

Strengthening the primary care workforce to deliver high-quality care for non-communicable diseases in refugee settings: lessons learnt from a UNHCR partnership

Philippa Harris ¹, Ros Kirkland,¹ Saimon Masanja,² Peter Le Feuvre,¹ Sarah Montgomery,¹ Éimhín Ansbro ³, Michael Woodman,⁴ Matthew Harris ⁵

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For numbered affiliations see end of article.

Correspondence to

Dr Philippa Harris;
philippa.harris@pci-360.com

ABSTRACT

Non-communicable disease (NCD) prevention and care in humanitarian contexts has been a long-neglected issue. Healthcare systems in humanitarian settings have focused heavily on communicable diseases and immediate life-saving health needs. NCDs are a significant cause of morbidity and mortality in refugee settings, however, in many situations NCD care is not well integrated into primary healthcare services. Increased risk of poorer outcomes from COVID-19 for people living with NCDs has heightened the urgency of responding to NCDs and shone a spotlight on their relative neglect in these settings. Partnering with the United Nations Refugee Agency (UNHCR) since 2014, Primary Care International has provided clinical guidance and Training of Trainer (ToT) courses on NCDs to 649 health professionals working in primary care in refugee settings in 13 countries. Approximately 2300 healthcare workers (HCW) have been reached through cascade trainings over the last 6 years. Our experience has shown that, despite fragile health services, high staff turnover and competing clinical priorities, it is possible to improve NCD knowledge, skills and practice. ToT programmes are a feasible and practical format to deliver NCD training to mixed groups of HCW (doctors, nurses, technical officers, pharmacy technicians and community health workers). Clinical guidance must be adapted to local settings while co-creating an enabling environment for health workers is essential to deliver accessible, high-quality continuity of care for NCDs. Ongoing support for non-clinical systems change is equally critical for sustained impact. A shared responsibility for cascade training—and commitment from local health partners—is necessary to raise NCD awareness, influence local and national policy and to meet the UNHCR's objective of facilitating access to integrated prevention and control of NCDs.

INTRODUCTION

Until recently, non-communicable diseases (NCDs) such as hypertension and cardiovascular disease, diabetes and chronic respiratory

SUMMARY BOX

- ⇒ Quality and continuity of care for non-communicable diseases (NCDs) in humanitarian settings is a challenge compounded by the lack of trained healthcare workers (HCW) at the primary care level.
- ⇒ In partnership with the United Nations Refugee Agency, using a collaborative process with in-country partner organisations including Ministries of Health, and supported by a facility-based needs assessment, we adapted clinical guidance and training materials, and delivered peer to peer Training of Trainer (ToT) programmes in 13 countries across Africa and Asia.
- ⇒ The broad diversity of refugee settings and the multiple health partners involved in delivering NCD care requires a context specific approach.
- ⇒ Pragmatic clinical guidance is lacking in many refugee settings but is necessary to improve quality of care.
- ⇒ Training HCWs using a ToT cascade is feasible in refugee settings and can be used to promote task sharing for NCD care.
- ⇒ Health system strengthening and access to basic equipment/investigations and medication is vital to allow successful implementation of clinical guidelines.
- ⇒ Training and professional development of HCWs requires ongoing commitment, supervision and nurture to have a sustained impact and promote a resilient workforce.

diseases, have largely been neglected in humanitarian settings^{1–3} where the main focus of healthcare delivery has been on communicable diseases and immediate life-saving healthcare.^{4 5} There is increasing evidence that NCDs are a major cause of morbidity and mortality in protracted refugee settings, however, there is little evidence to support healthcare interventions to tackle them.^{6 7}

The majority of refugees (86%) are hosted in low-income countries⁸ which also carry the greatest burden of mortality and morbidity from NCDs.⁹ As such national health systems and humanitarian organisations in low-income and middle-income countries are now incorporating NCDs into their essential health programmes.^{5 10 11} The current COVID-19 pandemic has also highlighted the urgent need to improve care for NCDs.^{12 13}

Adequate human resources represents a key element of the health system and training clinical staff on NCD prevention and case management is needed.^{11 14 15} There is, however, little in the literature surrounding training of the primary healthcare workforce to manage NCDs in refugee settings, where availability and experience of medical staff vary widely.³ There is also a need for standardised clinical guidance to help support continuity of care and establish systems to deliver standardised NCD care relevant to the context.^{5 16}

Context of the project

In 2014, the United Nations Refugee Agency's (UNHCR) Global Strategy for Public Health 2014–2018¹⁷ included an objective to: 'Facilitate access to integrated prevention and control of NCDs' at the primary care level, to reduce morbidity and mortality from NCDs among refugee populations.

Primary Care International (PCI) is a social enterprise founded by Red Whale, a British medical education provider. It exists to build capacity in people and primary healthcare systems with expertise rooted in postgraduate in-service medical education in resource-limited settings.¹⁸ Since 2014, PCI has partnered with the UNHCR to improve NCD care for refugee populations across Africa and Asia. Here, we share our experience of adapting clinical guidance and training primary healthcare workers (HCWs) in management of NCDs in refugee settings to highlight the challenges involved and offer future considerations for similar programmes.

