Outcomes of hepatitis C treatment in vulnerable populations co-infected with HIV and hepatitis C: Programme description, Manipur, India

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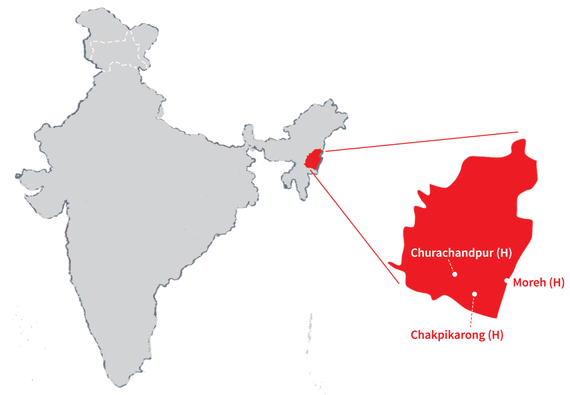

Figure 1. MSF operates three clinics in Manipur, a northeastern state of India

Introduction

- HIV and Hepatitis C virus (HCV) infections share common behavioral risk factors of intravenous drug use (IVDU), Men having Sex with Men (MSM) sex and female sex work (FSW) (1).
- HIV/HCV co-infected population have limited access to medical care due to stigma and vulnerabilities (1,2)
- Poor treatment uptake and outcomes is frequently reported in key populations.
- From Oct 2014, MSF provides integrated care for people with HIV co-infected with HCV through a tailored program to suit key populations (Figure 2); through three clinics in Manipur state of north-eastern India
- The context has a low socioeconomic profile and is ridden with low-intensity conflict.
- Treatment protocols adapt to emerging evidence and availability of drugs and diagnostics (Box 1)
- This study describes patient characteristics and outcomes the HCV care program
- Analysis of cohort characteristics informs adaptation program improve uptake and outcomes

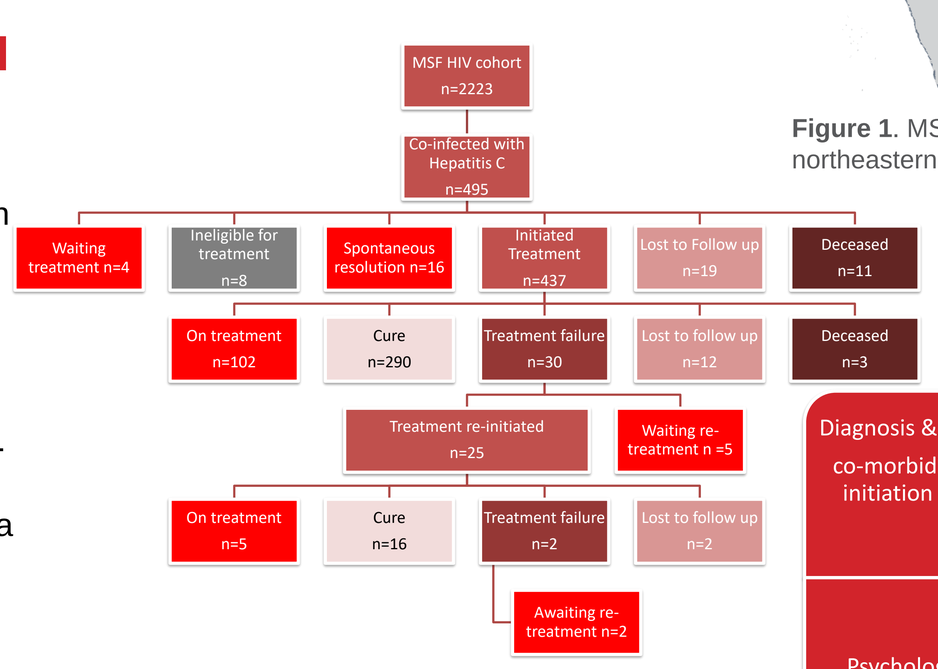

Figure 3: Flow of MSF's HIV/HCV co-infected cohort in Manipur; Oct 2014 – Oct 2019

