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Managing hypertension in a Rohingya refugee camp: a brief report

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ABSTRACT

Non-communicable diseases have overtaken communicable diseases as the most common cause of death worldwide, with the majority of these deaths in low-income and middle-income countries. Hypertension alone causes over nine million deaths per year.

Since 2017, around 750 000 Rohingya refugees have fled violence in Myanmar into Cox's Bazar District in Bangladesh. We describe a quality improvement project focused on the management of hypertension in Rohingya refugees in three primary health facilities within the Rohingya refugee camps. The aim of the project was to create a sustainable hypertension service within existing primary care services.

A number of plan–do–study–act cycles were performed to improve care, with methods including: creating a specialised clinic, writing a treatment algorithm, training of pharmacists, engaging community health workers and educational programmes for staff and patients.

In 2020, 554 patients were engaged in the new hypertension service. Of these, 358 (64.6%) returned for follow-up at least once. Mean systolic blood pressure (BP) was 141.7 (SD 60.0) mm Hg and mean diastolic BP was 88.1 (SD 11.1) mm Hg. Patients engaged in treatment had a significant reduction of BP of 8.2 (95% CI 5.4 to 11.0)/6.0 (95% CI 4.1 to 7.9) mm Hg (p<0.0001).

Our project shows that it is possible to create a hypertension service in a challenging humanitarian crisis, which can successfully improve the control of hypertension, although retention in care can be difficult.

INTRODUCTION

Since 2017, around 750 000 Rohingya refugees have fled violence in Myanmar into Cox's Bazar District in Bangladesh.[1] As the humanitarian response has become more established, care has focused more on the management of chronic, non-communicable diseases (NCDs), such as hypertension, alongside traditional objectives such as vaccination and nutrition.

The humanitarian community has recognised the imperative of managing NCDs within the humanitarian setting.[2–6] Hypertension is a risk factor for cardiovascular and cerebrovascular disease and reduction in blood pressure (BP) is important in preventing premature mortality and morbidity.[7 8] Hypertension affects over a billion people, with around two-thirds living in low-income and middle-income countries (LMICS),[9] and caused over 9 million deaths in 2010.[7] Other studies of refugee populations have shown a 76% follow-up rate in Palestine[10] and another with controlled BP in only 50% after 6 months in Lebanon.[11] We designed a quality improvement project (QIP) focused on the management of hypertension.

PROJECT SETTING

The Rohingya refugee camps in Cox's Bazar are the largest in the world.[12] Healthcare is provided by national facilities, United Nations agencies and non-governmental organisations (NGOs). Challenges facing refugees have included violence, nutrition, sanitation, fires, monsoon, several epidemics[13] and the COVID-19 pandemic.

The QIP was designed by a multidisciplinary team of international volunteer healthcare workers in conjunction with Bangladeshi doctors, nurses and pharmacists and Rohingya community health workers (CHWs). The aim of our QIP was to create a sustainable NCD service at the three primary health facilities run by a partnership of two NGOs: Food for the Hungry (FH) and Medical Teams International (MTI).

DESIGN AND STRATEGY

A number of plan–do–study–act (PDSA) cycles were performed to improve care. PDSA-1 involved setting up the dedicated hypertension clinic to run within existing primary healthcare services. We believed this was important, rather than treating patients in an ad-hoc fashion with the rest of primary services, so that we could encourage regular follow-up. Waiting times in the facilities were also very long and we aimed to reduce these in a dedicated clinic.