WHAT WAS DONE

Approach and timeline

The UNHCR is responsible for ensuring access to healthcare services for persons of concern under their mandate. In countries where refugees are hosted in camps, the UNHCR partners with international/local non-government organisations (NGOs) and/or Ministries of Health (MoH) to deliver health services, overseen by in-country UNHCR Public Health Officers (PHOs). This project was implemented in two phases, contracted by UNHCR Headquarters between 2014 and 2021 to work across 13 refugee hosting countries (table 1). It was facilitated in-country by UNHCR PHOs working with two or three PCI clinical associate trainers alongside NGO and MoH representatives.

Five core elements were applied:

1. Meeting in-country stakeholders, pre-training learning needs and facility-based assessments.

2. Adaptation of clinical guidance and training materials to the local setting.
3. Delivery of a ToT programme.
4. Implementation of a pilot monitoring and evaluation (M&E) framework.
5. Distance mentoring in phase 2 with follow-up visits to some countries (allocated by UNHCR where budget allowed).

Meeting with stakeholders, pre-training learning needs and facility-based assessment

Meetings were held with stakeholders at national and local level, including clinicians and managers working in camps where possible. Locally published literature, available NCD guidelines, WHO NCD country profiles¹⁹ and STEPwise approach to NCD surveillance surveys²⁰ were reviewed. MoH NCD health information systems, monthly reports and clinic/patient-based clinical records were observed.

A pre-training learning needs and facility-based assessment were performed to better understand challenges faced by HCWs. This involved a rapid appraisal of existing health structures and resources using a baseline checklist for NCDs (online supplemental appendix 1), drawing on adapted elements of the WHO Service Availability and Readiness Assessment survey²¹ and reviewing current NCD health service provision including HCW roles, supervision and training activities.

Adaptation of clinical guidance and training materials

Training programme delivery was centred around evidence-based, peer-reviewed PCI 'clinical guides' based on the WHO Package of Essential NCD (PEN) interventions,²² WHO and UNHCR's essential medicines list (EML)²³ and international primary care guidance adapted from sources such as the National Institute for Health and Care Excellence, UK^{24 25} and the European Societies of Cardiology and Hypertension.²⁶ Training materials were adapted to the local context in collaboration with in-country teams to reflect existing national health system structures, protocols, equipment and medication availability aligned with national EMLs. Where appropriate, clinical guides were translated into French, Spanish or Arabic.

Delivery of ToT programme

The ToT lasted 4–5 days, run by practising PCI primary care physicians using a pragmatic peer-to-peer approach. Core clinical material covered priority NCDs as defined by UNHCR. A combination of pedagogical methods was used (table 2).

Participants, chosen by local UNHCR PHOs, included doctors, medical technicians, nurses and pharmacists. Community health workers (CHW) were trained in some UNHCR priority settings where budget allowed. A subset of participants was identified by peers to become NCD 'Champions' and encouraged to make action plans for their health facilities, including cascade training to

Table 1 Countries and camp/settlement/region names, their total refugee population* and health partners involved in the project (in addition to host country Ministries of Health)

Country	Camp/settlement/region	Refugee population*	Health partner
Phase 1 (2014–2016)			
Algeria†			
Bangladesh	Cox's Bazar	276 000	Bangladesh Red Crescent Society International Organisation for Migration Refugee Health Unit (RHU) Research, Training and Management International
Burkina Faso	Ouagadougou, Dori	32 000	Centre du Support en Santé Internationale (CSSI)
Jordan	Zaatari	79 900	Jordan Health Aid Society Médecins sans Frontières (MSF)
Kenya	Dadaab, Kakuma	450 000	Kenya Red Cross Society International Rescue Committee Islamic Relief Kenya Médecins sans Frontières (MSF)
Phase 2 (2017–2021)			
Burundi	Kinama, Musasa, Kikuma, Nyankanda, Bwagiriza	76 000	Gruppo Volontariato Civile (GVC)
Cameroon	East, Adamaou and North regions	436 406	MINSANTE—Ministry of Health, Cameroon FAIRMED African Humanitarian Action (AHA)
Chad	Refugee operations in the east, south and west	478 664	Agence de Développement Economique et Social (ADES) Centre du Support en Santé Internationale (CSSI) International Rescue Committee (IRC)
Democratic Republic of Congo (DRC)	Gbadolite, Bili, Zongo, Bas Uélé and Libenge and Kinshasa	490 243	Association pour le Développement Economique et Social (ADES) L'Association pour le Développement Social et la Sauvegarde de l'Environnement (ADSEE)
Ethiopia	Gambella, Assosa, Shire, Jijiga and Melkadida	800 000	Administration for Refugee and Returnee Affairs (ARRA) Médecins sans Frontières (MSF)
Rwanda	Kigali urban clinic and Kigema, Mugombwa, Kiziba, Mahama 1 and 2, Gihembe and Nyabiheke	139 000	American Refugee Council (ARC) African Humanitarian Action (AHA) Save the Children International (SCI)
Tanzania	Nyarugusu, Nduta, Mtendeli	235 000	Médecins sans Frontières (MSF) Tanzania Red Cross (TRC)
Uganda	Moyo, Arua, Adjumani, Lamwo, Bidibidi, Kiryandongo, Oruchinga, Kyaka II, Nakivale, Rwamwanja	1 228 849	Real Medicine Foundation (RMF) International Rescue Committee (IRC) African Humanitarian Action (AHA) Medical Teams International (MTI)

*Approximate camp/settlement/region total refugee population in 2016 for phase 1 countries, and in 2020 for phase 2 countries.

