HHS Public Access

Author manuscript

Trop Med Int Health. Author manuscript; available in PMC 2017 November 01.

Published in final edited form as:

Trop Med Int Health. 2016 November ; 21(11): 1476–1480. doi:10.1111/tmi.12775.

Occupational hazards of traditional healers: Repeated unprotected blood exposures risk infectious disease transmission

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Abstract

Objective—Healers provide support for acute and chronic illnesses in rural Mozambique, such as socially acceptable traditional “vaccinations” (subcutaneous cuts in the skin to rub herbs directly into the bloody lesion). We aimed to document the frequency of blood exposure by traditional practitioners in Mozambique.

Methods—We conducted surveys with a simple random sample of 236 traditional healers in Zambézia province. Chi-square and Wilcoxon rank sum tests were used to compare “injection” behaviors across districts.

Results—Healers treated a median of 8 patients in the past month (IQR: 4–15). 75% conducted “injections”. These healers “injected” a median of 4 patients (IQR: 1–8), used a new razor a median of 3 times (IQR: 1–8), and almost never used gloves. Lifetime blood exposures among those who provided “injections” during treatments were estimated to be 1,758 over a healer’s career.

Conclusion—The majority of healers is exposed repeatedly to patient blood. Given the high prevalence of HIV, hepatitis B and C virus, and other blood-borne agents, specific healer practices are an occupational hazard and reuse of razors is risky for their clients.

Keywords

Occupational Health; Traditional Healers; Blood exposure; HIV; hepatitis; scarification

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Introduction

Occupational hazards associated with traditional healer practices in sub-Saharan Africa have attracted scant attention (1). Allopathic health care workers (HCW) are recognized to be at risk for human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), malaria, and other blood-borne infections through occupational exposure to blood and blood-contaminated objects(2). Hepatitis and HIV transmission via mucous contact and needle sticks among HCWs(3, 4) and people handling medical waste (5) are well-documented(6). Disease severity of the patients, large numbers of needlestick injuries, a culture of using injections rather than other treatments, re-use of unsterilized equipment, a large number of informal workers with little infectious disease transmission training, low HBV vaccination coverage rates, poor adherence to standard precautions, and insufficient availability of post-exposure prophylaxis contribute to higher rates of transmission in low-income countries (7).

In rural SSA, traditional healers provide primary health services to >80% of the population(8). Similar to allopathic HCWs, healers are also exposed to blood. A widespread practice is the traditional “injection,” involving dozens of subcutaneous cuts in the skin in order to rub herbs directly into the bloodied skin (9, 10). Healers commonly treat people with chronic disease, including those living with HIV(11). Our recent study in Mozambique found that 60% of newly diagnosed patients had received recent “vaccinations” from a traditional healer (1). Frequency of blood exposure, coupled with treatment of patients at high risk of infectious disease, can result in increased risk of patent-to-healer disease transmission if gloves and sterile equipment are not used.

In Zambézia province, adult HIV prevalence was estimated at 12.6% in 2009(12). While there are few data about the prevalence of HBV or HCV in this rural population, it is estimated that between 9.3% and 14.0% of Mozambican adults have chronic HBV infection (13, 14) and between 1.4 and 2.6% of Mozambicans have chronic HCV infection (15). Risk of blood-borne transmission varies by exposure type (16); HIV transmission risk is approximately 0.3% after percutaneous exposure and 0.1% post-exposure of blood to non-intact-skin and mucous membranes (17). HBV transmission varies by HB_eAg status, 2% if the “donor” is HB_eAg negative, and up to 30% if they are positive (16, 18, 19). The risk of HCV transmission from a needle stick injury is 1.8%. Although exposure to broken skin or mucous membranes has been documented, the risk has not been quantified (19, 20). Traditional “injection” practices are well documented (9, 11), but little is known about the proportion of healers who “inject” their patients during treatment, the number of blood exposures they experience over their careers, or precautions taken (e.g., use of gloves). We describe the results of a cross-sectional survey of such traditional healer practices, among those living in one urban and one rural community.