A treatment algorithm, based on the WHO 'Package of Essential NCD' guidance[14]

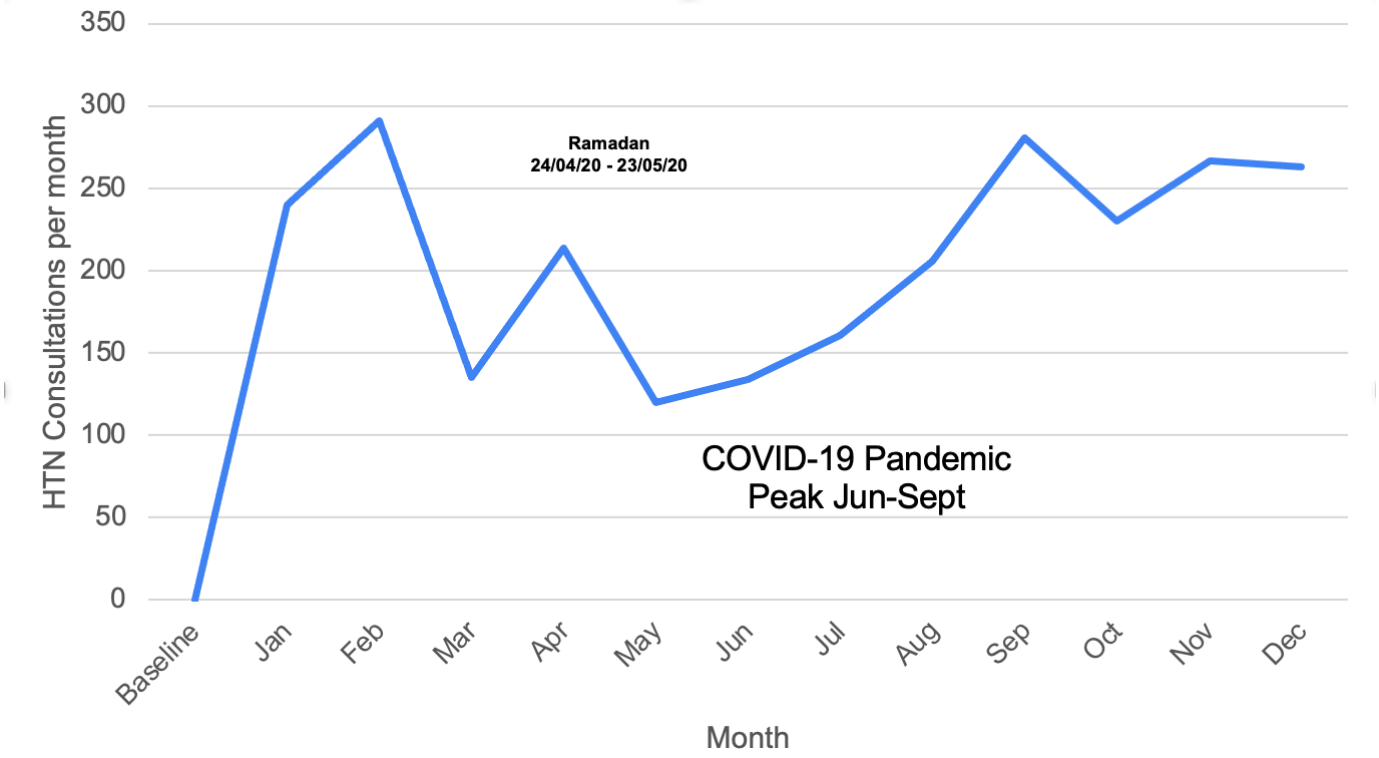

Figure 1 The number of consultations in the NCD clinic per month for hypertension during 2020. HTN, hypertension; NCD, non-communicable disease.

and adapted for locally available resources, was created (online supplemental appendix 1). The algorithm was introduced via teaching sessions, over WhatsApp and a podcast (available on https://soundcloud.com/user-137083346). Nurses were trained to ensure a consistent approach to BP measurement.

After the first pilot clinics, it was noted that 12 of 25 patients did not return for follow-up and we addressed this with PDSA-2. There was already a robust system in place of Rohingya CHWs visiting each home regularly and we decided to use them to encourage patients to return regularly for follow-up. They also provided health education and lifestyle management in regards to NCDs.

During the COVID-19 pandemic, patient numbers fell, as seen in figure 1. We addressed this in PDSA-3 and aimed to retain patients in care by giving longer prescriptions without the need to see a healthcare professional between refills. Figure 1 shows the quick return to prepandemic levels with this change.

