create top-down demand for information in this format. We are also working bottom-up, and are supported by an impact acceleration grant from the University of Warwick, using academic detailing to stimulate use by healthcare organisations.

Following publication we realised that there were significant untapped implementation benefits. We are ideally positioned to study the implementation barriers and improve the use of control charts methodology across the country.

It was through collaborative working with the WMAHSN that a service issue was identified and researched. We used our own resources to disseminate these findings by contacting hospital boards locally and writing for the Health Services Journal. We leveraged funding from the University of Warwick to investigate the implementation barriers and improve uptake through academic detailing.

We have already established a good working relationship with three local hospital trusts to implement SPC methodology into a variety of reports through to Board level to stimulate the supply of information in this format. We are meeting with the national lead from NHS Improvement to look at creating a national work programme around this and generating national demand for information to be provided to regulatory bodies in the format of SPC charts.







Patient and Public Involvement and Engagement

PPI/E Lead: Ms Magdalena Skrybant
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14 Advisors

Introduction: Meaningful involvement of patients and the public is the cornerstone of CLAHRC WM. Our 14 Patient and Public Involvement and Engagement (PPI/E) Advisors are service users, carers, and members of the public from a range of backgrounds, who are already involved in influencing service. The partnership between our advisors, researchers and NHS staff ensures our research focuses on issues important to patients and the public, and that their insights and direct experiences shape research design and influence how services need to change.

Strategy: As set out in our strategy, our PPI/E Advisors are:

Involved in the Management of Science – Our Advisors are allocated to research themes according to their interests/experiences and meet together three times a year as a Supervisory Committee. The Committee elects its own Chair and two representatives to the CLAHRC WM Steering Committee, and two to the Executive Committee, ensuring a strong patient voice at all decision-making levels. There is a PPI/E report at each Steering/ Executive meeting.

Involved in the Design of Interventions – We strive to co-produce knowledge with our public partners. Public involvement throughout the research cycle ensures that our research is relevant to patients, uses appropriate and acceptable methods that have the best chance of success, and is shared in accessible formats to a range of audiences.

Recruited Systematically – Recent recruitment of an additional Advisor provided an opportunity to revisit our recruitment and selection process. The applicants reported that they felt supported throughout the process and that it was a positive experience.

Partnerships and Collaborations: We have been working with a number of organisations and condition-specific groups that involve patients and the public in research in local NHS services.

In addition, we are a key partner in the Public Involvement and Lay Accountability in Research (PILAR) group, which brings together PPI/E groups in the West Midlands. The PILAR group was one of the groups showcased in the NIHR INVOLVE’s publication on regional networks. Members of the group are committed to sharing good practice, making best use of resources for PPI/E, promoting events and opportunities, promoting national campaigns, and addressing challenges together. Their first conference, held in November 2016, brought patients and the public and organisations involving public advisors together to focus on future priorities for PPI in the region and how we can work ‘Better Together’. In total, 176 ideas for ways we can work better regionally were expressed,



and PILAR’s priorities are focussed in three main areas: developing communities and partnerships; improving diversity and inclusion; and enhancing learning and development opportunities. PILAR has already started work in these areas and is mapping organisations in the region that involve patients and the public and bringing together examples of learning and development opportunities/resources.

Resources for Advisors: Our Advisors receive support from a dedicated PPI/E Lead and PPI/E Liaisons in each of the themes. Regular communications from the PPI/E Lead ensure our advisors are updated on research, opportunities for further involvement, and regional and national developments on PPI/E. All our Advisors receive reimbursement for expenses/time in accordance with INVOLVE guidelines.

Our Advisors are also supported to become involved in research projects. In 2016, all Advisors were offered a Learning Needs Analysis that identified topics for development. A session on ‘*Everything you want to know about the NHS but were afraid to ask*’ was popular, with further follow-up sessions planned. Our Advisors have also been supported to attend a number of conferences and workshops.