Methods

Associação dos Médicos Tradicionais de Moçambique (AMETRAMO) is the organization of traditional healers in Zambézia. AMETRAMO collaborated with us on questionnaire development and they provided a comprehensive list of registered healers in the city of

Quelimane and in the rural Namacurra district. A random sample of 236 healers was generated using Stata 13® (StataCorp LP, College Station, TX). We approached the selected healers in their homes for face-to-face interviewer-assisted surveys (none refused). Healers were included if they had seen at least one patient in the past month; were ≥ 18 years of age; and spoke either Portuguese or the local language (Echuabo). All study measures were administered orally in the participant's preferred language. Sociodemographic characteristics (age, sex, and Portuguese literacy level were ascertained by participate self-report and entered into REDCap® (Software-Version 6.9.0, Nashville, TN)(21).

The survey was developed to reflect the cultural norms, beliefs, and behaviors of local traditional healers. It was translated into Portuguese and Echuabo by a fluent speaker and independently back-translated into English to verify its accuracy. Survey items were assessed for clarity and cultural relevance with cognitive interviews with of 20 bilingual traditional healers in AMETRAMO living equidistantly between the study sites. Interviews were conducted in the language preferred by participants and assessed their understanding of the translated items and participants' ability to answer using an agree-neutral-disagree response option. Three items were then modified for clarity.

Chi-square and Wilcoxon rank sum tests were used to compare "injection" behavior and glove use. Multivariable logistic regression was used to model "injection" and glove use as a binary response variable using R version 3.1.2 (The R Foundation, Vienna, Austria; www.r.-project.org). We also estimated lifetime blood exposure for a representative traditional healer with these assumptions: 75% "injecting" a patient in past month; among these, a median of four blood exposures per month; no glove use. Using actuarial estimates for 1999 data, we estimated a 35.01-year life expectancy for a 20-year old Mozambican man and 37.38 years for a woman.(22) Since 68% of healers were women, our representative healer had a 36.62-year life expectancy (weighted average).

Ethical Approval

The study protocol was reviewed and approved by the *Comité Nacional Bioética Para a Saúde* and Vanderbilt's Institutional Review Board. No financial incentive was provided and written informed consent was obtained.

Results

The participating healers' median age was 49 years, 68% were female, they and lived a median of 52 minutes from the nearest health facility. 21% self-reported fluency in spoken Portuguese, and 19% self-reported the ability to write in Portuguese (Table 1). Healers treated a median of 8 patients in the past month (IQR: 4–15) and referred a median of 2 (IQR: 0–4) to the health facility for assistance. 75% of healers conducted razor "injections" in the past month. They "injected" a median of 4 patients (IQR: 2–10), used a new razor only 3 times (IQR: 1–8.5), and never used latex gloves (median 0; IQR: 0–0).

Healers who performed at least one "injection" in the past month saw more patients (9 [IQR: 4–18] vs 6 [IQR: 3–9]; p=<0.001), referred an equal number of patients to the health facility for testing or treatment (3 [IQR: 0–4] vs 1 [IQR: 0–5]; p=0.64), and were slightly younger

(48 [IQR: 46–50] vs 53 [IQR: 48–57]; p=0.003) than healers who did not perform “injections”. Logistic regression identified increased risk in “injection” behavior among healers with more patients and along those living in Quelimane. Propensity to provide “injections” was not associated with sex, distance to the health facility, or Portuguese proficiency (Table 2). Lifetime blood exposures among those who provided “injections” during treatments were estimated to be 1,758 over the course of a healer’s career.

Discussion

Our cumulative lifetime exposure estimates of 1758 razor-blood events for those using razors will imply different risks depending upon pathogen prevalence, frequency of healers’ hands’ skin abrasions(23), and efficiency of pathogen transmission. Documented transmission events of HIV or HCV transmission during blood splashes among HCWs are rare (24, 25). HIV transmission risk is approximately 0.3% after percutaneous exposure and 0.1% post-exposure to non-intact-skin and mucous membranes(17). HBV is much easier to acquire (16, 18). While transmission risks per-exposure are low, transmission risk from patient to healer or from patient to patient are elevated through repeated exposure to infected blood among a population with poor sanitary conditions, a lack of awareness of the need to avoid razor cuts, a shortage of latex gloves, and a complete lack of containers to dispose of used razors. If healers acquire blood-borne pathogens, they may also transmit them to other patients via re-use of razors, or by accepting sexual services as payment for their treatments.

