

# Experience Sharing on Continuity of Healthcare Services in Internally Displaced Peoples: The Case of Tigray War Crisis

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**Abstract:** The war and siege in Tigray led millions to displace internally. More than three-fourths of the health facilities were either destroyed or not functional as the equipment and other resources were stolen. Furthermore, the remaining functioning health facilities were flooded beyond their capacity, resulting in many patients received treatment late, and ending with complications including life loss. Mekelle City is one of the largest towns with many internally displaced people from different areas of Tigray. To provide services for the most vulnerable populations, 11 IDP clinics were opened for internally displaced people and the surrounding host community in Mekelle. A total of 6732 patients received clinical services, of which 3465 were males. The age of the patients was in ranged of 24 days to 95 years. A total of 364 patients were emergency cases and 428 outbreaks were seen. A total of 722 patients with chronic illnesses received follow-up services, the most common being hypertension (112), diabetes (79), and asthma (70). Overall, 1198 investigations were done and 1339 were referred to higher-level healthcare facilities. Upper respiratory infection (n = 976), acute gastroenteritis (n = 667), and pneumonia (n = 612) were the most common disease conditions in IDP clinics. Antibiotics were the most commonly prescribed medication for 2468 patients, followed by anti-pain/pyretic (1402). This community engagement showed us that, it is possible to continue healthcare services when health facilities get collapsed during crisis owing to the relocation and mobilization of available resources.

**Keywords:** health care, emergency, crisis, war, internally displaced peoples

## Introduction

War is a manmade enemy of the health system with both direct and indirect consequences. The conflict not only destroys the health system but also shunts all the limited resources to weaken health facilities. In addition to the immediate casualties and injury of individuals in the battlefield, it also breaks down the family, society, and culture of the community, causing significant health burden and increased mortality. Data from previous conflict-affected countries showed that, due to displacements, overcrowding, and a shortage of prevention mechanisms, communicable diseases have alarmingly increased with significant mortality.<sup>1,2</sup>

Tigray is one of the states in Ethiopia found in the northern part and had the better health system before the war.<sup>3,4</sup> Since the war and siege broke out in November 2020, thousands of deaths, rapes, and millions were displaced by Ethiopian forces and allies (Eritrean forces, Amhara militia, Amhara fano, and others).<sup>5</sup> Hundreds of civilian's deaths related to direct shelling, air/drone strikes, armed men attack, blasts and landmines were being reported by our clients that were fortunate enough to come to Ayder Comprehensive Specialized Hospital (ACSH) for treatment. Tegar was



displaced in every corner of Tigray; more than 2.5 million were reported to be internally displaced and 5.2 (91%) of the people needed emergency humanitarian assistance.<sup>6</sup> Internally displaced people (IDP) were among the most vulnerable; all were at risk of hunger, lack of shelter, lack of access to clean and potable water, lack of basic medical care, risk of gender-based violence, and other forms of violence (repeated reports of attempted sexual abuse by armed men), and lack of hygiene and sanitation.<sup>1</sup>

More than three-fourths (70–80%) of the health facility were destroyed and looted by the Ethiopian National Defence Forces and their allies (Eritrean Forces, Amhara Fano, and Militia). Due to deliberate health facility destruction and looting, Tigray remained with very limited space to provide health services.<sup>4</sup> Mekelle accommodated more than 150,000 internally displaced people (IDPs), including community-hosted.<sup>7</sup> Many were sheltered in approximately 26 government and private schools. Functioning health facilities which were limited around Mekelle were flooded with critical patients from every corner of the state including from internally displaced people (IDP) and overwhelmingly burdened beyond the hospital's capacity. Patients get treatment late and becoming complicated end up with death.

Therefore, alternative service areas, such as clinics, are important to provide the minimum service for the most in need. Thus, Mekelle University (MU), in collaboration with the Tigray Regional Health Bureau and Individual Voluntary Health Professionals, opened 11 IDP-Clinics for both displaced and community-hosted people, which were selected based on health demands and total population size. The team leaders of this project had regular meetings and discussions to set and plan how to run the clinic services (Figure 1). The main objectives of each clinic were emergency services, outpatient treatment that included follow-up of patients with chronic illness, referral linkage to higher medical services,



**Figure 1** Sample photos of the members of the community intervention in meeting and discussion.



active surveillance of outbreaks, telehealth and specialist on-site and phone consultations, antenatal care, and family planning.

