

Institution: Nottingham Trent University (NTU)		
Unit of Assessment: C20 – Social Work and Social Policy		
Title of case study: Widening access to healthcare for underserved populations in Uganda through new Community Health Worker training programmes		
Period when the underpinning research was undertaken: 2014 – 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Names: Linda Gibson Deborah Ikhile	Roles: Associate Professor Research Assistant	Period employed by submitting HEI: 2005 – present 2017 – present
Period when the claimed impact occurred: 2015 – December 31, 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact <p>Community Health Workers (CHWs) are central to primary health care delivery in low-income countries. In partnership with Makerere School of Public Health (MakSPH), NTU's Gibson led research into the design, development, evaluation and optimisation of new CHW clinical training programmes in Uganda. Addressing barriers of limited training opportunities and low morale, Gibson's research-led interventions upskilled the health workforce, improving CHW retention and competency in treating childhood illnesses, and significantly widened access to health care services. The programmes resulted in the delivery of health care to more than 215,000 people in underserved communities who previously had no access to community health services, and more than 25,000 children under five years of age were newly treated for illnesses including diarrhoea, pneumonia and malaria. A follow-on, award-winning project enhanced antimicrobial stewardship and improved clinical practice and governance, with stakeholders reporting that the CHW programme as a whole had strengthened the wider Ugandan health system.</p>		
2. Underpinning research <p>The World Health Organisation recognises CHWs as key to the effective delivery of primary health care services in low- and middle-income countries. CHWs receive training in a range of preventive and curative health services and are linked into recognised health facilities, enabling them to act as a bridge between formal service providers and underserved communities. In 2001 the Ugandan Government established a national CHW programme as part of its Uganda National Minimum Health Care Package, which aimed to ensure every village in the country could mobilise individuals and households for improved health outcomes.</p> <p>A five-year research programme (2014-2018) led by Gibson in partnership with MakSPH constituted the first study (with three phases of baseline research, intervention and evaluation) designed to improve the CHW programme in Uganda, focusing on village communities in Wakiso, the country's second most populous district. Exploratory work began in 2012 through a £5,000 start-up grant from the Tropical Health and Education Trust (THET), a global health organisation that trains and supports health workers, and DFID. Having established a formal Memorandum of Understanding between NTU and MakSPH, Gibson's initial needs assessment found that the CHW programme required a fundamental restructuring. This resulted in the first full THET/DFID grant [G1], supported by the Ugandan Ministry of Health, to strengthen the CHW programme across Ssisa sub-county, a semi-rural community of 64 villages in Wakiso District.</p> <p>Gibson's research identified gaps in the Government's CHW strategy. The baseline research [R1] identified that CHWs: 1) were not provided with ongoing training on how to diagnose and treat childhood illnesses including diarrhoea, pneumonia and malaria; 2) CHWs worked voluntarily with no formal recognition and incentives, which led to low morale; 3) CHWs received minimal refresher training and supervision. Although CHWs received training at initiation and were expected to conduct home visits for health education and treatment of childhood illnesses, their interventions were limited by out of stock medicines, inaccessible public transport and lack of basic resources (e.g. gumboots, raincoats) [R2]. Despite 98.5% of CHWs stating that being motivated was an important element of their work, only 45% said they felt motivated [R2].</p>		

Using the baseline research, the intervention and evaluation phases delivered tailored training to 301 CHWs, making it more bespoke to the roles they were being asked to perform. The interventions were co-designed by Gibson, MakSPH researchers and local health practitioners to ensure they were culturally appropriate and research-led [R3]. The research had identified structural barriers that were preventing CHWs from performing a core role within the primary healthcare system; this included an investigation of the barriers to early detection of breast cancer [R4]. Specialised training in rapid diagnostics testing and safe handling and administration of medicines for diarrhoea, pneumonia and malaria in children was delivered to 75 CHWs. Leadership and management training were provided to 24 CHW supervisors [R3]. The intervention phase provided gumboots, raincoats and solar equipment to enable CHWs to visit homes in any weather conditions. It also provided three motorcycles used by supervisors to augment the training component, increasing the availability of essential medicines and access to supervision for CHWs in the field [R3].