Mozambique began the process of integrating traditional healers into the national health system in 2010. Healers register with the MISAU, participate in national training programs about HIV, TB, malaria, nutrition, and diarrheal disease, and mental health, and their patients are allowed to “jump the queue” when waiting for treatment at a health facility (1). These changes have led to improved relationships between healers and clinicians and increased patient referrals for everything from HIV to gender-based violence. Although traditional “injections” are not approved by the MISAU, patients and healers believe that rubbing herbs directly into bloodied skin yields health improvements; thus traditional “injections” are unlikely to disappear(26, 27). Now that their role as health care extenders is sanctioned by the MISAU, there is an ethical responsibility to provide access to, and education about the importance of, the use of latex gloves during treatments and sharps containers afterwards to ensure safety for patients and providers.

This study provides new insight into the potential risk of blood exposure among traditional healers who conduct razor “injections” without the necessary protection. It is a call to research action. The scope of our study results is limited by the lack of biological data on healer HIV, HCV or HBC, as without these the risk of transmission by exposure cannot be measured. Risk of transmission will vary by sanitary measures taken (hand-washing, blade-washing), the presence of wounds/abrasions on exposed healer skin, and the patient’s viral load.

Conclusions

In the context of a generalized HIV epidemic, the health implications of repeated blood exposure need to be studied to ensure the safety of healers and their patients. If clinicians experienced this level of exposure to patient blood, protective measures would be implemented. Healers provide a valuable link between community members and clinical services. While the health system may not condone the practice of traditional “injections”, patient demand for traditional treatments will ensure continued exposure, and the public health implications cannot be ignored.

Acknowledgments

We thank the traditional healers in Namacurra and Quelimane for their encouragement of our research and their support in identifying areas of important research; and the Mozambican Ministry of Health for its support of our research. This study was funded by a Clinician and Translational Science Award and a Vanderbilt Clinical & Translational Research Scholar’s grant, and by awards from NIMH and the Tennessee Center for AIDS Research.