## Experience Sharing on the Establishment of Local IDP-Clinics During War Crisis

Volunteering healthcare professionals (MDs, nurses, midwives, etc.) in collaboration with the Tigray Regional Health Bureau (TRHB) visited the areas and produced relevant preliminary data via snapshot assessment to help stakeholders procure assistance. The assessment focused on under five children, pregnant and lactating mothers, the vaccination status of children, chronic medical illnesses, and disabilities.

Under five children were recorded 1420 of which 446 were evaluated; 19 had moderate acute malnutrition, and two had severe acute malnutrition (SAM). Of the 116 pregnant mothers assessed, three were found to be malnourished. Of the 214 lactating mothers, 41 were malnourished. The vaccination status of the children was assessed, and 152 children were eligible. Of these, 42 required catch-up, 63 not up to date, and 82 in the right timeline for vaccination. Gross assessment was performed for chronic medical illnesses. There were 222 patients with chronic medical illness; of these 39-hypertension, 31-HIV/AIDS, 31-Diabetes Mellitus, 27-Bronchial asthmas, 6-Tuberculosis and others. The patients were evaluated for disabilities and mental health conditions: 23 had visual related impairments, 18-mental illnesses, 6-hearing difficulties, and 61-musculoskeletal and congenital deformations. This baseline data assessment indicated a high demand for establishing clinics at all IDP sites to provide minimum medical care.

Based on the above assessment, 11 clinics were established in 11 of the 26 IDP schools that were selected based on health demand from preliminary surveys and population size of each IDP. The study sites were Adishimdhun, Adihaki, Ethio-China, Meserete, Kesate, Kisanet, Momona, Elala, Yekatit 11, Gerebtsedo, and Myweyni. More than 35,000 people lived inside and outside the selected IDP sites (Table 1).

This project was run by the Mekelle University College of Health Sciences, Ayder Comprehensive Specialized Hospital (MU-CHS-ACSH), in collaboration with TRHB and UNICEF (emergency kits) for continuous supply. The duration of this project strengthens over a total course of the six months. First, clinics were established at the six IDP sites. After one month, clinical services were expanded to five additional sites, resulting in a total of 11 IDP clinics because of the high demand. Each clinic was fully furnished with furniture and sanitary (Figure 2) and stationery materials like registration books and prepared medical sheets (prescription sheets, patient cards, etc.) were distributed (SI-1). Guideline to detect disease outbreaks was also distributed to each clinic for early detection and management (SI-2).

Medication and medical equipment were also mobilized from MU and TRHB and distributed to different IDP clinics (Figure 3 and Tables S1–S5). All IDPs were also given a laminated a guideline about the definition of different disease outbreaks and reportable disease (SI-2). Different levels of health professionals were deployed to each IDP clinic from the MU and TRHB. Each clinic had one general practitioner and a clinical nurse who were mobilized from the TRHB. These health professionals were active on a regular basis helping their patients (Figure 4) while volunteering specialist physicians working in Ayder Comprehensive Specialized Hospital (ACSH) were participating with daily phone consultations and onsite clinical services once per week when a patient was appointed (Figure 5).

The beneficiaries of this service were the IDP community sheltered in selected schools in Mekelle City and the community-hosted IDP. All necessary working document preparations and availability were performed to provide the following services in each IDP clinic: emergency and outpatient medical care, referral linkage to higher health facilities, antenatal care, family planning, follow-up of patients with chronic illness, passive and active surveillance of disease outbreaks, bedside laboratory investigations (urine dipstick, RBS, HBsAg, HCAB, pregnancy test, PICT, malaria kit, and VDRL), necessary medication, and medical equipment. Data was collected from registration book which includes sociodemographic, clinical diagnosis, and investigation done and the treatment received by the patients.



