

Christine Khosropour
CONTRIBUTION TO SCIENCE

1. Rectal chlamydial infection is common among MSM and is associated with an increased risk of HIV acquisition. CDC treatment guidelines recommend azithromycin or doxycycline for the treatment of rectal chlamydia but this recommendation is based on data from studies of urogenital infection. There have been no randomized, controlled trials to compare the efficacy of these two therapies for rectal chlamydial infection. This publication demonstrates that persistent/recurrent rectal chlamydial infection was 5-fold greater among men treated with azithromycin compared to doxycycline, suggesting that doxycycline may be more effective than azithromycin for the treatment of rectal chlamydial infection. This was the largest study to date to compare these two therapies in the treatment of rectal chlamydial infection and has directly informed clinical practice. This study laid the foundation for a randomized, controlled trial on this topic, which is currently being planned. I initiated this retrospective study and led the design and analysis.
 - a. **Khosropour CM**, Dombrowski JC, Barbee LA, Manhart LE, Golden MR. Comparing azithromycin and doxycycline for the treatment of rectal chlamydial infection: a retrospective cohort study. *Sex Transm Dis.* 2014 Feb;41(2):79-85. PubMed PMID: 24413484. PubMed Central PMCID: PMC4364392.
2. Nongonococcal urethritis (NGU) is common among men attending STD clinics. *Chlamydia trachomatis*, *Mycoplasma genitalium*, and *Ureaplasma urealyticum* biovar-2 have been implicated as the main etiologic agents of NGU. Regardless of the organism, current guidelines recommend azithromycin or doxycycline for the treatment of NGU. We conducted a randomized, controlled trial to examine the efficacy of the two therapies in the treatment of NGU. We found that the two therapies were similarly effective against NGU but that overall clinical and microbiological cure rates were somewhat low. Among men infected with *U. ureaplasma* biovar-2, microbiologic failure after treatment with doxycycline, azithromycin and moxifloxacin was common but imperfect adherence to doxycycline may be a contributing cause of persistent urethral infection. This work informed CDC guidelines for the treatment and clinical management of NGU. I conducted the analysis for the primary outcome publication (a) and led the design and analysis of two secondary analyses (b-c) resulting from the trial.
 - a. Manhart LE, Gillespie CW, Lowens MS, **Khosropour CM**, Colombara DV, et al. Standard treatment regimens for nongonococcal urethritis have similar but declining cure rates: a randomized controlled trial. *Clin Infect Dis.* 2013 Apr;56(7):934-42. PubMed PMID: 23223595; PubMed Central PMCID: PMC3588116.
 - b. **Khosropour CM**, Manhart LE, Colombara DV, Gillespie CW, Lowens MS, et al. Suboptimal adherence to doxycycline and treatment outcomes among men with nongonococcal urethritis: a prospective cohort study. *Sex Transm Infect.* 2014 Feb;90(1):3-7. PubMed PMID: 24106340; PubMed Central PMCID: PMC4057099.
 - c. **Khosropour CM**, Manhart LE, Gillespie CW, Lowens MS, Golden MR, et al. Efficacy of standard therapies against *Ureaplasma* species and persistence among men with non-gonococcal urethritis enrolled in a randomised controlled trial. *Sex Transm Infect.* 2015 Jan 23;PubMed PMID: 25616607.
3. The Internet has become a popular venue for MSM to meet potential sex partners; as such, Internet-based studies represent an important HIV prevention strategy to access MSM. However, many online studies of MSM have been limited by the ability to successfully recruit

and retain MSM of color. These publications characterize the biases and challenges associated with online minority samples of MSM, and highlight the differential loss to follow-up among MSM of color. But they also demonstrate an ability to retain a large cohort of MSM and enhance retention among black MSM by use of text messaging. This work has been pivotal in guiding online research of MSM. By providing evidence for methods to enhance the recruitment and retention of MSM, these publications offered a framework for a successful online HIV prevention intervention. For these studies I led the design (b-d), implementation (d) and analysis (a-d).

- a. Sullivan PS, **Khosropour CM**, Luisi N, Amsden M, Coggia T, et al. Bias in online recruitment and retention of racial and ethnic minority men who have sex with men. *J Med Internet Res*. 2011 May 13;13(2):e38. PubMed PMID: 21571632; PubMed Central PMCID: PMC3221372.
 - b. **Khosropour CM**, Sullivan PS. Predictors of retention in an online follow-up study of men who have sex with men. *J Med Internet Res*. 2011 Jul 11;13(3):e47. PubMed PMID: 21745792; PubMed Central PMCID: PMC3222173.
 - c. **Khosropour CM**, Sullivan PS. Risk of disclosure of participating in an internet-based HIV behavioural risk study of men who have sex with men. *J Med Ethics*. 2011 Dec;37(12):768-9. PubMed PMID: 21708832; PubMed Central PMCID: PMC3593712.
 - d. **Khosropour CM**, Johnson BA, Ricca AV, Sullivan PS. Enhancing retention of an Internet-based cohort study of men who have sex with men (MSM) via text messaging: randomized controlled trial. *J Med Internet Res*. 2013 Aug 27;15(8):e194. PubMed PMID: 23981905; PubMed Central PMCID: PMC3757960.
4. Serosorting is a common practice among MSM. Serosorting was increasing in the early 2000s but is not clear if this increase has continued in light of expanding HIV prevention efforts or the subsequent impact on the population's risk of HIV. Additionally, there is little data to describe how serosorting and other behaviors change after a diagnosis of HIV. These publications demonstrate that condomless anal sex with HIV-positive or unknown-status partners decreased among HIV-negative MSM in Seattle 2002-2013 concurrent with an increase in serosorting. This likely contributed to declines in HIV test positivity during this time period. We also found that after HIV diagnosis, HIV-positive men substantially modify their behavior to reduce the risk of transmitting HIV to HIV-uninfected men. This work has led to the development of programs to promote serosorting among some MSM and has motivated additional work in the field to determine a measurement tool to quickly but comprehensively assess sexual behaviors to ascertain risk. For these studies I led the design and analysis.
- a. **Khosropour CM**, Dombrowski JC, Swanson F, et al. Trends in serosorting and the association with HIV/STI risk over time among men who have sex with men (MSM). *J Acquired Immune Defic Syndr*. 2016; 72(2):189-97. PMID: 26885806 PubMed Central PMCID: PMC4866874
 - b. **Khosropour CM**, Dombrowski JC, Kerani RP, Katz DA, Barbee LA, and Golden MR. Changes in condomless sex and serosorting among men who have sex with men after HIV diagnosis. *J Acquired Immune Defic Syndr* 2016. *In press*.