Resources for Researchers: Workshops on public involvement have been delivered to PhD students, clinical academic interns, Masters to Doctorate students and Masters in Public Health students. Practical support is also provided to facilitate public involvement in research, such as the Research Design Service to support public involvement in developing new grant applications. We provide opportunities for researchers to pitch their research ideas or challenges to PPI/E in their research to

our Supervisory Committee. This initiative has been well-received by researchers, who have 'buddied' with Advisors to provide support in developing public involvement in their research, and to Advisors, who have welcomed the opportunity to get to know researchers.

Examples of impact:

Shout Out for Youth Mental Health – PPI/E Advisors in the **Youth Mental Health theme (2)** were involved in the planning and delivery of an event about our research that underpinned the design and delivery of an integrated care pathway for 0-25 year olds. This involved people from the Young Persons' Network and provided opportunities for commissioners in the region to learn about the service and its implementation. Further 'Shout Out' events are planned in the region with a view to implementing the successful care pathway (page 20).

Lay Involvement in the Implementation of Knowledge Group (LINK) – Keele University's PPI/E Team has set-up a group that works with patients and members of the public to mobilise the implementation of research evidence into practice. Task/Finish groups on two projects, JIGSAW and STarT Back, have produced resources for patients empowering them to incorporate the best evidence into managing their conditions.

Research into PPI – The **Implementation and Organisational Studies theme (5)** is researching the PPI/E Advisor role, how it develops over time, and how patients and the public can implement research

evidence. This longitudinal study aims to examine the development of the Advisor role and identify how Advisors could better contribute to all stages of research, from grant application to implementation of research evidence. The research also looks at what motivates Advisors to be involved in research, so as to provide them with more suitable training and personal development opportunities. Moreover, the study identifies barriers and facilitators for the full participation of Advisors in all stages of research and offers practical solutions to how to better embed the role into CLAHRC WM.

Engagement: In addition to our website, we use social networking sites, such as Facebook and Twitter, and our popular News Blog, which regularly features items about PPI/E activities and relevant opportunities.

Links with Industry: We are in the process of appointing an existing PPI/E Advisor to be a specific industry PPI/E. Often PPI/E is excluded from the process of industry engagement, when we believe it can offer a valuable contribution alongside clinicians, patients and technical experts, with significant benefit to both CLAHRC WM and industry partners.

Forward Look: We will continue to deepen our links with PPI/E, both within CLAHRC WM, and, predominantly, through providing local leadership to assist organisations to develop their own PPI/E structures and processes. This will then offer a wider base through which we and other organisations can engage meaningfully with patients and the public.



Training Overview:

We have continued to deliver our strategy of capacity development across academia, our NHS stakeholder organisations, and the public. Our approach has developed to include greater emphasis on what we believe to be the most successful elements of our capacity development programme.

Development of staff:

Our training and capacity development programme has a number of distinct strands, the first of which is our **Leadership and Diffusion Fellows (LDFs)**. These are our research active or research interested cadre, many of whom are working on CLAHRC WM implementation projects within their own health or social care organisation. We have held a variety of workshops for this group, but while these sessions are popular, we have not always been able to deliver these with the scale and reach that we would like. As such, we have teamed up with the West Midlands Academic Health Science Network (WMAHSN) and West Midlands Patient Safety Collaborative (WMPSC) to deliver a wider range of workshops and training and at much greater scale. These have offered the opportunity for LDFs to interact beyond the theme-specific elements of CLAHRC WM, creating a broader and longer-lasting community of practice within the West Midlands and beyond. This partnership will be developed through the Health Foundation-backed Q Fellowship programme, which is rolling out in early 2017, and for which our Head of Programmes (Engagement) is an assessor for selection.