References

1. Audet CM, Blevins M, Rosenberg C, Farnsworth S, Salato J, Fernandez J, et al. Symptomatic HIV-positive persons in rural Mozambique who first consult a traditional healer have delays in HIV testing: a cross-sectional study. J Acquir Immune Defic Syndr. 2014 Aug 1; 66(4):e80–6. [PubMed: 24815853]
2. Kumakech E, Achora S, Berggren V, Bajunirwe F. Occupational exposure to HIV: a conflict situation for health workers. Int Nurs Rev. 2011 Dec; 58(4):454–62. Epub 2011/11/19. eng. [PubMed: 22092324]
3. Joyce, M.; Kuhar, D.; Brooks, J. Notes from the Field: Occupationally Acquired HIV Infection Among Health Care Workers — United States, 1985–2013. Atlanta, GA: Centers for Disease Control and Prevention; 2015. Contract No.: 53
4. Mbaisi EM, Ng‘ang’a Z, Wanzala P, Omolo J. Prevalence and factors associated with percutaneous injuries and splash exposures among health-care workers in a provincial hospital, Kenya, 2010. The Pan African medical journal. 2013; 14:10. Epub 2013/03/19. eng. [PubMed: 23504245]
5. Anagaw B, Shiferaw Y, Anagaw B, Belyhun Y, Erku W, Biadgelegn F, et al. Seroprevalence of hepatitis B and C viruses among medical waste handlers at Gondar town Health institutions, Northwest Ethiopia. BMC research notes. 2012; 5:55. Epub 2012/01/24. eng. [PubMed: 22264306]
6. Rossouw TM, van Rooyen M, Louw JM, Richter KL. Blood-borne infections in healthcare workers in South Africa. South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde. 2014 Nov; 104(11):732–5. Epub 2015/04/25. eng. [PubMed: 25909108]
7. Lee R. Occupational transmission of bloodborne diseases to healthcare workers in developing countries: meeting the challenges. The Journal of hospital infection. 2009 Aug; 72(4):285–91. Epub 2009/05/16. eng. [PubMed: 19443081]
8. King, R. Collaboration with traditional healers in HIV/AIDS prevention and care in sub-Saharan Africa: a literature review. UNAIDS Best Practices Collection [Internet]. 2000 Aug 19. 2013. Available from: http://data.unaids.org/Publications/IRC-pub01/jc299-tradheal_en.pdf
9. Peters EJ, Immananagha KK, Essien OE, Ekott JU. Traditional healers’ practices and the spread of HIV/AIDS in south eastern Nigeria. Trop Doct. 2004 Apr; 34(2):79–82. Epub 2004/05/01. eng. [PubMed: 15117130]
10. Wojcicki JM, Kankasa C, Mitchell C, Wood C. Traditional practices and exposure to bodily fluids in Lusaka, Zambia. Trop Med Int Health. 2007 Jan; 12(1):150–5. [PubMed: 17207159]
11. Audet CM, Blevins M, Rosenberg C, Farnsworth S, Salato J, Fernandez J, et al. Symptomatic HIV-positive persons in rural Mozambique who first consult a traditional healer have delays in HIV testing: A cross-sectional study. J Acquir Immune Defic Syndr. 2014 May 8.

12. INSIDA. National Survey on Prevalence, Behavioral Risks and Information about HIV and AIDS (2009 INSIDA). 2009 Aug 14. 2013; (May 24, 2011). Available from: http://xa.yimg.com/kq/groups/15255898/801713730/name/INSIDA
13. Viegas EO, Tembe N, Macovela E, Goncalves E, Augusto O, Ismael N, et al. Incidence of HIV and the prevalence of HIV, hepatitis B and syphilis among youths in Maputo, Mozambique: a cohort study. PLoS One. 2015; 10(3):e0121452. Epub 2015/03/24. eng. [PubMed: 25798607]
14. Cunha L, Plouzeau C, Ingrand P, Gudo JP, Ingrand I, Mondlane J, et al. Use of replacement blood donors to study the epidemiology of major blood-borne viruses in the general population of Maputo, Mozambique. J Med Virol. 2007 Dec; 79(12):1832–40. [PubMed: 17935167]
15. Karoney MJ, Siika AM. Hepatitis C virus (HCV) infection in Africa: a review. The Pan African medical journal. 2013; 14:44. [PubMed: 23560127]
16. Deuffic-Burban S, Delarocque-Astagneau E, Abiteboul D, Bouvet E, Yazdanpanah Y. Blood-borne viruses in health care workers: prevention and management. Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology. 2011 Sep; 52(1):4–10. [PubMed: 21680238]
17. Ippolito G, Puro V, De Carli G. The risk of occupational human immunodeficiency virus infection in health care workers. Italian Multicenter Study. The Italian Study Group on Occupational Risk of HIV infection. Arch Intern Med. 1993 Jun 28; 153(12):1451–8. [PubMed: 8512436]
18. Lewis JD, Enfield KB, Sifri CD. Hepatitis B in healthcare workers: Transmission events and guidance for management. World journal of hepatology. 2015 Mar 27; 7(3):488–97. [PubMed: 25848472]
19. Gerberding JL. Management of occupational exposures to blood-borne viruses. N Engl J Med. 1995 Feb 16; 332(7):444–51. [PubMed: 7824017]
20. Stevens AB, Coyle PV. Hepatitis C virus: an important occupational hazard? Occupational medicine. 2000 Aug; 50(6):377–82. [PubMed: 10994237]
21. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)–a metadata-driven methodology and workflow process for providing translational research informatics support. Journal of biomedical informatics. 2009 Apr; 42(2):377–81. Epub 2008/10/22. eng. [PubMed: 18929686]
22. Lopez, A.; Salomon, J.; Ahmad, O.; Murray, C.; Mafat, C. Life Tables for 191 Countries: Data, Methods and Results. GPE Discussion Paper Series: no– 9 [Internet]. 2001 Nov 6. 2015. Available from: www.who.int/healthinfo/paper09.pdf
23. Chhaganlal K, van Jaarsveld I, Hoffmann K, Ramos MI, Krober M, de Hoop D. Cutaneous disorders in the “bairro Inhamudima” of Beira, Mozambique. International journal of dermatology. 2007 Oct; 46(Suppl 2):35–8. [PubMed: 17958629]
24. Hosoglu S, Celen MK, Akalin S, Geyik MF, Soyoral Y, Kara IH. Transmission of hepatitis C by blood splash into conjunctiva in a nurse. American journal of infection control. 2003 Dec; 31(8): 502–4. [PubMed: 14647113]
25. Mattner F, Tillmann HL. Proof of alleged transmission of hepatitis C virus by a conjunctival blood splash. American journal of infection control. 2004 Oct; 32(6):375–6. [PubMed: 15454904]
26. Gumodoka B, Vos J, Berege ZA, van Asten HA, Dolmans WM, Borgdorff MW. Injection practices in Mwanza Region, Tanzania: prescriptions, patient demand and sterility. Trop Med Int Health. 1996 Dec; 1(6):874–80. [PubMed: 8980604]
27. Reeler AV. Anthropological perspectives on injections: a review. Bull World Health Organ. 2000; 78(1):135–43. [PubMed: 10686748]