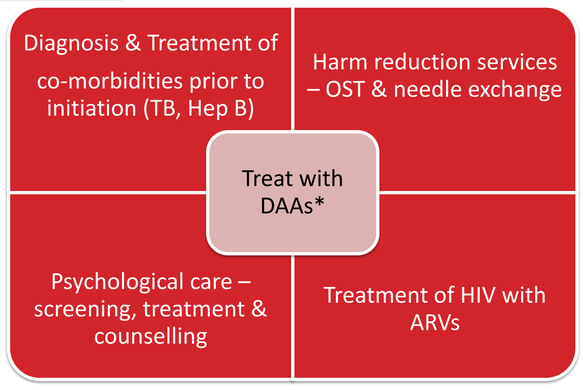

Figure 2. MSF Integrated model of care for HIV patients co-infected with hepatitis C

Table 1. Demographic and clinical characteristics of MSF's HIV/HCV co-infected cohort in Manipur; Oct 2014 – Oct 2019

Characteristics	All	Exiting cohort prior to treatment initiation	Exiting cohort after treatment initiation	
			Exiting cohort as cured	Exiting /in- cohort without cure[1]
Number of patients	495	54	306	24
Age in years				
Mean (SD)	38.64 (8.9)	38.1 (10.1)	39.9 (7.8)	32.1 (9.8)[3]
Median (IQR)	39.0 (33.0 – 44.3)	37.0 (31.0 – 45.0)	40 (35 – 44.9)	27.5 (23.7 – 42.2)
Sex				
Male (%)	384 (77.58)	40 (74.1)	223 (72.88)	21 (87.5)
Female (%)	111 (22.42)	14 (25.9)	83 (27.12)	3 (12.5)
Drug use status				
Active user (%)	75 (15.21)	9 (16.67)	35 (11.44)	2 (8.33)[3]
Past user[5] (%)	248 (50.3)	30 (50.56)	146 (47.71)	6 (25.0)
Never used (%)	170 (34.48)	15 (27.78)	125 (40.85)	16 (66.67)
Imprisonment history				
No (%)	425 (85.86)	45 (83.33)	263 (85.95)	21 (87.50)
Yes (%)	70 (14.14)	9 (16.67)	43 (14.05)	3 (12.50)
Men who have sex with men				
No (%)	492 (99.39)	54 (100.0)	304 (99.35)	24 (100.0)
Yes (%)	3 (0.61)	0	2 (0.65)	0
Female sex work				
No (%)	487 (98.38)	52 (96.30)	300 (98.04)	24 (100.0)
Yes (%)	8 (1.62)	2 (3.70)	6 (1.96)	0

Table 1. continued

Characteristics	All	Exiting cohort prior to treatment initiation	Exiting cohort after treatment initiation	
			Exiting cohort as cured	Exiting /in- cohort without cure[1]
BMI mean (SD) Kg/m²	20.73 (0.11)	20.42 (0.31)	20.92 (0.16)	20.99 (0.41)
WHO HIV stage; n (%)	n=483	n=54	n=299	n=23
1	337 (69.06)	44 (81.48)	213 (70.76)	16 (69.57)
2	8 (1.64)	1 (1.85)	6 (1.99)	0
3	95 (19.47)	6 (11.11)	56 (18.60)	6 (26.09)
4	43 (8.81)	3 (5.56)	24 (7.97)	1 (4.35)
HCV Genotype distribution n(%)	n=362	n=30	n=284	n=24
1	93 (25.70)	6 (20.0)	80 (28.87)	2 (8.33)
3	133 (36.44)	14 (46.67)	101 (35.24)	11 (45.83)
6	136 (37.76)	10 (33.33)	103 (35.89)	11 (45.83)
Cirrhosis of liver; n (%)[7]	n=291	n=34	n=211	n=10
No	247 (84.88)	24 (70.59)	181 (85.78)	7 (70.00)
Yes	44 (15.12)	10 (29.41)	30 (14.22)	3 (30.00)
APRI score				
<1	258 (52.12)	26 (48.15)	166 (54.25)	14 (58.33)
1 to 2	122 (24.65)	7 (12.96)	92 (30.07)	3 (12.50)
>2	115 (23.23)	21 (38.89)	48 (15.69)	7 (29.17)
Treated with interferons (%)				
No[8]	NA	NA	259 (84.64)	23 (95.83)
Yes			47 (15.36)	1 (4.17)

