

NGU SUMMARY

Author/ Year/ Journal	Study Design	Study Pop. Type/Setting	Exposure/ Intervention (Diagnostic)	Study Objective	Outcome Measures	Reported Findings	Design Analysis Quality/Bias	Subjective Quality Rating
Gillespie CW, Sex Trans Dis 2013	Cross-X, 7/2007-9/2009	Emergency room waiting area (family members of pts or men with nonemergent complaints without urethral complaints or antibiotic use x 30d)		Prevalence of asymptomatic urethritis	Urethritis >=5PMN/hpf and prevalence of pathogens	N=236 asmx men, mean age 37.2 (16.2-63); 52.1% black and 33.5% white; 94.1% sex with women, 84% circumcised, 42.2% prior STD, 25.9% no sex/2mo, 16.1% (95%CI 11.4-20.8) urethral inflammation. Discharge on exam in 16/38 (42.2%) with pos gs and 2% (4/198) of those with neg gs. 80% with d/c on exam with >=5pmn/hpf. PPV 80% dx asmx urethritis on brief genital exam alone and NPV 89.8% in men with no genital complaints. CT/MG and/or TV in 6.4% and 1 or more pathogens found in 18.4% men with evidence of urethral inflammation. Only 33.3% of men with pathogen had d/c. In men with urethritis - CT 3(8.3%), MG 3(9.1%), TV 1(2.9%), UU 10(30.3%), UP 11(33.3%) vs in men without urethritis - CT 3 (1.5%), MG 4(2%), TV 1(0.5%), UU 39(20.2%), UP 45(23.3%). MV anal asmx urethritis associ with black/mixed race (3.2; 1.3,8), detection established pathogen (2.6; 1.4,4.7), 2 hrs or more since void (2.3; 1.1,4.5), Insertive anal/2mo (2.1; 1.2, 3.9) and ># partners (1.1 per partner)	Good - recruitment from ED waiting area. Was prevalence diffeent for pts vs family/friends of pts?	4-epi
Gaydos, Sex Trans Infect 2013	Cross-X, 12/2006-7/2012	Men >=14yo, internet-based study.	Self-obtained penile meatal swabs, GenProbe APTIMA TMA for GC, CT, TV, questionnaire data	Prevalence of TV in men	Prevalence of TV in men	N=1699 requested kits, 38.6% returned kits (55.4% in 2012); 44.9% white and 42.7% black. 20-24yo made up 32.3% of popln. TV 3.7%. 1019 participants completed survey (survey discontinued 2/11) and TV prev 6% in that group. No sx in 56.6%, 10.3% reported penile d/c. Concurrent CT infxn in 13.6% and concurrent GC 1.3%. MV sign predictors of TV - black race [prevalence 9%] (OR2.7), >=30yo compared to <20yo (OR 30-39=6.63 and >40 5.31); age first sex <15 (OR 1.8) and penile d/c (OR 2.3).	Good - large sample size, 38-56% kits returned	5-epi
Walker 2013 CID	12 mo longitudinal study, 4/2007-8/2008	Australian women 16-25 from clinics (N=29 clinics = FP, gen practice, sexual health), who had sex with male.	survey, self-collected vag swab at baseline, 6mo, 12mo for MG PCR testing, pos samples had organism quantitation and macrolide resistance testing. MG+ rx with azithro 1gm x 1. TOC 4 wk post rx. If +, telephone consult to determine re-infx vs failure. Failure rx moxi 400/d x 10d. Reinfxn repeat azithro 1gm. Second TOC 4 wks post re-rx	Estimate MG incidence and treatment failure; estimates zaof organism load	MG prevalence, incidence, DNA load, MG 23s rRNA gene point mutations for azithro resistance using high res melt	1110 women participated, 735 (66%) gen prac; 375 (34%) sexual health and FP clinic. 877 (79%) provided specimen study end. 27 MG+ (2.4%; 1.5,3.3). 14 incident infxn (1.3/100py (0.8,2.3). Incident infxn higher in women from sex health and FP clinic vs gen pract and associated with more partners. 3 reinfxn (0.8/100py; 0.1,0.9) and cumulative risk reinfxn 11.1%. No persistent infxn in study (persistent MG in untreated subject). Of 41 MG+, 32 provided TOC, 3 of which were positive (9.4%; 2, 25) and 29 neg. All 3 women took rx and did not have sex with unrx partner. All 3 cured (by repeat TOC) with 10d moxi. All 3 women had wild-type pre-rx and macrolide resistant mutation post-rx. of 29 neg TOC, 27 (93.1%) had pre-rx specimens available and 2 (7.4%) had 23s rRNA mutation. Organism load measured for 22 (81.5%) of 27 prevalent infxn and 13 (92.9%) 14 incident infxn. Load sign higher in prevalent than incident infxn. Load higher in 3 women who failed rx compared with women successfully rx with azith (mean 6.1, SD 0.3, median 6 copies/swab vs mean 4.5, SD 0.9, median 4.5; 0=0.01).5 women with 23s rRNA mutation detected, 3 w rx failure and 2 successful rx. Organism load sign higher in rx failure cases than cases that responded (p<0.01)	Excellent - consider for citation	5 - rx response, molecular epi