†Detailed information not available at time of publication.

colleagues using training materials provided, and health system improvements guided by the pilot M&E framework (table 3).

A standardised, 15-question, multiple-choice test was used to evaluate participants' knowledge and understanding, and in some settings clinical skill confidence was rated (using a Likert scale) before and after training. A post-course evaluation questionnaire form was completed.

Each trainee was given access to PCI's NCD website to engage in a dedicated discussion forum, download cascade training materials and clinical guidance. Where internet access was limited, materials were provided on USB sticks. An attendance register was taken each day and a course certificate was presented to those who attended for 80% or more of the course.

Implementation of a pilot monitoring and evaluation framework

The pilot M&E framework tracked local, national, and global PCI/UNHCR project activity (table 3). Information was collected at baseline, mid-point (approximately 6 months), and endpoint (approximately 12 months) after the ToT. Improved clinical practice was assessed by random convenience sampling of 40 patient records with diabetes and hypertension. Notes were reviewed as to whether patients had been diagnosed in line with the WHO/PCI agreed clinical criteria, or to assess the detection and management of complications against the WHO/PCI clinical guidance; for example, has the urine been tested for the presence of protein and/or serum creatinine been measured in the preceding 12 months. Information was then entered into the supervision tool.

Table 2 Content of ToT training materials and training methods used

ToT training materials	Training methods used
Core clinical knowledge-based component	
<ul style="list-style-type: none">▶ Type 2 diabetes▶ Hypertension, hypertension in pregnancy and severe hypertension▶ Asthma▶ Chronic obstructive pulmonary disease▶ Primary and secondary prevention of cardiovascular disease, incorporating WHO risk charts³⁷	Interactive Microsoft PowerPoint presentations Case-based small group discussion Use of PCI clinical guides for each topic
Practical skills component	
Clinical skills	
<ul style="list-style-type: none">▶ Diabetic foot examination▶ Inhaler technique and how to measure peak expiratory flow	Small group teaching Practical peer assisted learning
Communication skills	
<ul style="list-style-type: none">▶ Breaking bad news▶ Motivational interviewing techniques for smoking cessation	Drama, debate, role play
Health education advice	
<ul style="list-style-type: none">▶ Dietary planning for a family in a refugee setting	Small group discussion and peer assessment
Operational skills component	
Leadership, team working and trainer skills	Interactive Microsoft PowerPoint presentation Case based small group discussion
Task sharing, clinic flow, medical records, chronic disease registers, quality improvement	
PCI, Primary Care International; ToT, Training of Trainer.	

An online webinar was used to explain the framework. Forms were available in English and French.

Distance mentoring and follow-up visit

In phase 2, distance mentoring consisted of video calls (quarterly where possible) between PCI, UNHCR PHOs, and occasionally key managers of partner organisations and clinicians, to highlight progress and challenges. A second follow-up face-to face visit was undertaken by PCI between midpoint and endpoint in some settings.

WHAT WAS FOUND

Meeting with stakeholders, pre-training learning needs and facility-based assessment

The diversity of multiple different health partners (table 1) and MoHs influenced the range of commitment to NCD care, resource allocation, and project implementation.

The NCD baseline checklist found most clinics did not collect detailed NCD information or have training or supervision activities for HCW on NCDs. Patients were largely seen in busy general outpatient clinics with no

appointment or recall system, or details on retention in care, with sporadic follow-up. In some areas there was a low awareness of the high prevalence of NCDs—especially hypertension—among HCWs themselves.

Access to WHO essential investigations and equipment was limited in most settings. For example, blood pressure monitors were in short supply or not functional. Lack of capillary blood glucose monitors and test strips, laboratory reagents for creatinine monitoring and facilities for measuring HbA1c were widespread. Consumables such as urine dipsticks were often out of date or stored incorrectly. Inconsistent availability of appropriate NCD medications, including insulin, was evident. Medication ordering for NCDs was done annually and delivery of medicines thereafter was often delayed, inconsistent and sporadic.

Adaptation of clinical guidance and training materials

In some settings, health partners were already using NCD clinical guidelines,²⁷ however, this varied significantly. Some MoH guidelines were out dated or promoted medication not in line with the UNHCR EML. In the absence of appropriate clinical protocols, recommendations focused on the need to distribute PCI's adapted clinical guides to support consistent management of NCDs. By engaging participants and health partners in the process, and with PHO support, the ToT was able to influence future medication procurement to encourage adherence to new guidance; for example, use of glibenclamide was discouraged in favour of gliclazide, bisoprolol was recommended instead of widely available atenolol, amlodipine once daily instead of nifedipine and salbutamol inhalers instead of salbutamol tablets.