Throughout the project, we also made improvements in the pharmacy to improve medication supply to avoid stock-outs, which had been a problem in the first clinics. Daily reports of medication use were digitalised to make monthly consumption reports more accurate. This meant that reliable projections could be made quarterly so medications could be ordered. Pharmacists also attended training on medicines management provided by the United Nations High Commissioner for Refugees agency.

Finally, we presented our project to other NGOs so that other groups in the camps could learn from our experience.

RESULTS

In 2020, 554 patients were seen for hypertension in the NCD service of FH/MTI in the Rohingya refugee camps. Of these, 358 (64.6%) returned for follow-up at least once that year. In total, there were 2712 consultations for the 554 patients (4.9 (SD 5.8) consultations per patient). Figure 1 shows the number of consultations per month in the hypertension clinic.

The mean first recorded BP was 145.6 (SD 15.3)/91.6 (SD 11.1) mm Hg. The most recent mean BP while on treatment taken during the study year was 137.4 (SD 15.5)/85.6 (SD 10.3) mm Hg, a significant reduction of 8.2 (95% CI (CI) 5.4 to 11.0)/6.0 (95% CI 4.1 to 7.9) mm Hg ($p<0.0001$).[15]

DISCUSSION

Given the burden of NCDs on LMICs, it is essential that NCD services are provided, including in humanitarian crises.[2–6] To our knowledge, this is the first study to examine the treatment of hypertension in the Rohingya refugee crisis.

Our project aim was to create a sustainable, specialised hypertension clinic in this humanitarian crisis. We were successful in this as the clinic is still running over 2 years after initiation, providing care for over 200 patients per month.

The difference between mean BP for those who were started on treatment and returned to the clinic was significantly reduced by 8/6 mm Hg, although this includes

patients who were on treatment for a different amount of time, which is a limitation of the data.

A strength of our project was its sustainability. It was recognised that the project had to involve national staff, local champions and refugee volunteers from the outset for effective change. After the initial joint setup phase, the operation of the clinic was almost entirely continued by national staff. Integrating the clinic within existing primary care services was also a key strength.

Our results demonstrate the difficulty in retaining patients in care with 35.4% not returning after the first visit, possibly because of the prevalent cultural misunderstanding about the chronic nature of the illness, its asymptomatic nature, dependency on traditional medications or competing priorities for refugees. Another challenge was the COVID-19 pandemic, which affected service utilisation. To encourage return to clinic, we found it useful to use CHWs. A future change will hopefully be to provide several postdated prescriptions to allow patients to collect medication without needing to be seen by a doctor every time.

In conclusion, our project shows that it is possible to create a hypertension clinic integrated into a primary care service in a challenging humanitarian crisis which could lead to significant improvement in the control of hypertension although retention in care remains an issue.