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Manhart 2013, CID	Double-blind, parallel-group, superiority, 1/2007-7/2011	Seattle, WA; N=606 men >=16yo. rx study (vis d/c +/->=5PMN/hpf x >=3 fields on GS. Azithro+placebo doxy (N=304) or doxy+placebo azithro (N=302)	Azithro 1g +placebo doxy vs. Doxy (100 mg BID 7 d)+ placebo azithro	Efficacy of azithromycin vs doxycycline in men with NGU	Initially: primary outcome microbiologic cure of MG and only MG—p os men followed. May 2007 - added Uu testing	CT, MG, TV, and UU-2 detected in 24%, 13%, 2%, and 23%, respectively. In modified ITT, 172 of 216 (80%; 95% confidence interval [CI], 74%-85%) azithro Tx and 157 of 206 (76%; 95% CI, 70%-82%) doxy Tx experienced clinical cure (P = .40). In pathogen-specific analyses, clinical cure did not differ by arm, nor did microbiologic cure differ for CT (86% vs 90%, P = .56), MG (40% vs 30%, P = .41), or UU-2 (75% vs 70%, P = .50). No unexpected adverse events occurred. Conclusions. Clinical and microbiologic cure rates for NGU were somewhat low and there was no significant difference between azithromycin and doxycycline. Mycoplasma genitalium treatment failure was extremely common.	Superiority RCT	5-rx study
Xu 2013, Sex Trans Dis	Cross X, 6/2008-9/2008	Multiple US STD clinic (LA, MS, MO), pt seeking care, N=2582	survey and MR extract	Determine prev missed dx if testing only visits conducted	Visit dx, sx, risk behav	19.3% men received dx non-GC/CT urethritis (GS NGU and neg GC/CT) - 15.7% in asmx and 32.6% in sx men. Prev did not differ by risk behav.	Excellent - consider for citation	5-epi
Dize, Sex Transm Infect 2012	Diagnostic performance study, 9/2006-11/2009	Internet based study	self-collected penile meatal swabs vs urine for GenProbe APTIMA Combo2 TMA for GC/CT and ASR for TV. For GC/CT, if urine and swab discordant, confirmed with APTIMA CT or GC stand alone assays. All positives TV taken as positive	Se and Sp of self-obtained meatal swab vs urine for GC/CT/TV	Se and Sp of self-obtained meatal swab vs urine for GC/CT/TV	N=634 matching swabs and urines. CT prevalence 13.6%, GC 1.4%, 9.3% TV; CT urine and swab se 76.7% (95%CI 67-84.8%) and 94.2% (95%CI 87.6-97.8%); GC urine and swab se 88.9% (95%CI 56.1-99.4%) and 100% (95% CI 71.7%-100%). TV urine and swab se 39.3% (95%CI 27.2-52.5%) and 80.4% (95%CI 68.4-89.2%). No specificity.	Good - self-obtained penile swabs always collected first, return of home kits <50%.	4-diagnostic test performance
Sena 2012 CID	Subanalysis from NGU rx trial, 11/2006-4/2009	Symptomatic hetero men 16-45yo with NGU from 4 US STI clinics who were randomized to 1 of 4 arms (azithro +/- tinidazole or doxy +/- tinidazole) and followed at 1 wk and 3-4 wks post-rx.	RX regimen	Determine characteristic s assoc with CT, MG and TV at baseline and persistence after rx	Survey data, clinical sx, biologic endpt (gs with >=5PMN/h pf, urine for CT, MG {both TMA} and TV PCR)	293 sx NGU, 98% AA, median age 24y; 245 (84%) returned for 1 wk visit and 169 (65%) returned for visit 3 (median 4 wk post-rx). Baseline 44% with Ct, 31% MG, 13% TV, 28% no pathogen. Of CT rx, 17% with CT visit 2 and 12% with CT visit 3. Among MG+, 47% + at visit 2 and 44% + at visit 3. Of 37 positive at visit 2, 20 had persistent MG. For TV, 14% (2/14) with infxn at baseline persistent infx after rx with tinidazole at visit 2, 1 whom cleared at visit 3 and other no f/u. 13% (33/245) men had clinical failure at visit 2 though 55% of these with no identified pathogen ->Ct in 9%; MG in 33% and TV 12%. At visit 3, 47% with clinical failure, 10% had CT, 25% MG, 10% TV, 56% no pathogen. CT assoc with clinical failure visit 3; MG assoc with clinical failure visit 2 and 3 (p<0.01). Every 5 yr reduction in age assoc. with reduction in CT and MG but with increase in pathogen negative urethritis. Urethral gs >15pmn/hpf aOR 2.01 (1.09,3.72) for CT and 2.31 (1.05,5.09) for TV compared with 5-15PMN/hpf. Having >15PMN/hpf protective against pathogen neg urethritis (aOR 0.39; .19-.78) compared with 5-15 PMN. Azithro rx assoc with CT persistence and doxy rx assoc with MG persistence. Visible d/c and >15 PMN/hpf assoc with persistent CT. Reported D/c or dysuria and visible d/c and >5pmn/hpf at f/u.all assoc with persistent MG infxn.	Excellent - consider for citation	5- rx study subanalysis

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Gesink 2012, Int J Circumpolar Health	Cross-X, 7/2008-11/2009	Convenience sample (Nuuk residents from 2005 Greenland populn registry contacted by phone, 395/1110 contacted, 112 participated and recruitment through press releases/marketing (N=37); In Sisimiut recruitment during health week. Total of 314 residents participated	Survey, FVU. Self-obtained vag swab from women. No exam	Epidemiology of MG in Greenland	Survey data, MG (PCR and macrolide resist testing in region V 23s rRNA gene), CT, GC, TV - all PCR testing	22% of Sisimiut and 16% Nuut participants had STI (MG 13% Sisimiut and 7% Nuut; CT 11% Sisimiut and 8% Nuut). Being young and female stronges predictors of MG infxn. 26 of 29 MG+ provided samples with enough DNA for analysis - All 26 carried macrolide resistance determinants; 9 (A2059G) and 17 (A2058G). 70% of MG + rx with azithro w/in 3 yrs prior to study.	Good	4 - epi, molecular epi