One of the capacity building highlights for the year was the first healthcare focussed **Nudgeathon** held in March 2017 and run in partnership between Warwick Business School (WBS), WMAHSN and WMPSC. This two day event brought together 18 front-line NHS staff with 24 Masters and Post-graduate behavioural

science students, along with patient representatives. They were set a number of problems around the detection, diagnosis and treatment of atrial fibrillation, with LDF clinicians providing 'real world' experience about the difficulties associated with this, and Warwick Create providing role-based drama to enliven the scenarios. A number of interesting evidence-based 'nudges' were developed as part of the event, which are now being planned for implementation, in conjunction with the WMPSC. We are set to evaluate their impact and have applied to the Warwick Impact Fund to follow up on the outcomes of the Nudgeathon, look at the resulting impact and develop proposals for further research, a potential grant application and future nudge events.

We have also delivered or facilitated a number of workshops for staff, including lecturing to MSc students (most of whom are current NHS staff) on our impact case studies; continuing to support the Research Midwives Forum (page 13); and lecturing to MPH students on effectively involving patients and the public. We supported two members of staff from the Local Authority to undertake MPH courses, which has proved highly successful, with one participant receiving a promotion as a direct result of their qualification, and cascade training being delivered to other staff in their organisations.

We also continue to work with our university partners to widen the training available to front line NHS staff. This has led to the launch of a Health Research Methods MSc / diploma / postgraduate certificate through the University of Birmingham, for which LDFs and CLAHRC associates receive a substantial discount on fees. We have contributed to the development of a Massive Open Online Course (MOOC) on Leadership for Healthcare Improvement Innovation through WBS, due to launch in May 2017 (page 34). We will work to promote this with our partner organisations within the region.

Attendees at the Nudgeathon



Particular strengths of the training environment:

Our training environment continues to mature and develop; it is becoming clear that some of the greatest value in our collaborative approach to research comes through our **embedded posts**. These are a variety of multi-disciplinary academics (including general practice, midwifery, and behavioural and organisational science experts) who are academics, but crucially are based within NHS provider organisations. They act as 'knowledge brokers' and help provide links between service delivery and the applied health research we conducted, both within and without their own areas of expertise. These posts are usually jointly funded between the university and the provider organisation, for between 12 and 36 months, with the aim that they go on to become self-funding. Although resources have become stretched within provider organisations, there is an increasing enthusiasm for these posts within our region as organisations begin to see their benefit. These posts mean that the organisation is invested in a programme of work for a defined period of time, and are provided with knowledge, expertise and evidence that they might otherwise find difficult to access. This, combined with 'low walls' ^[122] between departments at our academic base organisation, allows us to take a genuinely interdisciplinary approach to research. This is typified by the extensive collaborations between Warwick Medical School and WBS, with the CLAHRC WM Director being partly funded by WBS, and the Head of the WBS sitting as one of the Deputy Directors. This was also a strong narrative through our (unsuccessful) bid to host an NIHR Patient Safety Translational Research Centre.

Some of our embedded posts include: two posts shared between WBS and Heart of England NHS Foundation Trust; two shared posts between the University of Birmingham and University Hospitals Birmingham NHS Foundation Trust; three general practitioners at Keele University who still provide clinical sessions alongside their academic workload; and an associate professor from WBS jointly funded with Sandwell and West Birmingham Trust. There are further posts currently in negotiation with NHS providers. These shared posts also support the structure of LDFs (see above) by offering more local and accessible touchstones for academic support for groups who might not otherwise access this. Further, our Head of Programmes (Engagement) post also operates on a shared basis, within the Research and Development department of the NHS host University Hospital Birmingham NHS Foundation Trust. Part of this remit includes providing access to research expertise and evidence, and supporting the Annex U graduate scheme operated at the Trust to ensure that future service managers have an understanding of the research landscape, infrastructure and agenda.