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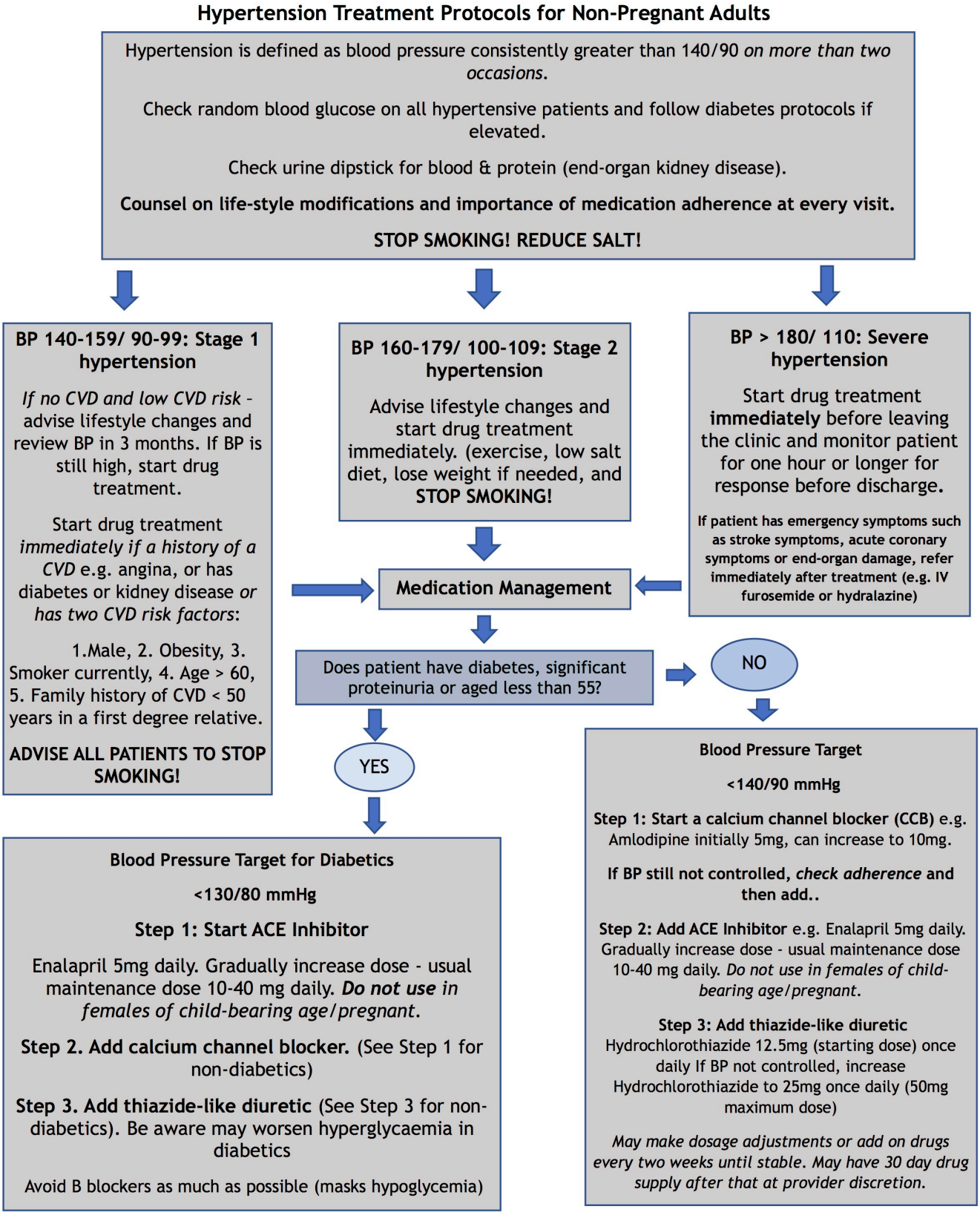
REFERENCES

1 Saiyed S, Siddiqui F, Gunja A. Providing healthcare in the camps of the Rohingya, 2018. Available: https://blogs.bmj.com/bmj/2018/12/31/providing-healthcare-in-the-camps-of-the-rohingya/ [Accessed 23 Jul 2021].
2 Demaio A, Jamieson J, Horn R, *et al*. Non-Communicable diseases in emergencies: a call to action. *PLoS Curr* 2013;5. doi:10.1371/currents.dis.53e08b951d59ff913ab8b9bb51c4d0de. [Epub ahead of print: 06 Sep 2013].
3 WHO. Noncommunicable diseases in emergencies, 2016. Available: https://apps.who.int/iris/rest/bitstreams/908919/retrieve [Accessed 23 Jul 2021].
4 Slama S, Kim H-J, Roglic G, *et al*. Care of non-communicable diseases in emergencies. *Lancet* 2017;389:326–30.
5 Keasley J, Oyebode 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.
6 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.
7 Lim SS, Vos T, Flaxman AD, *et al*. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the global burden of disease study 2010. *The Lancet* 2012;380:2224–60.
8 Ibrahim MM, Damasceno A. Hypertension in developing countries. *The Lancet* 2012;380:611–9.
9 Mills KT, Stefanescu A, He J. The global epidemiology of hypertension. *Nat Rev Nephrol* 2020;16:223–37.
10 Khader A, Farajallah L, Shahin Y, *et al*. Cohort monitoring of persons with hypertension: an illustrated example from a primary healthcare clinic for Palestine refugees in Jordan. *Trop Med Int Health* 2012;17:1163–70.
11 Kayali M, Moussally K, Lakis C, *et al*. Treating Syrian refugees with diabetes and hypertension in Shatila refugee cAMP, Lebanon: Médecins sans Frontières model of care and treatment outcomes. *Confl Health* 2019;13:12.
12 UNHCR, 2021. Available: https://data2.unhcr.org/en/situations/myanmar_refugees
13 Mair L, Relan P, Hamilton DO, *et al*. Lessons learned from an under-reported mumps epidemic among Rohingya refugees in COX's Bazar district, Bangladesh. *Trans R Soc Trop Med Hyg* 2020;114:635–8.
14 WHO. Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings, 2011. Available: https://www.who.int/ncds/management/Protocol1_HeartAttack_strokes_kidneyDisease.pdf?ua=1
15 Medcalc. Comparison of means calculator version 20.009. Available: https://www.medcalc.org/calc/comparison_of_means.php