Ito 2012, Inter J Urology	Prevalence pre and post-rx, 11/07-8/09	Australian sexual health clinic, archived samples of 111 rx, 77(69%) cured and 34(31%) failed; 82 (with pre-rx specimen) MG-infected pt rx'd 1gm azithro who returned TOC, 26 experienced failure (20 of whom had post-rx specimens for analysis)	Validation of HRM assay; Treatment failure (MG PCR+ approx 4 wk post azithro)	Prevalence macrolide resistance mediating mutations (MRMM), whether assoc with rx failure, and whether transmitted or selected utilizing high resolution melt analysis (Hrma)	MRMM prevalence pre and post-rx; validation of HRMA	82 (62 male, 20 female) pre-rx samples (MG+) and 20 post-rx (MG+). 6 prob reinfxn, 8 no reinxn, 6 unknown. All failure cases cured with moxi 400mg x 10d. 16 (19.5%) 23S rRNA mutations c/w macro resistance. Of 26 with rx failure (46%) w preexist resist vs 4(7%) of 56 pt with neg TOC (p<0.0001). 20 post-rx failure - all 20 with 23S rRNA mutation post-rx (45% cases mutation in pre-rx specimen = transmitted resistance); 11 (55% with wild-type pre-rx = selection of resistance). No assoc of transmitted resistance with overseas partner. HRMA - no non-specific amplication with 147bp probe but non-specific amp with 67bp assay. 147bp not as sensitiveas 67bp assay but 67bp had more nonspecific amplification.	Excellent, consider for citation	5 - Molec epi; STD
Mehta Sex Tran Dis 2012	Case series	Men enrolled in the RCT of circumcision to prevent HIV acquisition in Kisumu, Kenya	MG and TV detected in FVU by APTIMA transcription-mediated amplification assay. FVU and urethral swabs assessed for CT and NG by PCR. Herpes simplex virus type 2 antibodies detected by IgG ELISA.	Determine the prevalence of urethral MG infection and whether infection was associated with circumcision status among men enrolled in RCT of circumcision to prevent HIV acquisition	MG and TV detection	MG detected in 526 men. NG and TV not associated with MG. CT coinfection 5.8% in MG-infected men, and 0.8% among MG-uninfected men (P = 0.02). MG infectionpredominantly Asx (98%). Prevalence of MG was 13.4% in uncircumcised men versus 8.2% in circumcised men (P = 0.06). Being circumcised nearly halved the odds of MG (adjusted odds ratio [aQR] = 0.54; 95% CI: 0.29-0.99), adjusted for other variables significant at the P < 0.05 level: herpes simplex virus type 2 infection (aOR = 2.05; 95% CI: 1.05-4.00), CT infection (aOR = 2.69; 95% CI: 1.44-5.02), and washing the penis ≤1 hour after sex (aOR = 0.47; 95% CI: 0.24-0.95).	Excellent	5 - Molec epi; STD; consider citing

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Terada 2012, J Infect Chemo	Retrospective, 1/2008-8/2010	Women (18-42y) in Japan with MG+ PCR uterine cervicitis (purulent +/- mucopurulent exudate and sustained EC bleeding)	GC/CT/MG by PCR (EC swab)	Efficacy of various antibiotics for MG	Eradication of MG by PCR	Eradication rate - 90.5% (19/21) for Azithro 2gm po x 1; 85.7% (36/42) for Azithro 1gm x 1; 65% (13/20) for clarithro 400/d x 7; 85% (17/20) for clarithro 400/d x 14; 90.5% (38/42) for moxi 400mg/d x 7d; 100% (42/42) for moxi 400mg/d x 14d; 54.5% (12/22) for levo 500mg/d x 7d; 71.4% (15/21) levo 500mg/d x 14d; 78.6% (11/14) sitaflox 200mg/d x 7d; 92.3% (12/13) sitaflox 200mg/d x 14d	Fair - No clinical endpt; MULTIPLE regimens, no randomization or blinding	2- rx study
Orellana 2012, Sex Trans Inf	Cross-X, prospect, 1/2006-12/2007	Primary care lab (serves outpt from Madrid); sx males with urethral smears	Gram stain (≤ 2PMN/hpf; 3-4 PMN/hpf; >math>\geq 5</math> PMN/hpf); CT (EIA 1/06-5/07 and NAAT 6/07-12/07); GC and haemophilus cx; UU and MH cx; TV wet prep (if partner hx)	Se of gram stain and relationship to pathogens	Prevalence of pathogens by gram stain strata; se and sp of gram stain	148/491 (30%) samples with microorganism; 32 tested for TV (none positive). If urethritis defined as >2 PMN/hpf, se 38% (30-46), sp 79% (75-84); if >5PMN/hpf, se 26% (18-33), sp 91% (87-94). No PMNs in 10% of GC cases (3/30), 59% CT cases (20/34); 84% UU (46/55).	Fair to poor - EIA for CT early on, culture for GC, UU and MH, No MG testing. Wet prep for TV in men	2-diagnostics
Reitmeijer 2012, Sex Trans Dis	Cross-X, retro, 3/2005-12/2010	Denver STD Clinic, All men with gram stain and NAAT for GC/CT	Gram stain	Evaluate GC and CT positivity diff strata of PMN on gs	NAAT positivity by gram stain PMN increment (0,1,2,3,4,5,6,7,8,9,10,>10)	36,546 men evaluated, 5714 (16.6%) with GC and 2297 (6.3%) with CT. 13,520 GS done (36.9% of men with NAAT - 61% of those with CT and 91% of those with GC). 11,422 GS for CT analysis and 10,023 GS for GC analysis. CT pos showed progressive trend along PMN/hpf strata from 4.8% with 0 PMN to 43.8% if >10. Statistically sign increase between 1 (6.6% prev) and 2 (16.2% prev) strata. No trend in GC by PMN strata (only 2.3% had <math>< 10</math>). Rec lower cutoff to >math>\geq 2</math>PMN/hpf	Excellent - consider citation; only one clinic	5- diagnostics