Delivery of ToT programme

Across 13 countries, 649 health workers were trained in the initial ToT and received certificates of course completion (table 4). The degree of cascade training undertaken proved difficult to measure, and the definition was clarified (January 2019) to represent 'a session/sessions that amounted to eight hours of teaching, as a single long day of training, or in shorter sessions or 'on-job' training'.

Knowledge gained

In all 13 countries, a mean improvement in pre-training and post-training knowledge tests was seen in participants including doctors, medical officers, nurses and pharmacists (figure 1) who were trained together.

Healthcare worker engagement

Engagement and enthusiasm from participants was generally high, reflected in self-reported confidence ratings when done in some settings, and post-training course evaluation. Consultation skills sessions were well received and often represented a new approach to learning. Rapid staff turnover was consistently reported to be a barrier to the cascade process, with lack of time, organisation of activities or personnel for supervision, and little succession planning or budget for cascade training. Some

Table 3 Pilot monitoring and evaluation framework

Facility level	Data collection tool	Completed by	What was included
Local	Supervision tool and summary scoring sheet	Local clinician in charge of NCD clinic/health facility	Outcomes measured included: Improved clinical practice (review of clinical records). ► Patients with NCDs are diagnosed using correct criteria ► Detection and management of complications according to WHO/PCI clinical guidelines Improved system approach to NCD management. ► An up-to-date NCD register is maintained ► Evidence of medication stock outs ► A call and recall system has been implemented
National	M&E tracker: using the supervision tool and summary scoring sheets, data were inputted at country level using the PCI website	UNHCR PHOs	Outcome indicators included: Improved awareness of NCDs among public health and clinical staff ► Health managers and clinicians can describe why NCDs are important and identify three key features of good NCD care Improved knowledge/skills of clinicians and public health staff on NCDs evidence-based care ► Proportion of trainers with increased knowledge and skills after training ► Proportion of trainers who delivered at least one cascade training ► Numbers of clinicians who received cascaded training ► Increased knowledge and skills for those receiving cascade training (pre-and post-test scores) ► Summary of outcome measures in supervision tool above
Global	Master Comparison Table	PCI	A summary of baseline, midpoint and endpoint data, from the M&E tracker, for each country/region was collated into the Master Comparison Table
M&E, monitoring and evaluation; NCD, non-communicable disease; PCI, Primary Care International; PHO, Public Health Officer; UNHCR, United Nations Refugee Agency.			

HCWs reported an inability to leave their camp without a permit as a restrictive factor to accessing training.

Action planning by NCD champions that was SMART (specific, measurable, attainable, realistic, timely) was a

valuable feature of training workshops. For example, in Tanzania an interdisciplinary NCD management monthly team meeting was set up in one facility. Additionally, an exchange visit between camps run by two different

Table 4 Total number of healthcare workers directly trained in each country

Country	Primary healthcare medical practitioners*	Nurses	Community healthcare workers	Other†	Professional cadre not specified
Algeria	28	31			
Bangladesh	23	26			
Burkina Faso	27	17	40		
Burundi	11	20		1	
Cameroon	13	18		1	
Chad	12			1	
DRC	7	9			3
Ethiopia	8	13			56
Jordan	40	42			
Kenya	39	2	63		
Rwanda	3	1		3	20
Tanzania	22				
Uganda	44	5			
Total	277	184	103	6	79

*Includes doctors, medical/clinical officers.

†Includes lab technician, pharmacist, Public Health Officer, health partner coordinator.
DRC, Democratic Republic of Congo.

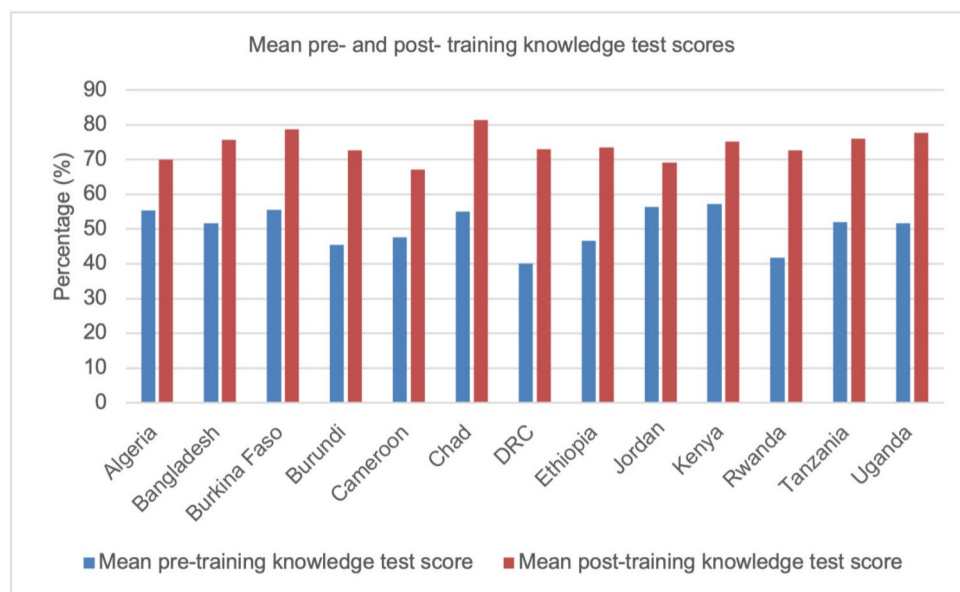


Figure 1 Mean pre-and post-training knowledge test scores by country, combined for all healthcare worker cadres.

health partners with differing resources and capacity was arranged by participants and facilitated by UNHCR, its aim to provide peer-to-peer learning and promote engagement through case-based discussion and meetings using WhatsApp. This provided a welcome opportunity for learning beyond the cascade model.