Hypertension Treatment Protocols for Non-Pregnant Adults
Hypertension is defined as blood pressure consistently greater than 140/90 on more than two occasions.
Check random blood glucose on all hypertensive patients and follow diabetes protocols if elevated.
Check urine dipstick for blood & protein (end-organ kidney disease).
Counsel on life-style modifications and importance of medication adherence at every visit.
STOP SMOKING! REDUCE SALT!
BP 140-159/ 90-99: Stage 1 hypertension
If no CVD and low CVD risk - advise lifestyle changes and review BP in 3 months. If BP is still high, start drug treatment.
Start drug treatment immediately if a history of a CVD e.g. angina, or has diabetes or kidney disease or has two CVD risk factors:
1.Male, 2. Obesity, 3. Smoker currently, 4. Age > 60, 5. Family history of CVD < 50 years in a first degree relative.
ADVISE ALL PATIENTS TO STOP SMOKING!
BP 160-179/ 100-109: Stage 2 hypertension
Advise lifestyle changes and start drug treatment immediately. (exercise, low salt diet, lose weight if needed, and STOP SMOKING!
BP > 180/ 110: Severe hypertension
Start drug treatment immediately before leaving the clinic and monitor patient for one hour or longer for response before discharge.
If patient has emergency symptoms such as stroke symptoms, acute coronary symptoms or end-organ damage, refer immediately after treatment (e.g. IV furosemide or hydralazine)
Medication Management
Does patient have diabetes, significant proteinuria or aged less than 55?
NO
YES
Blood Pressure Target
<140/90 mmHg
Step 1: Start a calcium channel blocker (CCB) e.g. Amlodipine initially 5mg, can increase to 10mg.
If BP still not controlled, check adherence and then add..
Step 2: Add ACE Inhibitor e.g. Enalapril 5mg daily. Gradually increase dose - usual maintenance dose 10-40 mg daily. Do not use in females of child-bearing age/pregnant.
Step 3: Add thiazide-like diuretic
Hydrochlorothiazide 12.5mg (starting dose) once daily If BP not controlled, increase Hydrochlorothiazide to 25mg once daily (50mg maximum dose)
May make dosage adjustments or add on drugs every two weeks until stable. May have 30 day drug supply after that at provider discretion.
Blood Pressure Target for Diabetics
<130/80 mmHg
Step 1: Start ACE Inhibitor
Enalapril 5mg daily. Gradually increase dose - usual maintenance dose 10-40 mg daily. Do not use in females of child-bearing age/pregnant.
Step 2. Add calcium channel blocker. (See Step 1 for non-diabetics)
Step 3. Add thiazide-like diuretic (See Step 3 for non-diabetics). Be aware may worsen hyperglycaemia in diabetics
Avoid B blockers as much as possible (masks hypoglycemia)