

Institution: The University of Manchester		
Unit of Assessment: 25 (Area Studies)		
Title of case study: Developing Emergency Medical Team Deployments Worldwide		
Period when the underpinning research was undertaken: 2010-2019		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Dr Amy Hughes	Academic Clinical Lecturer/Lecturer in Emergency Response	2013-2020
Dr Anisa Jafar	NIHR Clinical Lecturer in Emergency Medicine	2015-present
Professor Tony Redmond	Professor, HCRI Deputy Director	2001-2018
Professor Bertrand Taithe	Professor, HCRI Director	2000-present
Period when the claimed impact occurred: August 2013-2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Researchers in the Humanitarian and Conflict Response Institute (HCRI) carried out a series of projects about emergency medical responses to sudden onset disasters, with a focus on the collection, preservation and ownership of medical data. The team's findings informed <i>World Health Organization</i> (WHO) guidelines for Emergency Medical Teams (EMTs), first published in 2013, which set the standards now used to validate EMTs globally. Drawing on the research, HCRI staff established (2016) and trained the UK EMT through UK-Med, a closely associated Non-Governmental Organisation (NGO). HCRI led programmes of work to support EMTs in several countries to reach the standards required for WHO validation. The research led to HCRI's designation in 2016 as a collaborating centre of the WHO, through which it carries out activities in support of WHO programmes. In 2020 this designation was extended to 2022.</p>		
2. Underpinning research		
<p>The impact is underpinned by a sequence of interrelated research projects on medical data and EMTs carried out by HCRI researchers since 2010.</p>		
Medical Responses to Sudden Onset Disasters		
<p>In 2010, HCRI collaborated with the NGO Handicap International to examine anonymised medical records relating to amputation rates in the context of the January 2010 Haiti earthquake. The chaos that followed the major earthquake in Port-au-Prince resulted in a multidisciplinary investigation bringing together medical staff from HCRI (Redmond), NGO staff (Calvot, Duttine) and humanities researchers (Taithe). The team addressed the effectiveness of over 300 emergency humanitarian medical responses (now referred to as Emergency Medical Teams, or EMTs) to sudden onset disasters.</p>		
<p>The research [1] illuminated significant factors undermining an effective treatment of the traumatic injuries Haitians suffered during the earthquake. These factors included: the unreliability of medical data; that patients had limited ownership of their own medical records; and that field report statistics were inflated and unreliable because of both their ignorance of, and incapacity to accommodate, the agency of patients. Most foreign medical teams (with the exception of a handful of NGOs such as Médecins Sans Frontières (MSF) or the Cuban medical teams) produced inadequate and unreliable data. Cross-examining statistical evidence with a qualitative survey of 87 patients, the research demonstrated that patient understandings of care differed significantly from the reports given by medical teams. Through qualitative work with amputees, the research demonstrated that many had managed their own treatment and self-referred. It also established: i) the need to develop a validated international control on emergency medical teams, a call for which was published in <i>The Lancet</i> [2]; and ii) the need to reassess the manner in which medical data was collected, preserved and owned in sudden onset disaster settings [1].</p>		

The WHO did not have established minimum standards for health service provision, for the collection of medical data, or reporting systems for medical responses to sudden onset disasters at that time. The policy-focused research [1, 2] led the WHO to establish a Foreign Medical Team (FMT) Working Group in 2011 (https://www.who.int/hac/global_health_cluster/fmt/en/) that recognised the problems epitomised in the Haiti response and responded to the call in *The Lancet* [2]. Hughes and Redmond were invited to participate in the international working group, resulting in recommendations supported by HCRI research, including an initial classification system for FMTs (later renamed EMTs) that establishes minimum professional standards [see also section 4].

Improving Medical Record Data

Further research [3] exposed the need to reassess the manner in which medical data was collected, preserved and owned in sudden onset disaster settings. It argued for the standardisation of the content of medical records kept by FMTs in sudden onset disasters to ensure that robust follow-up arrangements are documented and meet the minimum standards for FMT practice. In the years that followed, HCRI staff conducted research into improving medical record data. This research:

- Developed and tested a minimum summary sheet for sudden onset disasters [4];
- Proposed a three-step operational learning framework that could be used for EMTs globally. The proposed framework includes the following steps: 1) ensure professional competence and license to practice; 2) support adaptation of technical and non-technical professional capacities into the low-resource and emergency context; and 3) prepare for an effective team performance in the field [5].
- Concluded that the principles of the NHS emergency care data set apply in a disaster response and should be used in EMT electronic patient record structures [6].

