

<p>Institution: The University of Warwick and Liverpool School of Tropical Medicine</p>
<p>Unit of Assessment: A2 – Public Health, Health Services and Primary Care</p>
<p>a. Context</p> <p><i>The University of Warwick and Liverpool School of Tropical Medicine partnership.</i></p> <p>This is a joint submission between the University of Warwick (UOW) and the Liverpool School of Tropical Medicine (LSTM). We formed a strategic partnership in 2011 to support a long-term collaborative research programme focused around the work of the Centre for Applied Health Research & Delivery (CAHRD).</p> <p><i>UK impact:</i> Warwick Medical School (WMS) first developed substantial activity in applied health services research around 2005. Our focus is on research of direct relevance to improving the quality of health and social care. Much of our research addresses areas of uncertainty identified by the NHS, ensuring it has a substantial influence on policy and practice. We have close links with the NHS and social care stakeholders, and our predominant source of funding has been the NIHR. Our primary research, funded through the NIHR health technology assessment includes work on Depression [Lamb, Singh, Thorogood, Underwood, Weich], Pain [Lamb, Seers, Underwood], Falls [Bruce, Carter, Gates, Lamb], fractures [Costa, Griffin, Parsons], cardiac arrest & intensive care [Gates, Perkins], and public mental health [Marwaha, Singh, Stewart-Brown, Weich].</p> <p>Our secondary research also addresses key NHS priorities. Clarke achieved a large competitively awarded grant from the NIHR HTA programme (recruiting Waugh to support this work) to run a technology appraisal group (Warwick Evidence), which produces health technology assessment reports; principally for NICE. Outputs have, for example, informed NICE guidance to offer botulinus toxin for chronic migraine and abiraterone for castration resistant metastatic prostate cancer. In the field of Mental Health & Wellbeing we have established the importance, and potential impact, of whole new areas of research. Barlow & Stewart-Brown have established the importance of parenting in child development. Barlow & Petrou's 2013 award of £7M from the Big Lottery to study preventive services in the early years will underpin our future impact in this area. Stewart-Brown & Weich have been instrumental in promoting the importance of wellness as an important outcome from health and social care interventions; the Warwick Edinburgh Mental Wellbeing Scale (WEMWEBS) is established as the brand leader for measuring wellness. Singh's work has made the transition from child to adult mental health care a national and international priority. An EU award of £4.3M to [Singh] will underpin our future impact in this area.</p> <p><i>Overseas impact:</i> The LSTM was established in 1898, making it the oldest institution, globally, dedicated to the field of tropical medicine. It became an HEI in July 2013. The LSTM's strategy is to focus on research with the greatest impact on global health, in particular saving lives in resource poor countries through research, education and capacity strengthening. We are focussed on maximising the impact of applied health service research on some of the traditional 'big' diseases of resource poor environments, e.g. Malaria [Garner], TB [Cuevas], malnutrition [Kandala], and sleeping sickness [Torr] (we identified trypanosomes as cause of sleeping sickness in 1902 [Dutton]). More recently we have explored spatial distribution of old and new disease (Malnutrition, female genital mutilation, hypertension) [Kandala, Stranges] and developed an implementation study of treating hypertension in South Africa [Thorogood]. Hosted at the LSTM and led by Garner the Cochrane Infectious Diseases Group (CIDG) works closely with the WHO and others in preparing systematic reviews in tropical infectious that directly influence policy globally.</p> <p><i>The broader picture:</i> Across the West Midlands health economy the synergies needed to get research into practice are in place. We established, and led, the West Midlands (South) Health Innovation and Education Cluster (HIEC) - £1.7 million has been invested in 17 locally led innovation-into-practice projects; we were instrumental in forming the West Midlands Academic Health Sciences Network (AHSN) (budget >£4M per annum; and the West Midlands (CLARHC). The CLARHC's budget will be >£30M over five years; Its director [Lilford] moves to Warwick in February 2014. These initiatives share common themes around mental health, care of long-term conditions (e.g. diabetes & musculoskeletal disorders), and digital technology.</p>
<p>b. Approach to impact</p> <p>We aim to produce excellent research that changes practice. Our programmes are informed by clinical relevance and strategic importance. Impact delivery is supported by excellent facilities and infrastructure support. The UoW Institute of Advanced Teaching and Learning (IATL) and Institute of Advanced Studies (IAS) provide specific funding to ensure we can sustain,</p>