Having significantly widened access to health care via CHWs for the local population, Gibson was awarded follow-on research funding [G2] to scale up the new CHW programme to three other sub-counties in Wakiso and ensure its long-term sustainability by designing a 'train the trainer' model. A total of 222 CHWs and 34 CHW supervisors from the new sub-counties were trained, in addition to 263 CHWs and 24 CHW supervisors from Ssisa who received further training [R5]. As a result of the successful scale up of the CHW programme, Gibson was awarded funding by the Fleming Fund [G3], a £265m UK aid programme managed by the Department of Health, to co-design a training programme on antimicrobial resistance, antimicrobial stewardship and infection prevention and control. Part of the Commonwealth Partnership for Antimicrobial Stewardship (CwPAMS), and undertaken with MakSPH, Entebbe Hospital and Buckinghamshire NHS trust, training was delivered to 86 qualified health professionals and 227 CHWs in the Busiro South Health Sub District in Wakiso [R6].

3. References to the research

The quality of the underpinning research is evidenced by peer-reviewed outputs.

- **R1** Musoke, D., Gibson, L., Mukama, T., Khalil, Y. and Ssempebwa, J., 2016. Nottingham Trent University and Makerere University School of Public Health Partnership; experiences of co-learning and supporting the healthcare system in Uganda. *Globalisation and Health* 12:11. doi: 10.1186/s12992-016-0148-x.
- **R2** Musoke, D., Ndejjo, R., Atusingwize, E., Mukama, T., Ssemugabo, C. and Gibson, L., 2019. Performance of community health workers and associated factors in a rural community in Wakiso district, Uganda. *African Health Sciences*, 19 (3), pp. 2784-2797. ISSN 1680-6905.
- **R3** Musoke, D., Mukama, T., Ssemugabo, C., Atusingwize, E., Ndejjo, R. and Gibson, L., 2019. Strengthening the community health worker programme for health improvement through enhancing training, supervision and motivation in Wakiso district, Uganda. *BMC Research Notes*, 12: 812.
- **R4** Ikhile, D., Gibson, L. and Wahidin, A., 2019, "I Cannot Know That Now I Have Cancer!" A Structural Violence Perspective on Breast Cancer Detection in Uganda. In: Vaitinen, T. and Confortini, C., eds. *Gender, Global Health and Violence: Feminist Perspectives on Peace and Disease*. London: Rowman & Littlefield, 2019, pp. 70-88.
- **R5** Gibson, L. and Namatande-Sakwa, L. 2019. Equity: Exploring Gender Equity in Health Partnerships. *THET Annual Conference*, September 26-27, 2019, pp 20-39.
- **R6** Musoke, D., Kitutu, F.E., Mugisha, L., Amir, S., Brandish, C., Ikhile, D., Kajumbula, H., Kizito, I.M., Lubega, G.B., Niyongabo, F., Ng, B.Y., O'Driscoll, J., Russell-Hobbs, K., Winter, J. and Gibson, L., 2020. A One Health Approach to Strengthening Antimicrobial Stewardship in Wakiso District, Uganda. *Antibiotics*, 9 (11), 764. <https://doi.org/10.3390/antibiotics9110764>.

Key underpinning grants

- **G1** THET/DFID Health Partnership Scheme (ID: A38): Strengthening the Community Health Worker programme for health improvement in Wakiso District, Uganda. £166,440 awarded to Gibson. November 2014 – April 2017.
- **G2** THET/DFID Health Partnership Scheme for Sustainability, Scale-up and Access (ID: AGL14): Strengthening the Community Health Worker programme for health improvement in Wakiso District, Uganda. £119,712 awarded to Gibson. December 2017 – December 2018.
- **G3** Fleming Fund: Commonwealth Partnerships for Antimicrobial Stewardship. £60,000 to Gibson. February 2019 – January 2021.

4. Details of the impact

New CHW training programmes shaped by the NTU research have upskilled a key part of the Ugandan health workforce, significantly widened access to primary health care services in a district of two million people and strengthened antimicrobial stewardship. These impacts would not have happened without the research conducted collaboratively with MakSPH and seen as a '*model Health Partnership*' by THET [S1].