3. References to the research

1. **Redmond, A. D.**, Mardel, S., **Taithe, B.**, Calvot, T., Gosney, J., Duttine, A., & Girois, S. (2011). A qualitative and quantitative study of the surgical and rehabilitation response to the earthquake in Haiti, January 2010. *Prehospital and Disaster Medicine*, 26(6), 449–456. <https://doi.org/10.1017/S1049023X12000088> 60 citations (Google Scholar).
2. **Redmond, A. D.**, O'Dempsey, T. J., & **Taithe, B.** (2011). Disasters and a register for foreign medical teams. *Lancet*, 377(9771), 1054–1055. [https://doi.org/10.1016/S0140-6736\(11\)60319-X](https://doi.org/10.1016/S0140-6736(11)60319-X) and <https://www.isprm.org/wp-content/uploads/2012/10/Disasters-and-a-register-for-foreign-medical-teams.pdf> 39 citations (Google Scholar). Impact factor: 60.362
3. **Jafar, A. J.**, Norton, I., Lecky, F., & **Redmond, A. D.** (2015). A literature review of medical record keeping by foreign medical teams in sudden onset disasters. *Prehospital and Disaster Medicine*, 30(2), 216–222. <https://doi.org/10.1017/S1049023X15000102> 18 citations (Google Scholar).
4. **Redmond, AD.**, **Jafar, A.**, Alcock, C., Fletcher, R., Hayden, B., Simpson, J., Hughes, T., & Gaffney, P. (2017). Developing a Minimum Summary Sheet for Sudden Onset Disasters: The UK, EMT Approach. *Prehospital and Disaster Medicine* 32(S1), S60-S60. <https://doi.org/10.1017/S1049023X17001649>
5. Amat Camacho, N., **Hughes, A.**, Burkle, F. M., Jr, Ingrassia, P. L., Ragazzoni, L., **Redmond, A.**, Norton, I., & von Schreeb, J. (2016). Education and Training of Emergency Medical Teams: Recommendations for a Global Operational Learning Framework. *PLoS Currents*, 8. <https://doi.org/10.1371/currents.dis.292033689209611ad5e4a7a3e61520d0> and <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5104687/> 33 citations (Google Scholar).
6. **Redmond, AD.**, Hughes, T., Alcock, C., Gaffney, P., **Jafar, A.**, Hayden, B., & Simpson, J. (2017). Development of an Electronic Patient Record Structure for use in a Disaster Response. *Prehospital and Disaster Medicine*, 32(S1), S61-S61. <https://doi.org/10.1017/S1049023X17001674>

4. Details of the impact

HCRI research findings have made a substantial contribution to the establishment of new norms and standards for the validation and training of EMTs authorised internationally to deploy and register in another country to deliver post-disaster healthcare. Prior to 2013, foreign improvised response teams often arrived suddenly in countries where a disaster had occurred (e.g. the Haiti earthquake and Pakistan floods in 2010). These medical teams were unverified as to their equipment, training or skills. They could add to the confusion and stress of difficult times and left poor evidence of their interventions on patients. The paucity of data and inadequate medical records had lifelong consequences for the victims of disasters [1, 2], such as inadequate rehabilitation or loss of legal redress for malpractice.

The impact of the research is demonstrated in three areas: (1) Informing WHO policymaking on EMTs; (2) Creating and training the UK EMT; and (3) International training and validation of EMTs.

1. Informing WHO policymaking on EMTs

In response to the research in Haiti [1, 2], the WHO invited Hughes and Redmond to contribute their research to an initiative to develop a classification system and set minimum standards for EMTs. This initiative produced benchmarks for international teams, published in 2013 and revised since as the 'Classification and Minimum Standards for Foreign Medical Teams in Sudden Onset Disaster' (the 'Blue Book') [A], citing [1]. HCRI research shaped the content of this field-guide document, which has been applied and used globally throughout the assessment period. The contribution of HCRI research is recognised in the acknowledgements of the Blue Book [A, p. 7], and in the fact that the Book responded to all the demands of the 2011 call published in *The Lancet* [2].