**Table I** Descriptive Results of the Intervention of Community Service in Each IDP Clinic Sites

S.N	Variable	Kisanet	Myweyni	Ethio-china	Momona	Shumdu	Gerebtsedo	Adihaki	Elala	Kesate	Yekatit I I	Meserete	Total
1	<b>Total population in each IDP clinics</b>	1386	7322	2864	3077	3500	4865	3987	1300	2665	1031	3085	35,082
2	<b>Age of the patients seen in the IDP clinics</b>												
	<6 months	16	11	19	7	14	24	12	13	19	12	24	171
	<5 years	133	224	89	73	103	177	188	183	151	86	242	1649
	< 18 year	258	381	152	155	127	259	290	213	251	136	374	2596
	18–65 year	340	500	200	322	236	475	378	385	307	190	384	3717
	>65 years	44	51	19	3	50	49	62	34	51	27	29	419
	<b>Total</b>	642	932	371	480	413	783	730	632	609	353	787	6732
3	<b>Patient residency visited the IDP clinics</b>												
	<b>Inside IDP</b>	606	831	371	365	390	680	633	591	390	286	743	5886
	<b>Outside IDP</b>	36	101	0	115	23	103	97	41	219	67	44	846
	<b>Total</b>	642	932	371	480	413	783	730	632	609	353	787	6732
4	<b>Sex</b>												
	Male	339	473	244	300	210	418	324	277	329	187	364	3465
	Female	303	459	127	180	203	365	406	355	280	166	423	3267
	<b>Total</b>	642	932	371	480	413	783	730	632	609	353	787	6732
5	<b>Type of clinic visit</b>												
	New	635	864	350	462	350	768	702	618	573	312	755	6389
	Follow up	5	54	21	18	63	15	28	14	32	41	32	323
	<b>Total</b>	640	918	371	480	413	783	730	632	605	353	787	640
7	<b>Diabetic mellitus</b>	7	4	10	5	6	6	9	4	11	9	8	79
8	<b>Hypertension</b>	19	2	15	8	13	8	9	5	21	1	11	112



9	<b>Other comorbid illness</b>												
	RVI	5	1	6	6	7	0	8	1	2	0	4	40
	Malnutrition	0	4	0	0	4	0	3	0	2	0	4	17
	Asthma	3	0	5	2	7	10	6	3	14	10	4	70
	Renal	0	0	3	0	2	0	1	0	0	1	0	7
	Cardiac	1	1	4	2	1	0	0	2	3	1	0	14
	Epilepsy	0	0	0	0	3	1	0	6	0	2	0	12
	Total regularly followed Chronic illness'	35	12	43	23	43	25	36	21	53	24	31	351
	<b>Total chronic medical illness served in the clinics</b>	46	96	62	32	95	122	91	41	80	33	24	722
10	<b>Outpatient visit</b>	642	932	371	480	413	783	730	632	609	353	787	6732
	<b>Pregnant mothers</b>	9	20	10	5	4	24	26	37	24	19	35	213
	<b>Family planning</b>	24	0	10	0	10	5	52	0	23	27	19	170
	<b>Total</b>	675	952	391	485	427	812	808	669	656	399	841	7115
11	<b>Investigations done</b>												
	Blood sugar	55	36	30	25	120	39	100	70	108	56	69	708
	Pregnancy test	14	1	5	4	4	25	37	21	3	5	5	124
	HIV test	7	7	11	9	10	13	8	17	12	64	15	173
	HBsAg test	0	0	1	0	0	0	0	2	1	1	0	5
	Covid-19 test	21	0	3	7	4	0	0	0	14	0	0	49
	VDRL test	0	0	1	0	0	0	0	0	0	0	0	1
	RDT-malaria	15	2	13	1	1	0	13	0	10	30	0	85
	Urine dipstick	9	3	1	0	0	0	4	3	1	4	28	53
	<b>Total</b>	121	49	65	46	139	77	162	113	149	160	117	1198

(Continued)



**Table I** (Continued).

S.N	Variable	Kisanet	Myweyni	Ethio-china	Momona	Shumdu	Gerebtsedo	Adihaki	Elala	Kesate	Yekatit II	Meserete	Total
12	<b>Patients' condition during visiting the clinics</b>												
	Cold	623	897	341	435	397	751	691	606	539	324	764	6368
	Emergency	19	35	30	45	16	32	39	26	70	29	23	364
	<b>Total</b>	<b>642</b>	<b>932</b>	<b>371</b>	<b>480</b>	<b>413</b>	<b>783</b>	<b>730</b>	<b>632</b>	<b>609</b>	<b>353</b>	<b>787</b>	<b>6732</b>
13	<b>Referred patients</b>	71	138	160	160	161	207	134	191	51	41	25	1339
14	<b>Reportable disease outbreaks</b>												
	Scabies	32	25	9	9	12	9	9	9	10	13	13	150
	Pertussis	0	3	3	0	4	1	12	11	16	20	2	72
	Chicken pox	14										4	18
	Measles	1	2	0	0	1	0	0	1	1	0	1	7
	Dysentery	0	18	0	0	3	3	2	1	3	11	3	44
	Covid 19	4	0	1	0	1	1	0	4	7	3	0	21
	Malnutrition	0	4	0	0	1	1	1	0	21	1	4	33
	Malaria	0	0	6	1	11	12	2	1	18	11	21	83
	<b>Total</b>	<b>51</b>	<b>52</b>	<b>19</b>	<b>10</b>	<b>33</b>	<b>27</b>	<b>26</b>	<b>27</b>	<b>76</b>	<b>59</b>	<b>48</b>	<b>428</b>
15	<b>Consultations</b>	11	5	47	3	9	5	10	19	40	10	1	160