This table describes data at a point closest to exit from cohort prior to treatment initiation or at the time of treatment initiation.
1–Includes Lost to follow up and death; 2– Probability of difference of characteristics between two groups of patients exiting cohort after treatment; 3 – p<0.005; 4 – Pearson 'chi' square test; 5 – Used drugs prior to 12 months; 6 – Determined by transient elastography; 7 – Treated with directly acting antiviral drugs. SD – Standard Deviation; IQR – Interquartile Range; APRI – Aspartate Transaminase to Platelet Ratio Index

Methods

- *Study design*: Descriptive analysis of an HCV care cohort
- *Study cohort*: HIV/HCV co-infected patients of three MSF clinics
- *Time period*: Oct 2014 to Oct 2019
- *Variables:* Demographic, biological, clinical characteristics, treatment and outcome
- *Analysis:* Central tendency and frequencies described across relevant patient groups and strata
  Ethics: Cleared by Ethics Review Boards of MSF, Genève and Regional Institute of Medical Sciences, Imphal, Manipur

Results

- 22.2% (495/2223) of HIV cohort had positive HCV viral (Figure 3)
- 86.5% (290/335) of patients with a treatment outcome cured HCV on 1st initiation. While 8.95% (30/335) of patients failed treatment, 3.9% (13/335) were Lost to follow-up (LFU) while 0.9% (3/335) died. Death was not related to HCV or HIV
- Active drug users were significantly more in group exiting cohort without cure
- Among patients retreated, 80% (16/20) cured while 10% (2/20) failed treatment and 10% (2/20) were LFU while 5/25 were on retreatment.
- Of 495 registrations, 369 exited the program with 87.2% (322/369) cured. While 8.9% (33/369) were LFU, 3.7% (14/369) died and 0.2% (8/369) were ineligible for treatment (Figure 5).
- All patients, ineligible for HCV treatment were transferred to tertiary care

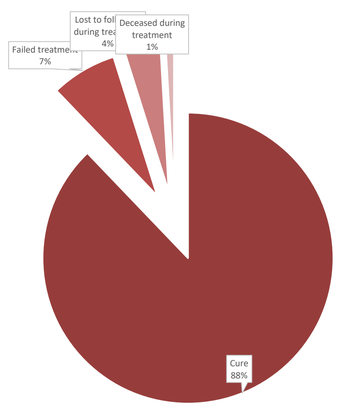

Figure 4. Treatment outcomes of first initiation of Hepatitis C treatment in patients co-infected with HIV

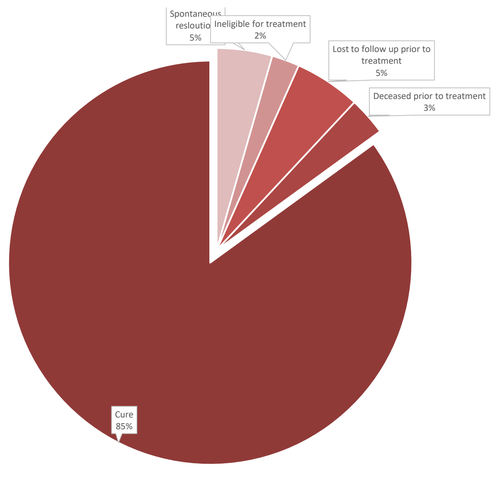

Figure 5. Hepatitis C cohort outcomes in patients co-infected with HIV

Conclusion

- In Manipur, over half of HIV/HCV co-infected patients were either active or past IVDU
- MSF's patient centric model of care provided HCV treatment to 88% of HIV/HCV co-infected patients and cured 87% of the patients
- Integrated care models, tailored to suit needs of key populations can successfully treat HCV in a significant proportion of patients
- Further analysis of factors associated with treatment success is warranted

Discussion

- MSF follows a patient-centered model of HCV care to address influencers of treatment outcome
- Key populations, mainly IVDU were two-thirds of the HIV/HCV.
- Nearly half (47.9%) of the patients had significant liver fibrosis
- With successive treatment initiations, 87.2% of HIV/HCV co-infected patients cured HCV (86.5% on first, and 80% of on second initiation).
- In clinical trial settings, 75%-95% of HIV/HCV co-infected patients cured HCV when treated with DAAs (3) .
- Poor outcomes in active drug users are attributed to liver fibrosis, poor treatment adherence, reinfection, and morbidities (5).
- HCV treatment in HIV co-infected populations decrease risk of all cause-mortality by 50% over five years (6).
- Providing HCV treatment to key populations is essential to break transmission cycle in local populations which contributes to micro-elimination of HCV (1).

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