Following this normative phase in 2013, HCRI research subsequently shaped the WHO Working Groups for EMT Training and contributed to the process of developing a template for a minimum data set and uniform reporting system in disaster zones. This work continues to inform ongoing revisions of the EMT guidelines today [e.g. activity reported in B].

In recognition of this work, HCRI was granted the status of a WHO Collaborating Centre for the Humanitarian Policy and Guidance unit in the Emergency Operations Department at WHO for a period of 4 years from 2016 [C.i]. The status recognises the significance of the research [including 3, 4, 5 and 6] and the role of HCRI in supporting WHO programmes. HCRI is the only existing collaborating centre of the 57 UK centres to be based in a faculty of humanities. The 2016 terms of reference for this partnership [C.i] specifically outlined areas for HCRI to conduct research and support the WHO in key areas of interest to its operational work-plan, including EMT data, training, capacity building, research into the effectiveness of EMTs, and the quality of and accountability for the medical data EMTs generate [5, 6]. In January 2020, this status was renewed until 2022 [C.ii], even though at this time the WHO reduced the number of collaborating centres worldwide to 800 [C.iii].

2. Creating and training the UK EMT

The research informed the creation of the UK EMT, founded in 2016 as a partnership between the former UK Department for International Development (DFID), the NHS, Public Health England, Handicap International, the UK Fire and Rescue Service and UK-Med. HCRI's research continues to underpin the UK EMT's work. UK-Med (<https://www.uk-med.org/>) is a medical NGO, formerly directed by Redmond and hosted in HCRI since 2013, which prepares medical teams to respond to sudden onset disasters and provides training for healthcare workers in countries at high risk of disease outbreaks, conflict or natural disasters. UK-Med and HCRI have a formal agreement to collaborate on research and training [D.i]. Through the UK-Med/HCRI partnership, research on EMTs carried out by HCRI staff continuously informs UK-Med training and operations (approximately 1,100 UK clinicians trained [D.ii]). In 2016, UK-Med was awarded a large DFID five-year contract of approximately GBP8,000,000 to train and recruit staff for the national UK EMT in collaboration with HCRI [D.iii]. Each year UK-Med rotates six teams of 60 clinicians who are on-call for a period of two months [D.iv]. The teams have been deployed to disaster and disease

outbreak responses, including the response to the Cyclone in Mozambique in 2019 and the COVID-19 response in 2020 [D.v].

The work since 2016 built on UK-Med's central contribution to the UK Ebola Response in Sierra Leone Programme in 2014. In 2016, Hughes was awarded an MBE in recognition for her work in leading UK-Med trained NHS volunteers in Ebola response in West Africa and was named a 'Point of Light' by Prime Minister David Cameron in 2015 [D.vi].

In 2016, the WHO launched its global classification process and Global EMT list. Managed by the WHO EMT Secretariat, the process allows EMTs to register for mentoring and eventually to be classified as internationally deployable. In the same year, the UK EMT was one of the first teams to be verified by the WHO [E], having met the standards required to deploy a full field hospital (type-2) to a sudden onset disaster using the framework developed as a result of the research [5]. In all recent deployments, HCRI's research [particularly 4 and 6] has informed the practices and recording processes of the UK EMT.

3. International training and validation of EMTs

Following the pioneering validation of the UK EMT, in 2016 HCRI established a collaboration with the Hong Kong Academy of Medicine (HKAM) to develop a research agenda on EMTs and a training programme to support Chinese EMTs to meet the WHO standards [F.i]. Through the dual focus of this partnership, HCRI's earlier EMTs research [1, 2, 3] shaped training and the development of standards, which, in turn, led to the further development and application of research on EMTs through wider collaboration. The project with HKAM both contributed to the research for outputs [4], [5] and [6] and had a significant impact on training. Using HCRI processes and research-based guidelines, between 2016 and 2018 HCRI and UK-Med trained 431 medical staff in mainland China and 118 in Hong Kong [F.ii]. This programme included an EMT training event in Dali, China, in September 2017, which involved team leaders from the 37 Chinese national EMTs (91 participants) [F.ii]. Training events for West China Hospital took place in February and April 2018 (total participants 219) [F.ii], providing technical support and full field hospital simulation pre-deployment training [F.iii] in preparation for verification by WHO. The West China Hospital EMT was verified by WHO later in 2018 [F.iv].