Widening access to primary health care services and treatment for communicable childhood illnesses in underserved and hard-to-reach communities in Uganda

The research-led CHW training programme [G1, G2] upskilled 523 CHWs across the four Wakiso sub-counties of Ssisa, Kasanje, Katabi and Bussi between 2014 and the end of 2018, widening access to healthcare for 216,620 people and resulting in 26,158 young children being treated for illnesses [S1]. There was a focus on reaching underserved and hard-to-reach communities; for example, Bussi is a typically neglected island community and the programme was targeted at women and people living with disabilities. NTU's research has revitalised the CHW framework, transforming it from a failing service into a structured programme capable of fulfilling its original mandate of providing health education and treating childhood illnesses across wide population areas in rural communities [S1-S5, S10]. This is demonstrated by the outcomes from the first phase of the programme [G1] in which 301 CHWs were trained:

- The number of people receiving education from CHWs relating to communicable diseases and healthy practices increased from a baseline figure of 1,327 to 127,011 (Male: 44%; Female: 56%) in April 2017 [S1, S2].
- The number of household visits that CHWs made for health promotion and treatment purposes increased from a baseline of 369 to 40,213 in April 2017 [S1, S2].
- The training of CHWs in rapid diagnostics testing and administration of essential medicines increased treatment of children under five years of age from 78 at baseline to 19,387 in April 2017 [S1, S2].

At the end of the first phase, the Chairperson of Wakiso District said the community of Ssisa sub-county had '*observed improvement in their health status*' and called for the project interventions to be '*scaled up to other areas so as to further support the work of the Ministry of Health*' [S3]. The resulting scale-up programme [G2] engaged 485 CHWs (222 from the new sub-counties) and 58 CHW supervisors (34 from the new sub-counties). Key outcomes included:

- In just six months (June to November 2018), the number of people newly receiving health education from CHWs was 130,608 (Male: 44%; Female: 56%), including 89,609 from the three new sub-counties [S3].
- Over the same period, CHWs involved in integrated community case management of childhood illnesses treated 8,895 children, including 6,771 in the new areas [S3].
- CHWs sensitised 530 people with disabilities on health issues [S3].

THET reported a fall in cases of childhood illnesses as a result of increased access to treatment provided by CHWs. It said: '*As a result of the training which the CHWs had received, they (health clinic staff) were seeing less of the easily treatable childhood cases of malaria, pneumonia and diarrhoea, and could focus their time more on treating more serious cases*' [S1].

Qualitative evidence from local stakeholders also demonstrates the benefits delivered to rural communities. The Chairperson of Wakiso District commented: *'During the course of the project, the CHWs became very active and were visible in the entire sub-county. In fact, some even came to my home and sensitised me on pertinent health issues. Can you imagine a CHW health educating a whole district governor and providing me with information I did not know about?'* [S3]. One community member said the treatment of their grandchildren by CHWs had saved them money and time spent travelling many miles to the nearest hospital [S2]. A local councillor said he was *'happy and surprised'* at the resourcefulness displayed by the CHWs in his own village [S3]. One person living with a disability said: *'I am so happy for the training we received as people with disabilities as it has never happened to have someone gathering us together for health issues. We are only remembered by politicians during election time'* [S3].

Upskilling and motivating the community health workforce through new training programmes and proactive knowledge exchange

Three months after completing the first phase of the new training programme [G1], 98% of CHWs (from a baseline of zero) reported that they felt 'very competent' (68%) or 'competent' (30%) to carry out their work among the community, having demonstrated adequate knowledge and skills in their face-to-face interactions [S2]. A final evaluation at the end of G2, involving 485 CHWs, showed that 97.5% of CHWs met the competency criteria for a range of health interventions, including the diagnosis and management of malaria, diarrhoea and pneumonia [S3]. CHWs who felt motivated to carry out the work rose from 46.6% to 71.1% [S3]. One health centre worker commented that the training programme had *'greatly changed the status of CHWs in this part of the district'* [S3]. THET [S1] highlighted the training programme's multiplier effect: *'The community groups educated by the village health teams have improved not just their own attitudes to health and hygiene, but have passed this information on to their peers, their children, and their husbands.'*

As a result of the project, a male CHW supervisor from the Uganda programme was invited to speak at the 2017 THET conference in London (other speakers included a UK government minister, the UK Chief Medical Officer and WHO's Director General) and to shadow community health organisations in Nottingham. He said the experience had been a key factor in his subsequent promotion from CHW supervisor to district coordinator [S6]. A female CHW from the Uganda programme was invited to present at the International Health Conference in Oxford in 2019 and interact with community organisations in Nottingham [S6].