Impact template (REF3a)

professionalise, and develop, impact facilitation. The WMS Impacts Officer provides further specialist advice and has developed formal impacts training and resources for UoW staff with the **Learning and Development Centre** (LDC). Additionally, yearly workshops are held jointly with other departments across UoW at which research staff highlight their research impact. Research impact criteria are factored into the recruitment and selection process where appropriate. The assessment of potential research impact is now integrated into the WMS annual review/appraisal process. UoW invests strategic financial resources to help increase its capacity and capability to deliver impact. This includes support for pump-priming & proof-of-concept projects as the first stage to commercialising or disseminating of UoW intellectual property through the Warwick Impact Fund and Warwick Ventures Ltd with financial support from HEIF5.

Influencing policy: Our academics are encouraged to engage with local, national, and international stakeholder groups who design and implement policy and practice change. For example, **Cooke** as the Department of Health lead for emergency care - facilitated implementation of his research on emergency care redesign. **Sidebotham** was part of the committee that produced the Munro report on safeguarding at-risk children. **Slowther** has been part of government committees on PIP breast implants and Blood transfusions. **Stewart-Brown** has had an extremely active role in getting the importance of parenting onto the national agenda. **Singh** has advised the Department of Health on mental health needs and priorities of ethnic minority groups. He is Commissioner for the Equality and Human Rights Commission ([EHRC](#)) and member of the EHRC Disability Committee).

Work with end-users: **Cuevas** was the Chair of the stop TB partnership new diagnostics working group on smear-microscopy (2007-2011). **Garner** contributed directly to changes in WHO policy on the formula of Oral Rehydration Salt Solution for treating diarrhoea and replacing quinine with artesunate for severe malaria. **Hutton** has taken an active role in providing statistical advice to the courts based on her work on rare disease. **Slowther** has produced [training material](#) for the General Medical Council (GMC) as a response to her important findings on the needs of non-English speaking doctors coming to the UK. **Stallard** has an on-going relationship with Roche who are implementing his work on adaptive designs in their early phase trials, **Stewart-Brown & Barlow** have shaped the policy on public mental health and wellbeing in the UK.

Other examples of the ways in which our research has been influential in policy and practice include: evidence to support the roll-out of the gold standard framework for terminal care in the UK [**Dale**]; demonstrated a link between metalworking fluid and allergic extrinsic alveolitis that led to a changes in the Industrial Injuries Disablement Benefit system [**Robertson**]. Work on mental health law that formed the evidence-base for the Mental Health Act Amendments (2007) [**Singh, Weich**]. Work on early Intervention in psychosis has led to new services being established across the NHS in England [**Singh**]. CAHRD members have co-authored new reports and policies with key global stakeholders and policy players, such as 'Addressing poverty in Tuberculosis Control' (with WHO) 'Guidance on Methodologies for Researching Gender Influences on Child Survival, Health and Nutrition' (with UNICEF).

Institutional Resources to Assist in Delivering Impact from Research

Support for individual academics

- [Public engagement awards](#) to support research dissemination to key opinion leaders.
- Media training is provided: both general training, and targeted training and coaching prior to release of important research
- Obligatory impact training for all academic and senior administrative staff
- Inclusion of research impact as part of annual review and performance management processes
- Releasing staff from other duties to support research implementation; including secondment to policy bodies and vice versa
- Open access publications and the Warwick Research Archive Portal
- Maintaining a register of our policy links
- Active dissemination of research finding back to participants and host organisations