The partnership also established a significant role for the HKAM-HCRI team in the WHO EMT network at Secretariat level, through taking up a Working Member role in the WHO EMT Training Working Group [F.ii]. This Group aimed to develop a set of standardised guidelines for developing the training plan of EMTs. Redmond participated in Working Group meetings in April and September 2017 [F.ii], which generated a standardised list of training topics and subtopics for EMTs globally for the 26 EMTs classified and 70 EMTs working towards classification.

Between 2017 and 2019, HCRI took up a leading role in the Training for Emergency Medical Teams and European Medical Corps (TEAMS) project [G.i]. TEAMS was an EC-funded consortium which researched, developed, piloted and assessed a standardised, cost-effective and sustainable operational training package for different types of EMTs within low-income countries. The resulting TEAMS Training Package, which is underpinned by the findings in [5], was endorsed by the WHO EMT Secretariat in 2019 [G.ii]; WHO is preparing to roll out the training package from 2021.

In January 2020, WHO directors for the AFRO region of the UN organisation invited HCRI and UK-Med to contribute to the development of African EMTs, with a focus on outbreaks. The renewal of HCRI's status as a Collaborating Centre of the WHO in January 2020 [C.ii] ensures the continuation of research impact that corresponds closely to field-based realities as well as WHO regional priorities. HCRI work has thus had impact at an international level through WHO, nationally in the UK, internationally in China and Hong Kong and Africa since Ebola.

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5. Sources to corroborate the impact

- A. WHO, *Classification and Minimum Standards for Foreign Medical Teams in Sudden Onset Disasters* (2013): https://www.who.int/docs/default-source/documents/publications/classification-and-minimum-standards-for-foreign-medical-teams-in-sudden-onset-disasters.pdf?sfvrsn=43a8b2f1_1
- B. Extract from HCRI WHO Collaborating Centre annual report (2018), corroborating HCRI team contribution to the WHO Technical Working Group for Emergency Medical Team Training.
- C. HCRI WHO Collaborating Centre status:
(i) WHO database record indicating Collaborating Centre Terms of Reference, 2016-2020;
(ii) WHO Letter of renewal of Collaborating Centre status (14 January 2020);
(iii) List of WHO Collaborating Centres:
<https://www.who.int/about/who-we-are/structure/collaborating-centres>.
- D. Collaboration with UK-Med:
(i) UK-Med and HCRI formal agreement:
<https://www.hcri.manchester.ac.uk/connect/collaborations/uk-med-partnership/>;
(ii) UK-Med Vision, including number of clinicians trained: <https://www.uk-med.org/our-vision-and-mission/>;
(iii) DFID contract awarded in 2016: <https://www.bbc.co.uk/news/uk-england-manchester-35243160>;
(iv) Number of UK-Med teams documented at: <https://www.uk-med.org/emergency-sudden-onset-disaster/>;
(v) UK-Med work in response to the Cyclone in Mozambique <https://www.uk-med.org/2019/07/11/from-the-field-david-anderson/> and in response to COVID-19 <https://www.uk-med.org/our-covid-19-response/>;
(vi) Point of Light award to Amy Hughes (2015): <https://www.pointsoflight.gov.uk/1994-2/>.
- E. WHO Validation of the UK EMT: <https://www.euro.who.int/en/countries/united-kingdom-of-great-britain-and-northern-ireland/news/news/2017/06/united-kingdom-emergency-medical-team-successfully-classified-by-who>.
- F. Hong Kong Academy of Medicine:
(i) HCRI collaboration with HKAM documented at: <https://www.hkjcdpri.org.hk/global-emergency-medical-teams-project-0>;
(ii) Report on research and development project between The University of Manchester and Hong Kong Academy of Medicine;
(iii) Training at West China Hospital (April 2018), documented at: <http://www.blog.hcri.ac.uk/international-emt-training-programme-west-china-hospital-sichuan-university/>;
(iv) WHO Verification of West China Hospital EMT (2018): http://en.nhc.gov.cn/2018-05/09/c_73429.htm.
- G. TEAMS project:
(i) <https://www.teams-project.eu/>;
(ii) Training Package endorsed (2019): <https://www.teams-project.eu/2019/11/05/teams-training-package-has-been-endorsed-by-the-emt-secretariat/>.
- H. [text removed for publication]