Implementation of pilot monitoring and evaluation framework

Despite repeated efforts by PCI and UNHCR, quality of engagement, timely submission and accuracy of data submitted was variable. However, in six out of eight phase 2 countries an improvement in clinical practice was reported using correct diagnostic criteria, an up-to-date patient register for NCDs was subsequently maintained, a call and recall system was implemented and an improvement of the overall average supervision score was seen. All eight countries reported a fall in stockouts of three essential medicines.

Distance mentoring and follow-up visits

Eleven WhatsApp groups were established across the eight phase 2 countries, with 200 users, of whom 141 (70%) were active soon after training. These stimulated participants to share cases and supported cascade training initially, particularly where a strong group identity had been established during training.

The PCI NCD Training website was used by 287 participants, of whom 45% (128) downloaded training materials. Unreliable internet connectivity limited the website's value in some settings.

Follow-up visits of 1–2 weeks' duration occurred in only 6 out of 13 countries due to limited funding or security concerns. Depending on need, refresher training, mentoring of HCWs in facilities and programmatic support for health systems strengthening at camp and partner level was provided.

WHAT WAS LEARNT

Strengths of the project

Through its wide geographical reach and contact with multiple different government departments and NGOs, this project has increased awareness and contributed to initial steps to improve delivery of NCD care in refugee settings.

Our experience echoed previous findings that clinical guidance for NCDs in humanitarian settings is often absent or insufficient.^{2 3 7} We were able to promote use of evidence based clinical guidance in managing NCDs which is likely to improve effectiveness of NCD care in humanitarian settings.^{3 15}

However, training HCWs cannot be delivered as a 'one size fits all' approach. With the number of refugees increasing in every region of the world, humanitarian settings vary significantly.²⁸ The epidemiology of NCDs, duration of displacement, security constraints, competing priorities and health system characteristics in the host country, including availability and experience of medical staff affects delivery of NCD care.^{3 5 15} For example, remote rural camps in Tanzania present unique health access challenges in contrast to Zaatari camp in Jordan—home to many thousands of Syrian refugees, with high background rates of NCDs in the host country.^{29 30} Ongoing security, financial and logistical constraints in Democratic Republic of Congo shortened training to 4 days, while poor internet connectivity restricted training activities and use of M&E tools in some settings. This reinforced the need for effective multi-stakeholder collaboration and in-depth learning and facility-needs assessment prior to training. A flexible, realistic, and context specific approach to coadapting clinical guidance and training materials was used to encourage genuine engagement and meaningful adoption of new guidelines into practice.

Insufficient health workers has been identified as a barrier to NCD intervention delivery.³¹ ToT programmes are a well-known, cost effective and realistic way to increase capacity of health workers by improving knowledge and facilitating task sharing^{32–34} and could help decentralise NCD care to the primary care level.¹⁶ We were able to train different cadres of HCW together to promote task sharing, although formal job descriptions may have to be adapted locally by MoH to facilitate this. Future training should ensure CHW are prioritised in a cascade model that is adapted appropriately, and community recipients of care should be consulted.

The ToT programme created a platform for dialogue whereby local HCWs were empowered to influence health system improvements beyond the ToT. Engaging the multidisciplinary team in operational aspects of NCD care enabled new perspectives to be shared and promote effective teamwork. Uniformity of clinical guidance enhanced the cascade process, helped facilitate knowledge sharing and interorganisational communication. UNHCR PHOs and clinicians were able to influence pharmacy procurement pathways to reduce stock outs by improving medication and equipment consumption and forecasting, and therefore improve adherence to evidence-based guidelines for NCDs in line with the UNHCR EML. Training discussions focused on clinical priority setting including relevant screening activities and prioritisation of laboratory investigations appropriate to each setting, as well as consolidating referral pathways necessary for emergency NCD care.¹⁴ The positive contribution created by peer-to-peer learning across camps and communities of practice should be encouraged.

Limitations

Although a transfer of knowledge was demonstrated initially, without on-going commitment and nurture this may not translate into a more capable workforce.³³ Pre-training and post-training knowledge tests showed improvements; however, the range of results around the mean, and the association with HCW cadre was not reported, restricting more meaningful interpretation. Confidence ratings may be subject to reporting bias while pre- and post-training knowledge tests are unable to measure programmatic, consultation or trainer skills. Future ToT programmes may benefit from incorporating on-job training for improved effectiveness.³⁵

For sustainability of the cascade model to be achieved wider issues that can facilitate or prevent continuation of training need to be considered.³³ This includes selection of training participants based on ability, experience and soft skills.³³ Cascade training should occur promptly to ensure momentum, and quality of knowledge gained is maintained. A clear expectation of cascade training, with budget and time allocation to support it, is needed. The short timeframe, limited by funding, restricted opportunities for supervision and complete transfer of training skills. Additionally, stock outs of medication and poor

equipment availability persisting after the ToT disincentivised adherence to clinical guidance.