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Lee J Infect chemo 2012		739 pts (304 F and 435 M) at the National Health Insurance Corporation of Korea in Seoul, Gyeonggi province, and six metropolitan cities	PCR for 6 organisms (CT, NG, MG, Uu, M. hominis, and TV), with six monoplex PCRs (one for each organism), and with the SDA assay for CT and NG	Primary goal: assess the concordance of each monoplex PCR assay and the multiplex PCR for the 6 organisms with the use of an automated PCR-based auto-capillary electrophoresis (ACE) system. Secondary goal: compare the results with those obtained with an additional NAAT system, strand displacement amplification (SDA) for CT and NG as		Concordance between the multiplex PCR and monoplex PCR 100% for both sensitivity and specificity. Results of multiplex PCR and duplex SDA were 99.7% concordant for CT and 100% concordant for NG.		4 - Good
Ito 2012, J Infect Chemo	Clinical rx study, Japan, 4/2009-7/2011	16-69yo Japanese males att urologic clinic, heterosexual, with acute NGU, persistent/recurrent NGU, post-GC urethritis; all w ≥ 10 WBC/1ul FVU	Rx with sitafloxacin 100mg BID x 7d	Sitafloxacin efficacy against NGU	Resolution of sx/signs; micro cure (GC/CT TMA; MG, MH, UP UU PCR) - urine as specimen; 22-35d post enroll	89 men enrolled, 63 with ≥ 1 microorganism. 73 (82%) returned to clinic between 7-34 days. Sx resolved in 84.9% judged clinical cure. Those returned post-21 days eval for micro outcomes (N=44) and 95.5% (42) cured. UU persisted in 2. Of 42 with micro cure, 40 (95.2%) clinical cure. UU with 80% eradication rate compared to CT and MG. One MG case that failed levo eradicated with sita.	Good - not randomized or blinded; Prior antibiotic receipt varied by clinical syndrome at enrollment	3-rx study

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Mavedzenge 2012 AIDS	Nested Case-Control within Logitudinal, 1999-2004	Women from Zimbabwe FP clinics and Uganda FP, STD Clinics and sex worker networks, 18-35yo, 218 of whom acquired HIV and 190 from whom specimens available (353 HIV-controls)	HIV Ab and PCR; GC/CT/BV testing, MG testing around the time of HIV seroconversion (PCR), survey data	Determine association of MG infxn with HIV acquisition	MG status around HIV seroconversion visit (or comparable visits for controls); Population attributable fxn of MG and other factors on HIV	183 case and 337 control samplex available; cases had higher risk profile across several different measures than controls; 9.4% MG prevalence at visit prior to HIV detection (14.8% cases;6.5% controls). MG prevalence 9.7% at HIV detection visit (14.9% cases, 6.6% controls). MV analysis association of MG with HIV at visit prior to HIV dx (aOR 2.42; 1.01,5.8). Estimated that 8.7% (0.1-12.2) incident HIV infxn due to MG (c/t 9.1% TV, 72.6% HSV-2, 23.6% partner risk). MG at HIV detection visit associated with HIV acq b/t visits (aOR 2.18; 0.98,4.85)	Excellent - consider for citation; Prospectivedesign; PCR for M gent 68% se and 89% sp in this study so effect size may be underestimated)	5-epi
Politch 2012, AIDS	Cross-X, ?yrs	MSM for HIV care at Fenway (Boston, MA), on stable HAART at least 3 mo and sex. Active (last 6mo)	survey, Semen (24hr post last sex), blood - for HIV RNA and DNA PCR, HSV-2 PCR; HSV-2 serology	Prevalence of HIV seminal shedding in HIV+ MSM on stable HAART	HIV RNA and DNA PCR blood and semen, HSV-2 PCR; HSV-2 serology;p IL-6, IL-8, TNF-a, lysozyme, SLPI. Cell free and cell-associated virus RNA) and cell-assoc DNA combined to make one variable.	101 men, 74% white, 97% MSM, median age 43, median CD4 513 cells/ul. 80% on HAART >1yr. 72% on current HAART >6mo. 73% unprotected sex/3mo. 63% HSV seropositive. 9 men with STI/urethritis or HSV-2 outbreak w/in 1 wk recruitment (all "high risk"=unprotected IAI or RAI/6mo). Of 101 men, 18% with HIV RNA in blood (median VL 560 co/ml) and 30% HIV RNA +/- DNA in semen. Men with HIV detectable in blood more likely to have it detected in semen (9/18 (50%) vs 21/83 (25%), p=0.049). Multi Regress: pts with STI/urethritis >29 x more likely to have HIV in semen (aOR 29.03; 95% CI 2.6, 523.53) vs those without STI/urethritis. Seminal plasma TNA-a in upper quartile assoc with HIV in semen (aOR 13.97; 2.85,95.02). Unprotected IAS with HIV+ partner assoc with HIV in semen (aOR 7.34; 1.59,47.73)	Excellent - consider for citation urethritis hx based on self-report?	5 - epi

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Cosentino J Clin Micro 2012	Case series	500 participants aged 18 to 64 years attending the Allegheny County Health Department, Magee-Womens Hospital of University of Pittsburgh Medical Center (UPMC), or the Pittsburgh AIDS Center for Treatment reporting at least one lifetime episode of receptive anal intercourse	SDA to TMA	Compare the performance of strand displacement amplification (SDA) to that of transcription-mediated amplification (TMA) for CT from rectal swab samples obtained from both men and women; Assess the performance of these NAAT compared to culture for rectal NG; describe the prevalence of MG and TV		Of 497 evaluable participants, 41 (8.2%) were positive for CT, 21 (4.2%) were positive for NG, 26 (5.2%) were positive for TV, and 47 (9.5%) were positive for MG. The sensitivity and specificity of the CT test were 100% and 99.8% for AC2 and 56.1% and 100% for SDA, respectively. The sensitivity and specificity of the NG test were 100% and 100% for AC2 and 76.2% and 100% for SDA, respectively, while culture was only 23.8% sensitive. Of the 114 participants who had a positive result for any of the four infectious agents, 16 were positive for two pathogens and 3 were positive for three pathogens		4- diagnostic perform