Ensuring that research student / support staff receive a high quality development experience:

As has already been described, one of our key principles is to bridge the gap between the expertise in academia and ensure that those training or in service delivery benefit from access to this. As outlined in previous reports postgraduate students are embedded across our themes and we continue to support this group through centrally organised activities, as well as linking them to the wider infrastructure and offering them access to other training opportunities. As an example, we have had participants from our student base undertake Appreciative Inquiry training hosted by the WMPSC; and three of our faculty attended the NIHR Infrastructure Doctoral Research Training Camp in July 2016. Another of our PhD students, Jennifer Cooper, successfully completed her NIHR infrastructure exchange scheme from University of Warwick to University of Birmingham, from which a publication has been submitted. We have also encouraged and supported Dr Sian Taylor-Phillips to successfully apply for a NIHR Career Development Fellowship due to start in 2017. Dr Sara Kenyon from **Maternity and Child Health theme (1)** has also recently been made a full Professor at the University of Birmingham.

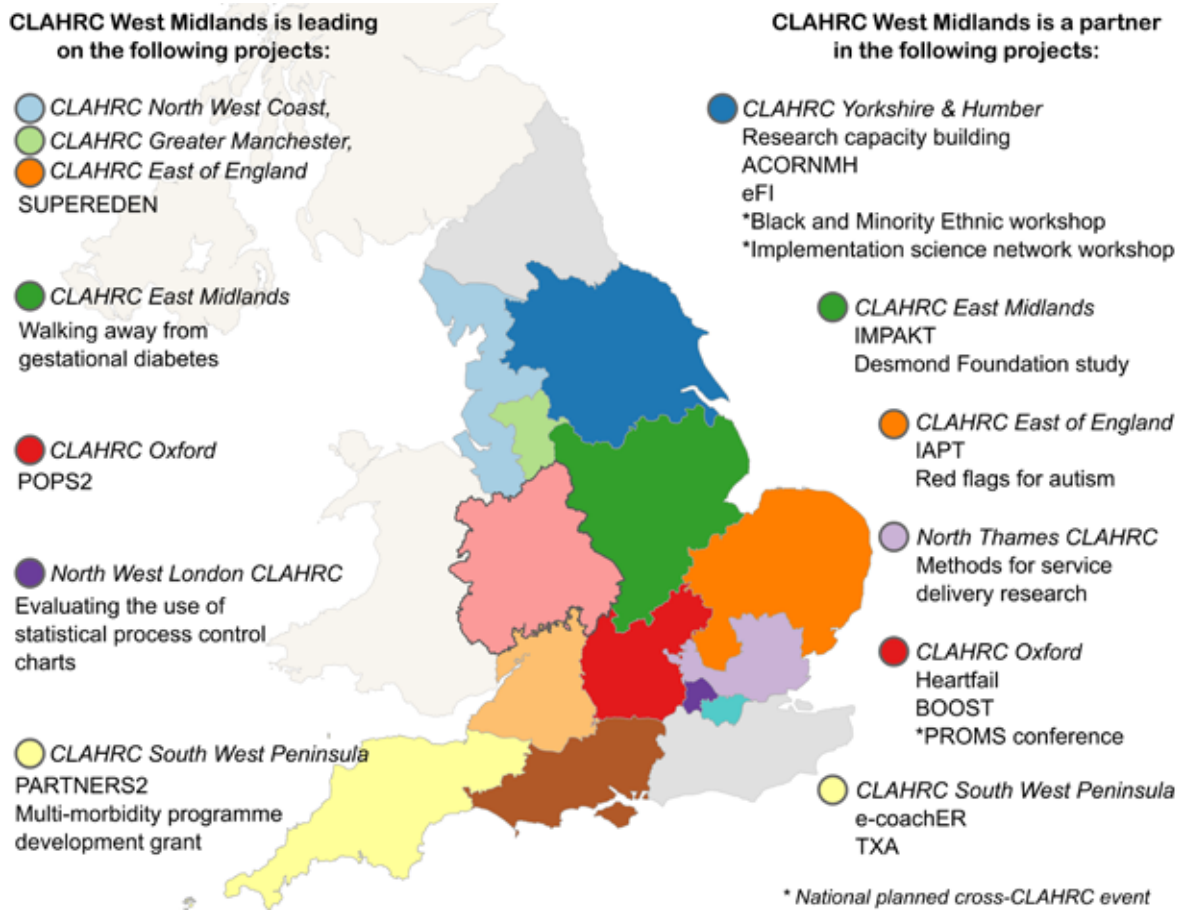
We welcomed nine new postgraduate students – four fully funded and five supervised by an academic funded by CLAHRC WM. A further 14 postgraduates were awarded degrees within the reporting year, including four MSc part-time students/LDFs who were fully funded through the award, and ten PhD students.