Table 1

Traditional healer characteristics and practices by “injection” behavior in the past month in Zambézia Province, Mozambique

	No “injection”	Any “injection”	Combined	p-value
	(n=40)	(n=192)	(n=232)	
Female, n(%)	28 (70%)	129 (67%)	157 (68%)	0.73
Age, median (IQR)	53 (48 – 57)	48 (46 – 50)	49 (47 – 50)	0.05 *
Distance to HF in minutes, median (IQR)	59 (47 – 71)	51 (44 – 58)	52 (46 – 58)	0.30
District				0.001 *
Namacurra	34 (85%)	111 (58%)	145 (63%)	
Quelimane	6 (15%)	81 (42%)	87 (38%)	
Transportation to HF, n (%)				0.067
Foot	37 (93%)	157 (82%)	194 (84%)	
Bicycle	2 (5%)	34 (18%)	36 (16%)	
Motorcycle	1 (3%)	1 (1%)	2 (1%)	
Speak Portuguese fluently, n (%)				0.27
No	18 (45%)	78 (41%)	96 (42%)	
Little	14 (35%)	74 (39%)	88 (38%)	
Yes	8 (20%)	40 (21%)	48 (21%)	
Patients (last month), median (IQR)	6 (3 – 9)	9 (4 – 18)	8 (4 – 15)	<0.001 *
Number of referrals to health facility (last month), median (IQR)	3 (0 – 4)	1 (0 – 5)	2 (0 – 4)	0.64
Times used razor (last month), median (IQR)	–	4 (2 – 10)	3 (0 – 7)	
Times used latex gloves (last month), median (IQR)	–	0 (0 – 0)	0 (0 – 0)	
Times used new razor (last month), median (IQR)		3 (1 – 8.5)	2 (0 – 6.5)	

* denotes statistically significant relationship

Table 2

Logistic regression model: factors associated with vaccination behavior

	Odds Ratio	95% CI	p-value
Age (every additional year)	0.976	0.949–1.003	0.086
Gender	0.75	0.308–1.835	0.530
District (ref: Namacurra)	3.73	1.382–10.071	0.009 *
Treat last month (every additional patient)	1.103	1.030–1.183	0.005 *
Speak Portuguese (ref:none)			
Some	0.648	0.219–1.912	0.432
Fluent	0.757	0.315–1.822	0.535

* denotes statistically significant relationship