Strengthening health systems and embedding antimicrobial stewardship

The NTU-led CwPAMS project [G3] to strengthen antimicrobial stewardship (AMS) was carried out in Busiro South Health Sub District (comprising three Wakiso town councils and one sub-county), where a high number of households are engaged in poultry and livestock farming in which antimicrobials are used extensively. Using a One Health approach, 86 health practitioners (HPs), including animal health workers, and 227 CHWs were trained, and around 300 primary schools were sensitised on AMR, AMS and infection prevention and control. The quantitative impact data is corroborated by the peer-reviewed evaluative study in R6. Three months after the training, 92.2% of HPs and 90.3% of CHWs reported enhanced practices, including increased handwashing (57.3% and 81.0% respectively), and 51.5% of HPs reported a reduction in the quantity of unnecessary antibiotics per patient [R6]. Sixty-nine CHWs reported having each educated 50-100 community members on AMR, while 27 (12%) reached over 100 [R6]. Improved prescription practices among HPs led to improved availability of antimicrobials. One health worker at Bussi health centre said: *'I do not just give out antibiotics anymore. For this reason, I am now able to save amoxicillin tablets for patients who really need them, and I also give out the medication in the right dose. This has helped me reduce on the number of times I go to look for medicines from other facilities due to reduced stock-outs at my facility'* [R6].

Working closely with pharmacists at the 200-bed Entebbe Hospital and Buckinghamshire NHS Trust, the research team established a Medicine and Therapeutics Committee (MTC) was set up

at Entebbe Hospital in 2019; this resulted in the development of guidelines and protocols for safe prescription and administration of antibiotics [S7, S8]. An unanticipated impact of the MTC came during the Covid-19 pandemic; it was instrumental in Entebbe's hospital emergency preparedness and response as it developed Standard Operating Procedures for Covid-19 management. Entebbe Hospital was the first facility in the country to handle Covid-19 cases and its director reported that without the MTC and the CwPAMS project as a whole, *'the hospital would not have been well prepared to respond adequately to the pandemic'* [S7].

The CwPAMS project and its partners were successful at the 2020 Antibiotic Guardian Awards, run by Public Health England. The CwPAMS project won the 'multi-country collaboration' and 'infection prevention and control' awards; NTU was highly commended for the 'innovation and technology' award; a partner on the project, a Buckinghamshire NHS Trust pharmacist, won an AMS memorial award [S9]. The project also had a sustained impact on Buckinghamshire NHS Trust. Three of the Trust's pharmacists strengthened their leadership skills and, as a result of CwPAMS, all completed the first Chief Pharmaceutical Officer's Global Health Fellowship (16 fellows in total) [S8].

All of the projects [G1-G3] have contributed to a strengthening of the wider health system in Uganda. A Ministry of Health commissioner said: *'Your partnership approach in strengthening the national CHWs programme in Uganda is highly valued and appreciated. We will continue to support your work in supporting the community health system in Uganda'* [S10]. A Wakiso District Health Officer commented: *'... this project ... has benefited not only the CHWs but the entire health system of Wakiso district because when these motivated CHWs perform and report better, it is the district at large which benefits'* [S3].

5. Sources to corroborate the impact

- S1** Corroborating statement: Grants Officer, Tropical Health and Education Trust (THET) corroborates that the research has transformed the CHWs programme in Wakiso district and led to increased access to primary health care services.
- S2** Health Partnership Scheme final report, November 2014 – April 2017 confirms the research led to an increased number of people receiving health education, increased household visits and increased treatment of childhood illnesses by CHWs.
- S3** Health Partnership Scheme final report: December 2017 – December 2018 confirms that the research has improved the functioning of the health system in Wakiso district through improving CHWs' performance.
- S4** Letter of appreciation: from the District Chairperson of Wakiso District Local Government, Uganda confirms the contribution of the NTU-MakSPH partnership research to the CHW programme and the Uganda health system.
- S5** Transcript of online film featuring interviews with local stakeholders confirms the impacts of the CHW training programme, produced by the BroadLink Group for MakSPH and NTU.
- S6** Testimonial from a Ugandan CHW confirms the benefits of the knowledge exchange visits on professional development and practice.
- S7** Testimonial: Director at Entebbe Regional Referral Hospital verifies that the CwPAMS project led to the establishment of a Medicine and Therapeutics Committee at the hospital.
- S8** Testimonial: Pharmacist at Buckinghamshire NHS Trust verifies enhanced leadership skills and professional development of the 3 pharmacists involved in the CwPAMS project.
- S9** Antibiotic Guardian Awards 2020 Winners and Commended:
<https://antibioticguardian.com/antibiotic-guardian-awards-2020-winners-and-commended/>
- S10** Appreciation Letter: Assistant Commissioner for Health Education and Promotion, Uganda's Ministry of Health verifies and commends that the research for strengthening the health system in Uganda.