16	<b>Top 10 diagnosis</b>												
	Common cold/URTI	48	128	80	25	48	145	94	61	88	63	196	976
	Acute gastroenteritis	29	92	41	23	54	65	63	56	86	17	141	667
	Dyspepsia	35	31	23	27	26	22	42	12	26	12	42	298
	Pneumonia	47	102	19	97	48	21	73	25	73	47	60	612
	Conjunctivitis	34	43	10	26	27	55	45	17	27	29	57	370
	Tonsillitis	32	13	29	18	15	22	31	23	23	4	24	234
	Acute febrile illness	40	32	11	28	5	22	31	23	37	20	40	289
	Fungal infection	38	4	17	11	10	9	22	7	29	15	19	181
	Urinary tract infection	22	8	6	9	7	19	8	6	13	9	10	117
	Scabies	30	12	9	9	12	12	4	9	9	13	12	131
	Trauma	5	6	3	4	13	11	7	5	14	1	3	72
	TB	8	9	1	4	7	0	3	5	0	0	0	37
	Others*	125	308	119	141	110	91	104	95	115	32	95	1335
	<b>Total</b>	<b>493</b>	<b>788</b>	<b>368</b>	<b>422</b>	<b>382</b>	<b>494</b>	<b>527</b>	<b>344</b>	<b>540</b>	<b>262</b>	<b>699</b>	<b>5319</b>
17	<b>Medications Prescribed</b>												
	Antibiotics	145	284	86	169	175	235	273	96	403	165	437	2468
	Anti-pain/pyretic	123	234	56	102	65	100	125	157	122	78	240	1402
	Anti-fungal	25	4	9	4	5	10	18	4	29	13	19	140
	Anti-protozoal	33	14	9	6	12	10	18	4	16	8	32	162
	Oral rehydration salt/zinc	18	82	14	5	15	20	54	33	54	8	117	420
	Omeprazole/anti-acid	20	26	8	15	21	20	36	32	31	20	36	265
	Others**	80	69	50	33	53	25	88	75	98	49	112	732
	<b>Total</b>	<b>444</b>	<b>713</b>	<b>232</b>	<b>334</b>	<b>346</b>	<b>420</b>	<b>612</b>	<b>401</b>	<b>753</b>	<b>341</b>	<b>993</b>	<b>5589</b>
	Reassured	19	8	12	16	15	265	47	0	4	0	0	386

**Notes:** \*Bladder stone, BPH, furuncle, atopic dermatitis, urticarial, TB, ANC, and STI. \*\*Topical steroids, salbutamol, HCT, Lasix, Enalapril, diphenhydramine, loratadine, and Glibenclamide.





**Figure 2** Sample distribution of sanitation materials, medical sheets, beds and registration books, medication shelf.

## Outcome Services Provision in the IDP-Clinics

Before the clinical service started, the team members (Figure 1) discussed it in consecutive meetings and prepared different medical sheets for the IDP clinics, such as registration books, patient cards, investigation sheets, history sheets, prescription sheets, referral sheets, and case definitions of disease outbreaks for early reporting, isolation, and early management. Training was provided to doctors hired for the IDP clinic. Furniture, stationery, sanitation materials, medication, and medical equipment were partially mobilized from Mekelle University, TRHB, and UNICEF. The remaining equipment and medications necessary for the clinic were purchased from the limited budget of the Mekelle University. The clinic was open for clients seven days a week and emergency ambulances at night. Accordingly, from the 11 IDP clinics, 6732 patients were observed at 11 IDP clinics. Among those, 3465 were male, and the age ranged from 24 days to 95 years, with 1649 (47%) around fifty percent were under five children. Of these patients, 364 were emergency cases and 1339 were referred to higher facilities. A total of 722 patients had chronic illnesses and received clinical services. The most common chronic illnesses were hypertension ( $n = 112$ ), diabetes ( $n = 79$ )





**Figure 3** Sample arranging medication and medical equipment's to distribute to each IDP clinics.

and asthma ( $n = 70$ ). In addition to providing treatment for acute illnesses and follow-up for chronic illnesses, the clinics provided antenatal care to 213 mothers. 170-Family planning for clients of both sexes (male and female). A total of 428 patients were diagnosed with reportable disease outbreaks, with the highest burden of scabies (150), malaria (83), pertussis (72), and dysentery (44). In all the IDP clinics, 160 specialty consultations were conducted. The most common diagnoses in clinics were upper respiratory infection (URTI), acute gastroenteritis (AGE), and pneumonia, with frequencies of (976, 667, and 612), respectively (Table 1).