Our annual Scientific Advisory Group has always offered opportunities for PhD students and early career researchers to be involved in the discussion of research projects they are involved with. As a new development this year we offered a series of one-to-one sessions with our faculty of international advisors who are leading experts in their field to discuss individual research projects. We received very positive feedback from both our PhD and early career researchers who valued the opportunity to engage with leading experts and be challenged on their ideas, and from the advisors who enjoyed the opportunity to engage with early career researchers and to see their enthusiasm for research, as well as to pass on their expertise.

In addition we continue to support a wide range of multi-professional groups. The regional Research Midwives Forum instigated through CLAHRC WM continues to be a success and valuable resource for participants and helping service delivery set the agenda for future research. We are delighted that in 2016 it was confirmed that we also now have two NIHR Training Advocates in Dr Sara Kenyon (midwifery – University of Birmingham) and Prof Nadine Foster (physiotherapy – Keele University).

Links with NIHR & Industry:

We continue to collaborate with other CLAHRCs on a number of projects, including:



We have also led a number of national streams of work (page 7). In addition, we have contributed to bids across NIHR infrastructure, including the Biomedical Research Centre, Surgical Reconstruction and Microbiological Research Centre, and the Medtec and In Vitro Diagnostic Centre.

Over the last year we have improved relations with industry. Our Head of Programmes (Engagement) post has been a focal point for industry engagement, while adoption of a new engagement strategy has offered helpful structure in determining where to target limited resources. The post is based partially at the Institute for Translational Medicine (ITM), home to the West Midlands Academic Health Science Network (WMAHSN). We identified WMAHSN as the single point of contact for industry engagement. Although there are a wide range of partners interested in engaging with us, there are only a finite number of mutually suitable opportunities. Using WMAHSN as a single point of contact means that they act as a filter for ideas and innovations on our behalf; they can identify suitable industry partners for projects when required; and we can develop 'joint offers' for industry on the help and expertise that we can provide together. We also work closely with the WMAHSN to support the health and wealth agenda around small and medium enterprises – innovation ideas are appraised at our Programme Steering Committees in order to offer early academic input; while we have also offered one-to-one support, advice and ideas at

various live WMAHSN events.

We are firmly embedded within the infrastructure of the ITM, both physically and intellectually, and work closely with all relevant partners, including the West Midlands Patient Safety Collaborative, with whom we have a strategically complimentary programme of work, and have secured funding from to evaluate the SPACE programme (page 29); MidTech, who helped develop the licence agreements for STarTBack (page 31) and **Maternity and Child Health theme (1)** initiatives (pages 12-13); Medilink West Midlands, who assist companies in developing healthcare-related services and products in conjunction with NHS and academia; and the new Medical Devices Technology Evaluation Centre that aims to reduce time taken bringing devices to market by offering expert clinical appraisal of technologies, and will provide a range of collaboration opportunities. We also work closely with the Clinical Research Network to support trials and trial development, which has included presenting an overview of our projects as part of the CRN Partnership Group.

Overall, 23 licence agreements have been signed this year relating to CLAHRC WM developments. Although we have not individually signed any direct agreements with industry, we have contributed to the overall industry offering of the West Midlands through our work with partner organisations and NIHR infrastructure.