Ito 2012, Inter J Urology	Cross X, retrospect, 1/2006-6/2010	Japan, N=56 men <40yo w clinical epididymitis, confirmed with ultrasound	Urethral smear for gs/GC cx, FVU WBC quant, bacterial cx, NAAT for CT, PCR for MG, MH, UP and UU	Prevalence of genital mycoplasmas and ureaplasmas in acute epididymitis	Multi orgs	GNR - 2 (3.6%); GPC = 23 (41.1%); GC = 3 (5.4%); CT = 28 (50%); MG = 5 (8.9%); MH = 6 (10.7%); UU (biovar 1) = 6 (10.7%); UP (biovar 2) = 5 (8.9%); none = 9 (16.1%); Cases with GC - 66.7% also with CT; Chlamydial, non-GC - 15.4% also with MG, 7.7% also with MH, 3.8% with UP and 15.4% with UU; Non-GC and non-CT = 4% MG, 16% MH, 20% UP, 4% UU	Good (no direct aspirates of epididymi)	4 - clin dx
Ahrens, ASM 2012 abstract (C-2282)	Cross-X, molecular epi ?yrs	Males in STD clinic with urethritis and >10PMN/hpf and asmx males with <5PMN/hpf (urine?)	FVU - high throughput sequencing of bacterial flora	Characterize flora from asxm males and males with urethritis unknown etiology (UUE)	v3 and v4 region of 16srRNA gene amplification and sequenced	20 UUE, 3 CT+, 7 MG+, 18 neg controls selected - average 15K sequences obtained from each of the 48 samples (>300 genera). Median # genera 60 UUE, 67 in CT+ or MG+, 45 in controls. Propionobacterium and sphingomonas in all. Finegoldia and peptoniphilus widespread but >numbers in cases, paracoccus and lactobacillus >numbers in controls	Excellent - molecular epi	5-molecular epi
Taylor, Sex Transm Dis, 2011	Diagnostic performance study, 4/96-9/96	Males attending N. Orleans STD clinic	2 urethral swabs - 1 for methylene blue/gentian violet (MB/GV) stain and other for GenProbe PACE 2 for CT and GC, 2 days each moth GC cx and gs	Determine performance of MB/GV for GC	Se and Sp of MB/GV	N=332 men, mean age 27.7y, 97.8% black. 75/307 (24.4%) had positive culture. Sensitivity of gram stain and MB/GV = 97.3%. Specificity of gram stain and MB/GV = 99.6%. 100% correlation between GS and MB/GV. No heat fixation required for GV.		

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Samra 2011, Diag Micro and Infect Dis	Diagn test eval ?years	GU specimen 113 pt (72 male and 41 fem) with an STI	STD6B ACE sys	Determine se and sp intergrated PCR-based ACE system for detection of 6 STIs	CT, MG, MH, GC, TV, Ureaplasma (UU and UP) vs 1 or more ref std	60 genital smears, 45 urine, 8 semen samples tested; of 113 specimens 38 (33.6%) neg; 51 (45.1%) one pathogen and 24 (21.2%) mult pathogens; GC in 13.3% specimens; CT in 16.1%; MH in 11.5%; Ureaplasma in 42.5%; MG in 5.3% and TV in 3.3%; Se - 100% for CT, GC, MG, TV, MH and 98% for ureaplasma; sp 100% for CT, GC, MG, TV, 99% for MH and 97% for ureaplasma	Se and Sp, discrepant analysis used; 5 discord results, 2 resolved in favor of ACT and 3 in favor of COBAS, no pattern by pathogen	4-dx
Lillis 2011, J Clin Micro	Substudy-Cross-X, relative sensitivity of MG test by anatomic site	Women >=18yo NO STD clinic 5/28/03-2/26/04 for any reason	4 lab specimens: 1)FVU;2)PC vag swab;3)EC swab; 4) rectal swab - PCR testing	Relative sensivity of specimen/combo of specimens	MG infxn = 2 initial PCR tests+ or initial + at one site only confirmed by repeat on same spec.	Women 18-54yo, 95% AA, 70 (17.5%) with MG, Individ No (%) of specimens in which MG detected amongst the cases - vag swab 60 (85.7%) 95% CI 74.8,92.6; EC swab 52 (74.2%), 62.2,83.7; urine 43 (61.4%), 49-72.6; rectal 17 (24.3%), 15.2,36.3; Specimen combos - vag +/- EC 67(95.7%), 87.2,98.9; vag +/-urine 65(92.9%),83.4,97.3; EC+/-urine 61(87.1%), 76.5,93.6; vag +/-EC swab +/-urine 69(98.6%), 91.2,99.9	Good, does not provide sensivity of PCR itself but rather info about highest yield specimen types	4-dx
Hamasuna 2011, Sex Trans Inf	Clinical trial, not randomized or blinded, 3/2008-9/2008	Japan, males >20yo with sx pus/dc/dysuria/ureth discomfort/itch; >5WBC/hpf on urine sedi or >10 WBC/hpf uncentrifug urine, no GC	Gati 200mg po BID x 7d	Gati efficacy	f/u 2-3 wks post-gati rx;sx; GC/CT/MG rslt; GC/CT APTIMAC2; MG (fzn) Taqman. +recked w 16S rRNA test	169 enrolled, eval 135 {86 had MG or CT; 53% overall with CT, 13% overall MG). Micro cure 100% CT, 83% MG {3 with unresolv MG asx). Clinical cure rate 99% (2 men with CT cured still with dys/itch)	Fair, Open label, unblinded, nonrandomized rx trial	3 - rx