Competing clinical priorities on HCWs, often working far from home in stressful environments, requires significant personal sacrifice and commitment and should be recognised to ensure staff engagement and retention. Regular follow-up, refresher training and supportive supervision and evaluation of staff performance should also be set up.¹⁵ Continuous professional development on NCD management that is appropriately incentivised should be incorporated into job descriptions of HCWs in humanitarian settings contractually with health partners, whereby project managers recognise increased input from HCWs in the cascade process.

Unfortunately, reliability and validity of data entered into the M&E supervision tool restricted analysis, despite some health system indicators showing improvements in delivery of NCD care. As the integration of NCD care becomes more established and data collection more widespread, it will be easier to gather meaningful M&E. Improvement of data collected systematically on NCD patients into the UNHCRs tablet-based Integrated Refugee Health Information System will be an important step in facilitating how programmes can be evaluated in future.

Future recommendations and further work

Through various challenges experienced in this project valuable lessons have been learnt. Table 5 outlines future recommendations to consider in training of HCWs on NCDs in refugee settings. With limited evidence on health intervention research in humanitarian settings⁶ measuring effectiveness of the ToT programme is needed, but likely to be challenging where data collection is limited. Assessing clinical effectiveness of training within a health system that is lacking many of the resources required to implement new knowledge and practice is challenging. Significant confounding influences, and varying attitudes and behaviours that determine how participants may learn and apply knowledge means monitoring patient outcomes only may not be fully representative. To reflect this complexity, triangulation of multiple sources of data is required (ie, preknowledge/postknowledge and skills test results, clinical record review and health system indicators including availability of essential medications and equipment and the provision of healthcare workers). Further qualitative research on facilitators and barriers experienced by HCWs to improve care for NCDs in different settings is needed.³⁶ Additionally, we would recommend following participants more formally using knowledge and skills testing after 6 months and 12 months to guide the need for refresher training, although high turnover of clinical staff and ongoing funding and supervision are challenges that need to be considered to achieve this. Questions on how the training has changed practice over time, and what services and clinical guidelines have been implemented following training may be more informative. Future evaluation of this project will

Table 5 Summary of future recommendations to consider for training of HCWs on NCDs in refugee settings

Challenge being addressed	Recommendation
Staff retention and engagement	<ul style="list-style-type: none"> ▶ Ensure detailed induction by health partners outlining NCD care objectives for all clinical staff ▶ Ensure selection criteria of ToT participants is based on ability, experience and soft training skills (eg, enthusiasm, patience, insight, confidence, communication skills, willingness to teach, leadership, capacity for reflection, ability to be constructively critical, motivation to help others and offer long term commitment)³³ ▶ Ensure participants have a clear expectation of the cascade process and it is included in job descriptions ▶ Empower NCD champions to motivate staff and push for quality of care in local projects ▶ Ensure time allocated for staff mentoring, supervision, continuing professional development opportunities and consider accreditation ▶ Ensure succession planning to prepare for high staff turnover ▶ Future qualitative work needed to evaluate the barriers, challenges and facilitators to effective staff engagement in NCD care in this setting
Barriers to cascade training	<ul style="list-style-type: none"> ▶ Define cascade training and strategy from the outset ▶ Ensure ongoing protected time and supervision of participants to become confident trainers and develop soft training skills ▶ Consider extending length of ToT workshop to embed knowledge and training skills and incorporate clinical on job training where possible ▶ Provide adequate resources/budget for training equipment, travel, cost of refreshments and per diem incentives if necessary ▶ Enable logistics to encourage peer to peer learning across camp settings if appropriate ▶ Explore options for access to digital learning content to be scaled across larger numbers of healthcare workers on an ongoing basis for induction and refresher purposes
Lack of NCD champions and local leadership	<ul style="list-style-type: none"> ▶ Ensure ownership of cascade model transferred to local leadership with support to coordinate activities between organisations ▶ Create meaningful roles for trained participants as NCD champions scaling across camp and regional borders to encourage peer moderation of communities of practice ▶ Include NCDs and the ToT strategy in the mandatory induction of UNHCR PHO staff ▶ Include NCDs in any regional workshops to disseminate training information and encourage strategic planning
Competing clinical priorities	<ul style="list-style-type: none"> ▶ Prioritise funding and healthcare provision for NCDs alongside other communicable diseases in refugee settings ▶ Address implementation challenges in the context of competing priorities, such as dedicated days for NCD patient clinics and adequate staff capacity to manage clinical workload
Weak local health systems	<ul style="list-style-type: none"> ▶ Support national health system strengthening and engagement with development partners alongside WHO SARA²¹ to manage NCDs effectively ▶ Ensure ongoing discussions between managers and clinicians to review health system and operational issues to enable improved quality of care alongside clinical guidance
Availability of essential medications and equipment	<ul style="list-style-type: none"> ▶ Continue to review medication and equipment procurement needs and supply processes to prioritise the timely availability of medications for NCDs alongside the WHO/UNHCR EML²³
Lack of simple but appropriate monitoring and evaluation tools	<ul style="list-style-type: none"> ▶ Improve data systems and M&E tools to align with multiagency/UNHCR strategic goals ▶ Consider further research/analysis of clinical outcomes in response to HCW training
EML, essential medicines list; HCW, healthcare workers; M&E, monitoring and evaluation; NCD, non-communicable disease; PHO, Public Health Officer; SARA, Service Availability and Readiness Assessment; ToT, Training of Trainer; UNHCR, United Nations Refugee Agency.	