Matched Funding Overview:

We have continued to make good progress on matched funding through the Head of Programmes (Engagement) post, both in respect of recording and quantifying matched funding, and also in terms of developing stronger links with NHS organisations directly, and through collaboration with groups such as the West Midlands Academic Health Science Network (WMAHSN) and West Midlands Patient Safety Collaborative (WMPSC). Two new organisations have joined our collaboration via our Deed of Adherence process, with a further two in advanced negotiations. As a result we are on course to deliver £22.1 million of matched funding across our lifespan against the original £10 million award. All of the matched funding is detailed and reported allowing us to regularly review totals by theme and project (through our Financial Site Visit and Theme Steering Committee meetings) and identify areas for improvement or new engagement.

Leadership and Diffusion Fellows:

Recruitment of Leadership and Diffusion Fellows (LDFs) has continued; we now have 338, an increase of 45 since March 2016. Despite the maturity of CLAHRC WM, this reflects the continuing and deepening engagement with regional NHS organisations. We engage with our LDFs through our fortnightly News Blog, which currently has 1,603 subscribers from academia and service delivery both within the UK and abroad. We have sought to find new ways of engaging service delivery staff in academic research, for example our Head of Programmes (Engagement) published an opinion piece in the Health Services Journal summarising our work on control charts (page 40), which created national opportunities to increase the impact of the research.

The LDFs are crucial to almost all of the implementation activities of CLAHRC WM and have played particularly key roles in a number of projects, including STarTBack (page 31); the ENHANCE study (pages 28-29); the delivery of a 0-25 Youth Mental Health service through Forward Thinking Birmingham (page 20); midwives working on the Birmingham Symptom-specific Triage System and on the Place of Birth study (pages 12-13); the HECTOR early discharge model for frail elderly (page 28); and projects with renal services looking at home dialysis and end of life care (pages 28-29).

Shared Posts:

The 2016-17 financial year has seen further increases in the number of shared posts between Warwick Business School (WBS) and NHS organisations with two new posts agreed. These posts embed Research Fellows who are experts in implementation

science and enables them to immerse themselves in the NHS organisation and contribute across the operational research agenda (page 47). They can act as a conduit to transfer evidence and knowledge directly to the heart of these organisations, but can also bring ideas directly from the service and patients to research institutions to make sure that we are responsive to service need. These posts have received very positive feedback from both the academics involved and the NHS organisations, and the fact that the numbers continue to expand despite the constraints on NHS funding demonstrates the value that organisations are now attaching to these posts. The idea is that these posts have funding fixed for a period of time (usually three years) with the plan that they become self-sustaining after this period, acting as lasting link between academia and service delivery.

Additional Funding:

In addition to the academic matched funding added to these shared posts, we successfully applied for a total of £39k from the University of Warwick Impact Fund to fund additional impact activities relating to our research work. These included:

- Impact on national screening policies and Local Authority decision-making.
- Wider adoption of service models to reconfigure youth mental health services.
- Use of control charts by hospital boards.

We have applied again to the Warwick Impact Fund to follow up on the outcomes of the Nudgeathon (page 46).

Other Partnerships:

We have also worked in partnership with the WMPSC to reach out to their communities of practice, many of whom are not LDFs but have an identified interest in evidence based improvements. This has allowed us to build our profile within the region further and reach out and engage with professionals not directly involved in our current work programmes or themes. This has included a number of training programmes (Learning from Excellence, Appreciative Inquiry and Human Factors training), along with the Nudgeathon (page 46).