Frolund, 2011, Sex Trans Inf (conference abstract ISSTD 2011 P3-S7.14)	Cross-X, ?yrs	male STD clinic pt with symptomatic NGU (>=5PMN/hpf) and asmx men without NGU (Denmark vs Sweden)	Urine testing for GC, CT, MG, UU, UP, TV, HSV1 and 2, adeno	Asso UU and UP by quantitative PCR in urine of men w and wo NGU	Prevalence and bacterial load of UU and UP in males w and wo NGU	158 men with NGU (22% CT, 30% MG; 3 dual infxn). UU in 13% NGU and 12% controls (NS), Median UU DNA load higher in men with NGU vs no NGU (223 geq vs 10, p=0.002). No diff in UU detection in NGU of unknown etiology though UU DNA load higher in this group compared to controls (p=0.01). Using cutoff 53geq, men with NGU unknw etiology more likely to have UU (14%) than control group (1%), p=0.005. No difference in UP detection or DNA load bw groups. HSV-1 in 3% cases vs 1% controls, HSV2 in 2% cases. All negative for adeno.	Good, conference abstract	4-epi
Hoosen 2011, Sex Trans Inf (conference abstract ISSTD 2011 P3-S1.23)	Cross-X, ?yrs	Men with d/c, dysuria, and no sx. ?venue	MG bacterial load, pathogen prevalence (TMA assay)	Determine Assoc of MG bacterial load with sx	MG bacterial load, GC, CT, TV	94 men with d/c, 206 with dysuria, 75 no sx; 138 (46%) with at least 1 pathogen, 9.3% mixed. SX vs ASX - (MG 17.3 vs 6.6%), (GC 16.7 vs 2.6%), (CT 12.3 vs 5.1%) and TV (8 vs 1.3%). MG in 20.2% men with d/c vs 4.4% dysuria. Men with d/c had significantly higher MG concentrations than those with dysuria (p<0.001) and loads in those with sx +/- signs of were higher than asx (p/02).	Good - conference abstract	3-epi

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Furness 2011, Sex Trans Inf (conference abstract ISSTDR 2011, P3-S1.36)	Cross-X (random sample), 1/2008-12/2009	600 18-60yo Men, SE STD Clinic (Washington, DC) with gram stain and NAAT	Se and Sp of gram stain with NAAT as gold std; time to rx by diagnostic test	Gram stain performance and time to rx by gs vs NAAT	Atypical urethritis=inflammation on gs (no GC) and NAAT neg for GC and CT	N=600 (82.3% black), 253 (42.2%) with clinical urethritis, 47% previous STD, mean age 30.6y. 105 GC, 110 CT, 3 co-infxn. Atypical urethritis = 31.2% GS se = 84.3%, sp 100%, PPV 100% and NPV 96.7%. Mean time to rx 2.52d (SD 2.17). Analysis of variance - gs (F 41.5, p<0.0001) with sign different effects on time to rx than NAAT (F=19.18, p<0.0001) with rx related to gs significantly earlier.	Good - conference abstract	3-test performance
Yew 2011 J Clin Micro	Retrospective review of MG+specimens with sequencing 9/2009-10/2010	SELECTED patient with recurrent NGU with MG PCR. Archived specimens.	Presence of macrolide resistance point mutations	Correlate clinical response with mutations.	Prevalence of macrolide resistance mutations	N=52 with 11 MG+, 9 able to be sequenced, 4 had A2059G mutation. All 4 had received single dose azithro 34-58 days {or within several weeks}, prior to MG+ test. All 4 received extended azithro (500mg/250mg qd 2-5); 2 cured and 2 failed. Of 5 MG+ pts with no mutations, 3 cured, 1 LTF, 1 received Azithrox1 with subsequent testing A2059G+.	Fair-small sample size, retrospective, samples frozen for variable amt of time	3-molecular epi
Frolund, 2011, Sex Trans Inf (conference abstract ISSTDR 2011 P3-S1.28)	Cross-X, ?yrs	Men with and without NGU (>/=5PMN/hpf), without GC, CT, MG, UU and UP. ?venue (Sweden vs Denmark)	PCR for BV-assoc bacteria (urethral swab)	Association of BV organisms with urethritis unknown etiology (UUE)	BV organisms by PCR (atopobium vaginae (AV), Sneathia sanguinegens (SS), leptotrichia amnionii (La), G.vag (GV), BVAB 1, 2, 3; megasphaera phylotype 1 (M1)	9 symptomatic men, 19 asymptomatic men with NGU; 30 asymp men without NGU. GV 93% cases with UUE vs 37% controls (p<0.0001). No difference in organism load. 1 control with BVAB1, otherwise everyone negative for BVAB2, 3, M1. No other associ with specific organisms between NGU (sx and asx) and asx.	Good - conference abstract	3-epi (conference abstract)
Kumar 2011, Sex Trans Infect (conference abstract ISSTDR 2011 P3-S1.20)	Cross-X, 2008-2009	males with dysuria +/- d/c at 8 govern and NGO STI clinics at 4 Indian states	survey, exam, urine for GC, CT. Urethral swab for MG, UU, TV by PCR	Determine etiologic agents of urethral d/c syndrome	Prevalence of pathogens	246 clients dx UD syndromes, 29% at least 1 infxn. GC - 14%, CT 4%. 86 with discharge (64% with a pathogen) - 33% MG, 34% UU, 0% TV, 24% GC, 7% CT	Fair - difficult to assess - conference abstract	3-epi
Mavedzenge 2011 Sex Trans Inf (conference abstract ISSTDR 2011 P1-S1.57)	Nested case-control, longitudinal cohort, ?yrs	HIV+ ART-naïve Zimbabwean women 19-37yo.	MG PCR, HIV viral load	Prevalence of MG, Assoc with HIV genital shedding	Presence and quantity of MG, Genital and plasma HIV viral load	MG at 44/420 (10.5%) visits, median load of 1497 copies/ml (<300-3,240,000). MG independently assoc with BV and younger age, genital HIV RNA (OR 2.73, 95% CI 1.02-7.33). Higher MG VL weakly assoc detection of genital HIV RNA (OR 1.75, 95% CI 0.96-3.19) but no assoc w quantity of HIV RNA.	Good but limited info available as conference abstract	3-epi