be an important step to understand this and assess attrition of any gains lost over time.

In the context of COVID-19, the rise in remote digital/e-learning may help health partners fill the gap in providing HCW education via blended learning, both online and offline. This is likely to be more sustainable and scalable than face-to-face training. ToT programmes should also be extended to include other neglected NCD topics, such as chronic kidney disease, and palliative care.

CONCLUSIONS

As far as we are aware this paper describes the first multisite ToT programme for primary HCWs on NCDs in refugee settings. We have shown ToT programmes are a feasible way to address the lack of trained HCW in primary care to deliver high quality and continuity

of NCD care in diverse resource constrained refugee settings. ToT programmes can engage multidisciplinary teams to promote task sharing and influence health system improvements. Locally adapted provision of clinical guidance is a vital step in their roll out. The cascade training process needs to be supported and supervised with mutual responsibility generated across stakeholders, with necessary funding, to succeed in implementation and sustainability. The challenge is to create genuine engagement, realise and measure improvements to clinical practice, and to change systems and processes in ways that will sustain these improvements, whereby the importance of cocreating an enabling environment for HCWs to deliver accessible, high-quality care is prioritised.

Author affiliations

¹Primary Care International, Oxford, UK

²School of Public Health, Catholic University of Health and Allied Sciences (CUHAS), Bugando Medical Centre, Mwanza, Tanzania

³Centre for Global Chronic Conditions, London School of Hygiene & Tropical Medicine, London, UK

⁴The Office of the United Nations High Commissioner for Refugees, Geneva, Switzerland

⁵Department of Primary Care and Public Health, Imperial College London, London, UK

Twitter Éimhin Ansbro @EimhinA and Matthew Harris @drmattharris

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ORCID iDs

Philippa Harris <http://orcid.org/0000-0002-9222-7864>

Éimhin Ansbro <http://orcid.org/0000-0002-2291-1652>

Matthew Harris <http://orcid.org/0000-0002-0005-9710>

REFERENCES

- 1 Keasley J, Oyebo O, Shantikumar S, *et al*. A systematic review of the burden of hypertension, access to services and patient views

of hypertension in humanitarian crisis settings. *BMJ Glob Health* 2020;5:e002440.