Warwick Ventures Limited (WVL) WVL is a wholly owned subsidiary commercialising innovations resulting from research of the University. It offers advice and services that support academic innovators through the process of generating impact to a wider reach, and by working closely with industry via specialist commercialisation managers linking business and investors to the UoW's intellectual property. WVL supports technology development, protecting and licensing and creating spinout companies with support for funding and grants from proof of concept through to start up

funds. The most recent of these (relevant to this unit of assessment) being [ClinVivo](#), which is in its first year of trading in data capture techniques [**Froud, Underwood**]. Two healthcare technologies of particular significance that have been patented and commercialised with WVU are: [Kingmark](#) - used worldwide - making hip replacement surgery safer, quicker and more precise [**Griffin**]; and [TrueCPR™](http://www.physio-control.com) (<http://www.physio-control.com>), developed with industrial partners to correct errors in their resuscitation monitoring devices [**Perkins**].

Science City Research Alliance (SCRA)

A key component of our approach to research impact is our membership of the £55m [Science City Research Alliance](#) (SCRA, 2008– 2018) of the Universities of Birmingham and Warwick. The SCRA is aimed at delivering a vibrant knowledge-led economy in the West Midlands by delivering new models of partnership with the local industrial base, particularly with small and medium sized enterprises. This is measured through number of businesses assisted through initial engagements with academic staff and more substantial longer-term collaboration. Its programme of research on translational medicine enabled capital investment into a new, state of the art clinical trials unit to support applied health research. As part of the condition for investment, we have been required to demonstrate impact across a range of targets set over a 10-year period, the majority of which were exceeded within the first three years. Actual figures, relevant to UoA2, to date include (but are not limited to): jobs created and jobs safeguarded (112); business assists and collaborations (169), and research funding levered (£32.2M). This also supported the start of a spin-out company ([Clinvivo](#)).

c. Strategy and plans

The UoW 2012 *Research Impacts Strategy* has five objectives that build on broader departmental research strategy:

- To foster world-leading clinical research that delivers significant benefit for human health:
- To enhance our culture of clinical research impact relevant to users beyond academia:
- To provide the best support to the next generation of clinical research impact innovators:
- To benchmark our impact activities against the highest international standards:
- To raise the profile of WMS clinical research impact locally, nationally and internationally

We have an overarching University strategy: Global Research Priorities (GRP) for Science & Technology for Health. Priorities are healthy aging, early diagnosis and treatment, and Improving health in resources poor settings. The University supports this activity with funding for Impact and ‘Proof of concept’. Professional support is provided by a Corporate relations unit and supported by Warwick Ventures to enable exploitation of intellectual property. The WM AHSN and WM CLARHC focus on production and dissemination of internationally excellent research that is of relevance to local and regional stakeholders. An important aspect of this work are the dissemination and implementation fellows who are jointly funded to work across academic, health, and social care. The LSTM is a translational research institute, using its research findings to implement product development and policy into practice. These two phases of translation are delivered through partnerships with government departments, NGOs, industry, global health organizations and national/ international funding agencies. The Research Office coordinates business and partnership activity, handling over 600 external contracts each year that form a major part of The LSTM's core business and underpin the outward facing collaborations to deliver health interventions globally.

d. Relationship to case studies: Our exemplar case studies highlight our impact over a range of settings. All four case studies have been supported by the key infrastructure provided to support impact across our two institutions. It requires expertise from a range of disciplines to combine and integrate scientific, technological, economic and social insights. Crucially our work on both Malaria [**Cuevas**] and TB [**Garner**] has been underpinned by the CIDG that has produced the evidence syntheses that have either set the research agenda or have, in themselves changed WHO policy. Our child death review case study is from the division of Mental Health and Well-Being who have a focus on parenting. **Sidebotham’s** work is at the extreme end of the spectrum of poor parenting but has clear links to **Barlow & Stewart-Brown’s** work on improving parenting more generally. Our emergency care review comes from the Division of Health Sciences. It is grounded in both our expertise conducting trials in challenging areas (Intensive care units, care homes, ambulance service, frail elderly) and on a cross disciplinary approach that allows us to develop methodological synergies between those interested in systems & care pathways and those with expertise in RCTs.