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Anagnius 2011 Sex Trans Infe (conference abstract ISSTDR 2011 LB0-1.4)	Retrospective analysis of rx outcome for MG	Pts STD Clinic in Sweden with MG PCR+, 1/1998-12/2005 with TOC	TOC following doxy, azithro 1gm and azithro 15gm extended rx	Determine rx response by regimen, determine macrolide resistance prevalence(in those rx'd and yearly 2006-10 in any MG+)	TOC result, macrolide resistance	313/407 (77%) had TOC, 254/313 (81%) within 12 wk. Eradication rate - doxy (43%; 46% women/38% men); azithro 1g (92%; 96% women/89% men); azithro 15g (96%; 100% women/93% men). 100% those positive post 1gm azithro with macrolide resistance! 2006-2007 - no macrolide resistance; 2008-2009 - 1 resistant isolate/yr; 2010 - 11 pts with macrolide resistance in newly detected MG	Good - Rx study not RCT or blinded but retro; small numbers	4- rx study and molecular epi
Walker 2011, Sex Trans Infect (conference abstract ISSTDR 2011 P1-S1.56)	Cross-X, ?yrs	Women 16-25yo, sexual health clinics and general practice clinics, Australia	q6mo CT and MG testing (self-obtained vag swab)	Determine incidence of MG	Prevalence and incidence	1116 women from 29 clinics, 79% retained. Prevalence MG baseline 2.4% (95% CI 1.5-3.3). Incidence 1.2/100py (95% CI 0.7-2.1). Prev and Incidence assoc with women from sexual health clinic and increased number of partners assoc with MG. Azithro failure rate 15% (95% CI 3.2-37.9).	Fair - abstract ?technology	3 - epi
Wetmore 2011, JID	Case-control, 5/2007-10/2009	Seattle, WA; N=754 men >=16yo. Cases (N=329) from NGU rx study (vis d/c +/- >=5PMN/hpf x >= 3 fields on GS. Controls (N=191) men wo NGU in STD clinic or (N=193) men from ED (no dc or PMN).	PCR for UU and UP. Pt variables	Assoc UU and UP with NGU	MV analyses	UU marginally assoc with NGU in aggregate analyses regardless of control group (aOR 1.6; 0.9-2.8 STD control; aOR 1.7; 0.97-3.0 ED control). Assoc strongest when restricted to men with <10 lifetime part. {aOR 2.9; 1.2-6.7 STD control and aOR 3.2; 1.3-7.6 ED control} and <5 vaginal partners {aOR 6.2; 1.8-21.0 STD control and aOR 5.2; 1.3-20.2 ED control}. UP not assoc positively with NGU. ?adaptive immunity attenuate clinical manifestation of UU?	Good	4 - epi
Hagiwara 2011, J Infec Chemo	MIC deter plus rx study, 8/2004-12/2007	Japan, 7 strains MG vs AZM, clarith, doxy, mino, gati, levo, spar = MIC; Men with MG NGU (N=30)	MIC determ; Efficacy of 1gm AZMx1	In vitro susc antimicrobials vs MG; micro efficacy of 1gm azith for MG+ NGU	MIC; 2-4 wk post azm sx assess, GS or urine for WBC, PCR MG; sx resol plus 0 PMN on GS or FVU sed = cure	MIC AZM - 0.004-0.008; clarith - 0.008-0.015; doxy - 0.06-0.125; mino - 0.006-0.125; spar 0.25; levo - 1; gati - 0.125-0.25;;25 of 30 (83.3%) met defin of cure. Cure rates sx only - 90%(27/30), signs only - 83.3%(25/30), sx and sign 83.3% (25/30)	Fair - MIC not std; drug stdy open, non-blinded	3 - MIC and rx study
Ito 2011, Sex Trans Inf	Cross X, retro, substudy, ?yr	7 of 24 men enrol in prev study w no macrolide mutation in urine MG DNA at entry w micro failure with 1g azith	Assess relatedness of MG strains before and after rx; genotype MG DNA in urine	Geno short tandem repeats of AGT/AAT unit in MG309 gene and single nucleotide polymorph in MG191	Genotypes, Urine collected 14-28d post azith	4 of 7 pt with persistent sx; 6 of 7 abstinent; 4 of 7 pts, post-rx MG DNA in urine with A to G transition at nucleotide 2071 or 2072. In 1 of 4, Pro81Ser in ribo prot L4 with mutation in 23S rRNA gene. Suggests resistance selected by rx in the 4 strains	Good, small numbers, cannot correlate mutations with phenotypic resistance; ?exclude man not abstinent	5 - Molec epi; STD

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Schwebke 2011, CID	RCT, double-blind, phase 2B rx study, 11/2006-4/2009	305 hetero men 16-45yo from STD clinics in AL, LA, NC, MD with NGU (new-onset d/c or dysuria plus smear >=5PMN/hpf and no GC	Doxy 100mg BID x 7d +/- tinidazole 2gm x 1 vs azithro 1gm x 1 +/- tinidazole 2gm x 1	Efficacy of drug regimen	Clinical failure (1st visit; d15-19) - sx and >5PMN/hpf or d/c on exam; (2nd visit; d35-45) >5PMN/hpf along or d/c on exam	82% completed 1st f/u and 56% completed 2nd f/u; Most who d/c study early (41% 2dary to clinical failure 1st visit) the rest LTF; 43% with CT, 31% with MG, 13% TV, no pathogen in 29%; 16% with multiple pathogens (CT/MG 8%); MITT (PP similar) - Clinical cure 74.5% doxy regimens comb and 68.6% azithro regimens comb. Tinidazole addition no benefit to clinical cure. Majority (65%) of 82 pts with clinical failure final visit due to >5PMN/hpf. Micro efficacy - 94.8% CT for doxy vs 77.4% for azithro; 30.8% MG for doxy vs 66.7% MG for azithro; 69% of men with TV and did not receive tinidazole sponta resolved (73% of these had cleared by 1st f/u)	Excellent; No UU testing; 61% participants adherent (>= 80% study drug) at 1st visit	5-rx study