- 2 Kehlenbrink S, Smith J, Ansbro Éimhin, *et al*. The burden of diabetes and use of diabetes care in humanitarian crises in low-income and middle-income countries. *Lancet Diabetes Endocrinol* 2019;7:638–47.
- 3 Jobanputra K, Boule P, Roberts B, *et al*. Three steps to improve management of noncommunicable diseases in humanitarian crises. *PLoS Med* 2016;13:e1002180–e80.
- 4 Miliband D, Tessema MT. The unmet needs of refugees and internally displaced people. *Lancet* 2018;392:2530–2.
- 5 Aebischer Perone S, Martinez E, du Mortier S, *et al*. Non-communicable diseases in humanitarian settings: ten essential questions. *Confl Health* 2017;11:17.
- 6 Blanchet K, Ramesh A, Frison S, *et al*. Evidence on public health interventions in humanitarian crises. *Lancet* 2017;390:2287–96.
- 7 Ruby A, Knight A, Perel P, *et al*. The effectiveness of interventions for non-communicable diseases in humanitarian crises: a systematic review. *PLoS One* 2015;10:e0138303.
- 8 UNHCR. Figures at a glance, 2021. Available: <https://www.unhcr.org/en-us/figures-at-a-glance.html> [Accessed Aug 2021].
- 9 WHO. Non communicable diseases key facts, 2021. Available: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases> [Accessed May 2021].
- 10 Ansbro Éimhin, Homan T, Prieto Merino D, *et al*. Clinical outcomes in a primary-level non-communicable disease programme for Syrian refugees and the host population in Jordan: a cohort analysis using routine data. *PLoS Med* 2021;18:e1003279.
- 11 The Sphere Handbook; humanitarian charter and minimum standards in humanitarian response, 2018. Available: <https://handbook.spherestandards.org/en/sphere/#ch001> [Accessed Aug 2021].
- 12 Nikoloski Z, Alqunaibet AM, Alfawaz RA, *et al*. Covid-19 and non-communicable diseases: evidence from a systematic literature review. *BMC Public Health* 2021;21:1068.
- 13 World Health Organization. Covid-19 significantly impacts health services for noncommunicable diseases, 2020. Available: <https://www.who.int/news/item/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases> [Accessed Mar 2021].
- 14 Slama S, Kim H-J, Roglic G, *et al*. Care of non-communicable diseases in emergencies. *Lancet* 2017;389:326–30.
- 15 Bausch FJ, Beran D, Hering H, *et al*. Operational considerations for the management of non-communicable diseases in humanitarian emergencies. *Confl Health* 2021;15:9.
- 16 Kane J, Landes M, Carroll C, *et al*. A systematic review of primary care models for non-communicable disease interventions in sub-Saharan Africa. *BMC Fam Pract* 2017;18:46.
- 17 UNHCR. Global strategy for public health 2014–18, 2014. Geneva, Switzerland. Available: <https://www.unhcr.org/protection/health/530f12d26/global-strategy-public-health-unhcr-strategy-2014-2018-public-health-hiv.html> [Accessed Aug 2021].
- 18 Primary care international. Available: <https://pci-360.com/> [Accessed May 2021].
- 19 World Health Organization. Non-Communicable diseases country profiles, 2018. Available: <https://www.who.int/nmh/countries/en/#T> [Accessed May 2021].
- 20 World Health Organization. STEPwise approach to NCD risk factor surveillance (STEPS), 2017. Available: <https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps> [Accessed Aug 2021].
- 21 World Health Organization. Service availability and readiness assessment (SARA) reference manual, 2015. Available: https://apps.who.int/iris/bitstream/handle/10665/149025/WHO_HIS_HSI_2014_5_eng.pdf;jsessionid=366572B098F29EE3C4EB4CF63D508D7C?sequence=1 [Accessed Aug 2021].
- 22 World Health Organization. *Package of essential non-communicable (PEN) disease interventions for primary Health care in low-resource settings*. Geneva, 2010. [https://www.who.int/publications-detail-redirect/who-package-of-essential-noncommunicable-\(pen\)-disease-interventions-for-primary-health-care](https://www.who.int/publications-detail-redirect/who-package-of-essential-noncommunicable-(pen)-disease-interventions-for-primary-health-care)
- 23 World Health Organization. Model list of essential medicines 2019. Available: <https://www.who.int/groups/expert-committee-on-selection-and-use-of-essential-medicines/essential-medicines-lists> [Accessed Aug 2021].
- 24 NICE. Type 2 diabetes in adults: management, 2019. Available: <https://www.nice.org.uk/guidance/ng28> [Accessed Aug 2021].
- 25 NICE. Hypertension in adults: diagnosis and management, 2019. Available: <https://www.nice.org.uk/guidance/ng136> [Accessed Aug 2021].

- 26 Williams B, Mancia G, Spiering W, *et al.* 2018 ESC/ESH guidelines for the management of arterial hypertension. *Eur Heart J* 2018;39:3021–104.
- 27 MSF. MSF OCA NCD guidelines v4 2018.pdf, 2018. Available: <https://fieldresearch.msf.org/handle/10144/619201> [Accessed Aug 2021].
- 28 UNHCR. Global Trends - Forced Displacement in 2020. Available: <https://www.unhcr.org/flagship-reports/globaltrends/> [Accessed Aug 2021].
- 29 Collins DRJ, Jobanputra K, Frost T, *et al.* Cardiovascular disease risk and prevention amongst Syrian refugees: mixed methods study of Médecins sans Frontières programme in Jordan. *Confl Health* 2017;11:14.
- 30 Akik C, Ghattas H, Mesmar S, *et al.* Host country responses to non-communicable diseases amongst Syrian refugees: a review. *Confl Health* 2019;13:8.
- 31 Shah S, Munyuzangabo M, Gaffey MF, *et al.* Delivering non-communicable disease interventions to women and children in conflict settings: a systematic review. *BMJ Glob Health* 2020;5:e002047.
- 32 Joshi R, Alim M, Kengne AP, *et al.* Task shifting for non-communicable disease management in low and middle income countries--a systematic review. *PLoS One* 2014;9:e103754.
- 33 Mormina M, Pinder S. A conceptual framework for training of trainers (ToT) interventions in global health. *Global Health* 2018;14:100.
- 34 Some D, Edwards JK, Reid T, *et al.* Task shifting the management of non-communicable diseases to nurses in Kibera, Kenya: does it work? *PLoS One* 2016;11:e0145634–e34.
- 35 Rowe AK, Rowe SY, Peters DH, *et al.* The effectiveness of training strategies to improve healthcare provider practices in low-income and middle-income countries. *BMJ Glob Health* 2021;6:e003229.
- 36 Ansbro Éimhín, Homan T, Qasem J, *et al.* MSF experiences of providing multidisciplinary primary level NCD care for Syrian refugees and the host population in Jordan: an implementation study guided by the RE-AIM framework. *BMC Health Serv Res* 2021;21:381.
- 37 WHO CVD Risk Chart Working Group. World Health organization cardiovascular disease risk charts: revised models to estimate risk in 21 global regions. *Lancet Glob Health* 2019;7:e1332–45.