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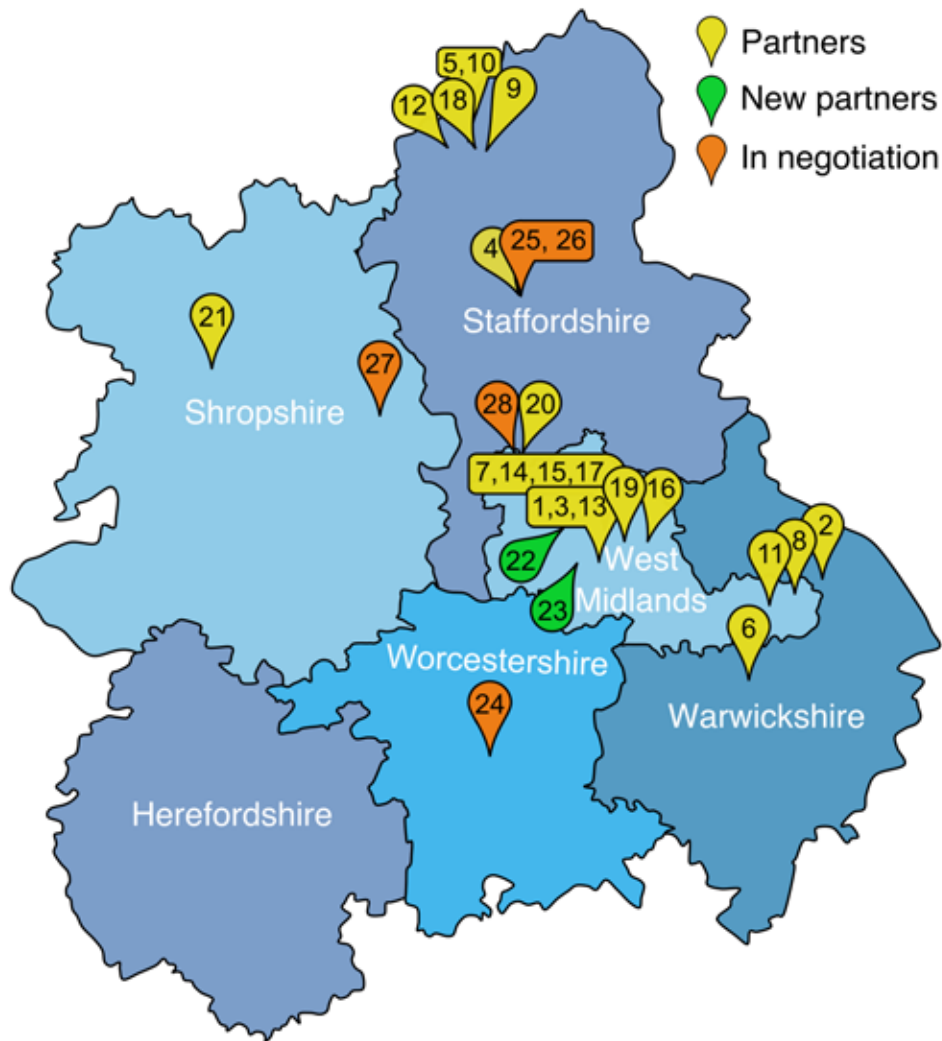
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1. University Hospitals Birmingham NHS Foundation Trust
 2. University Hospitals Coventry & Warwickshire NHS Trust
 3. Birmingham Women's NHS Foundation Trust
 4. South Staffordshire & Shropshire Healthcare NHS Foundation Trust
 5. Staffordshire & Stoke-on-Trent Partnership NHS Trust
 6. Warwickshire County Council
 7. Birmingham City Council
 8. Coventry City Council
 9. Stoke-on-Trent Clinical Commissioning Group (CCG)
 10. North Staffordshire CCG
 11. University of Warwick
 12. Keele University
 13. University of Birmingham
 14. Birmingham Children's Hospital NHS Foundation Trust
 15. Birmingham and Solihull Mental Health NHS Foundation Trust
 16. Heart of England NHS Foundation Trust
 17. Sandwell and West Birmingham Hospitals NHS Trust
 18. University Hospitals of North Midlands NHS Trust
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 21. Shrewsbury & Telford Hospital NHS Trust
 22. Sandwell Metropolitan Borough Council (New)
 23. Newman University (New)
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