Basic investigation services were provided by all established clinics. A total of 1198 investigations were performed, of which blood sugar determination (708) was followed by HIV (173) and pregnancy (124) tests. Antibiotics were prescribed to 2468 patients, followed by anti-pain/pyretics (1402), and 386 were reassured. Table 1 summarizes the major services provided by clinics at each IDP site. The service provided helped us divert the burden of functional health facilities, mainly ACSH, to some extent, as patients were retained there. This experience may also guide the continuation of medical care until the destroyed health facilities are completely restored and the relocations of IDPs to where they want to live. It also provides early detection and appropriate treatment for outbreaks. Since the total duration of these clinics was six months, the clinics were handed over to the TRHB.

## Conclusion and Recommendation

This project provided clinical services for more than 35,000 people (those who were living in the 11 Mekelle IDP sites), including free access to medication for those who had chronic medical illnesses, such as diabetes and hypertension, and onsite specialty services. Emergency cases and different disease outbreaks were identified, reported, and managed or referred early to the appropriate institutions. There was a smooth referral system between IDP clinics and health facility institutions. These timely services averted further morbidities and mortalities, with minimal expenses. In addition, there was a significant decrease in the patient load of the overburdened nearby institutions in Mekelle like ACSH, relieving the





**Figure 4** Sample interactions with IDP site responsible bodies, professionals providing services to clients in some of the IDP clinics like “May weyni”, “Elala” and “Ya katit II clinic”.

financial concerns of the displaced people as they have received the medications free, and nearby without transportation inside their camps, including specialty services.

This gave us insight into how to fill the gaps in basic health services during complex emergencies. During crises, the mobilization of local expertise, resources, and coordination can effectively and efficiently tackle health crises. This also teaches us how to utilize local resource allocation, including manpower, which should be started from the available assets.

This experience complements the available evidence that it is possible to continue clinical services in conflict-affected areas, where civilians are not the main targets of conflict. This was not true in Tigray, as many were massacred and forcefully displaced from different parts of Tigray. This makes it more difficult to expand services outside Mekelle, where the health dire is imminent. Therefore, to continue healthcare services in war-torn areas like Tigray, it is up to the international community to protect civilians from getting their rights, including healthcare. This highlights the need for authorities, health experts, institutions, and policy-makers to continue such small clinics and mobile clinics to reach the health issue of our community and until relocation of displaced people as a bridge until destroyed health facilities are constructed and services resumed. Still, Tigray is under a worse health crisis, and nearly all the population is in terrible need of help; hence, government and non-government must think and





**Figure 5** Specialist doctors evaluating patients in the IDP clinic.

mobilize small and mobile clinics to address the health deficit in every corner of Tigray until the destroyed health system reconstructs and resumes its function.

## Strength and Limitation

This involved teamwork among MU, TRHB, and other partners and was supplemented by each other smoothly and in a timely manner. This is a practical problem-solving task with successful patient care that creates a strong referral system. There was also a significant shortage of medications, owing to budget limitations and subsidies. The project members were equally involved in their routine clinical and teaching activities, which overstretched them. Our main limitations were the communication blackout in the middle (after six months of implementation) of the project and the siege, which made it very difficult to continue services such as specialist phone consultations, continued provision of medication as transactions, and other services were cut off, and there was no transportation, which made continuous monitoring difficult. There was a significant problem in the documentation of the daily activities of the clinic, which underestimated the clinical work when expressed in numbers.



## Abbreviations

IDP, Internally Displaced people; AGE, Acute gastroenteritis; CD, Communicable disease; TRHB, Tigray Regional Health Bureau; NCD, Non-Communicable disease; MUAC, Mid upper Arm Circumference; HIV, Human Immunodeficiency Virus; ACSH, Ayder Comprehensive Specialized Hospital; RBS, Random Blood Sugar; HBsAg, Hepatitis Surface Antigen; HCAB, Hepatitis C Antibody; PICT, Provider-initiated counselling and testing; VDRL, Venereal Disease Research Laboratory test.

## Ethical Considerations and Consent for Publication

The study was approved by ethical review board of College of Health Sciences, Mekelle University, and informed consent was taken from each participant including to publish their image by blurring out identifiable faces and confidentiality was maintained. Our intervention and study were complied with Declaration of Helsinki.

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## Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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