Takahashi 2011, J Infect Chemo	Rx study, not randomized or blinded, 9/2009-4/2010	Japan, male pt (>=18yo) sx and asx NGU (dysuria or itch +/- d/c plus >=5WBC/hpf FVU sedi. Asx included only if CT+. No GC	Levoflox 500mg QD x 7 d	Clinical and micro efficacy of levo for NGU	CT/GC NAAT; MG, MH, UU and UP PCR; sx assess; WBC <4 or less	87 men with NGU - 82 sx and 5 asx. Only 53 of 82 sx had f/u: 19/53 (35%) with CT; 4/53 (7.5%) MG; 6/53 (11.3%) with UU; 39.6% no pathogen; Micro cure 92% (22/24) for CT, 60% for MG (3/5), 100% for UP, UU, MH. Clinical cure rate - 95% for CT; 50% for MG; 100% UU; 100% MH; 100% UP	Good, not randomized or blinded. High LTF	4-rx study
Wetmore 2011, Sex Trans Dis	Case-control, 2007-2009	367 men in NGU rx trial Seattle STD clinic with visible d/c or >=5PMN/hpf on GS and no GC	GC, CT, MG, TV and UU NAAT testing; MV analysis	Determine demo, behav and clinical charact of men with NGU w and wo pathogens	MV analyses of predictors	Mean age 33.9, 52% white and 35% black; 28.9% male partner/12mo; Urethral pathogens in 50.7% (CT 22.3%, MG 12.5%, TV 2.5%, UU 24%, multiple 9.5%). UP in 13.6% {not considered pathogen}. CT+ and MG+ men significantly younger. MG+, TV+, UU+ more likely black. Idiopathic cases less likely black, less likely low income/low educ status and fewer partners/2mo. CT+ more likely MSM. UU+ less likely MSM. All TV MSW. Partners of TV+ men sign older than partners of TV- cases and partnership sign longer. CT+ more likely >5PMN/hpf. Inflammation not sign assoc with MG+; CT+ indepent asso young age, male partner, black race, visit d/c, inflam on GS and less likely hx NGU, other pathogen; MG+ indepent young age, black, money for sex, d/c sx. UU assoc with less educ, >=1 fem partner/2mo, cloudy d/c	Good	4 - epi
Muvunyi 2011, Diagn Micro and Infect Dis	Diagn test eval 11/2007-3/2010	Kigali, Rwanda; N=242 vag swabs from infertile fem plus 80 spec +GC or CT previously tested by duplex PCR Abbott real time	STDFinder assay (diff targets per pathogen) vs established tests for other pathogens, discrepant analysis for CT/GC/TV/HSV	Test performance and validation	Se/sp STDFinder vs expanded gold standard (2 PCR+)	CT, NG, MG - se and sp both 100%; TV se = 100% and sp 90.2%; HSV-2 se 100% and sp 96.1%	Good, not clear how discrep analysis for MG would have been handled but did not come up	4- diagnostic perform
Shimada 2010, Inter J Antimicro Agents	Cross X, retro, 2006-2008	Japan, men with NGU visiting urologic clinic.	Ampl/seq quinolone-resist determining region (QRDR) of gyr A gene and anal region parC gene from MG. Comp to previously report quino resist mutants of mycopl and ureapla sp	Determine prevalence poss. Quino resist MG in sample	Prevalence of QRDR mutation in gyr A and parC gene	58 (18.8%) of 308 prerx urine sp MG+(PCR); 28 that were neg for CR, MH, UP and UU randomly chosen for analysis. 3 of 28 (10.7%) urine specimens contained MG with aa alterations in ParC analog to those commonly observed in FQ resist mutans of other mycoplasma and ureaplasma sp.	Good, small sample size, unable to look at other mechan FQ resist, unable to demonstrate phenotypic resist	5-molecular epi

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Wetmore 2010 CDC STD Prev conference abstract (B3c)	Cross-X, 7/2007-9/2009	Men w/o urethral sx or antibiotic use in ED waiting area, Seattle, WA	Survey, urethral swab, GC/CT/MG/TV NAAT	Identify characteristic s assoc with asmx urethritis	Prevalence of urethritis defined as ≥ 5 PMN/hpf on gs (incl by pathogen) and assoc with risk markers by MV analysis	236 men - 38 (16%) with asymptomatic urethritis {16 (42%) with ≥ 5 pmn/hpf and 4 of 198 (2%) with < 5 PMN/hpf and visible d/c on exam}. CT, MG, +/- TV in 6 (16%) those with > 5 PMN/hpf and 8 (4%) < 5 PMN. Asmx urethritis on MV analysis - assoc with pathogen (aRR=2.6; 2, 3.3); > 2 hrs since last voice (aRR=2.6,1.4,4.7); insertive anal sex/2mo (aRR=2.2;1.9-2.6); uncircum (aRR 1.7;1.5,2.0); more sex partners/2mo (aRR 1.1 per partner,1.1,1.2). Results same when pathogen+ men excluded.	Good	3-Epi
Ezpeleta 2010 ICAAC abstract (L1-356)	Cross-X, 1/2010-3/2010	men with acute urethritis and men without sx/signs urethritis, Spain	GC and TV testing by cx, CT and MG by PCR (urethral swab)	MG prevalence in pt with urethritis	Prevalence of pathogens and associ with clinical dx	373 men, 63 with sx/signs urethritis (21 GC/41 NGU) and 310 without. MG prevalence 12.2%{CT prevalence 87%} in NGU group- no CT+ NGU case with MG but MG prevalence 80% in NGCNGU. 1 pt with MG in control group. MG detected more frequently in sx vs asmx men and prevalence greater in CT- NGU vs CT+ NGU	Fair, ?criteria for urethritis dx	3 - Epi
Couldwell, Int J STD AIDS 2010	Case-control, 4/2006-11/2007	STD Clinic, Sydney, Australia, Case = men with urethral sx or signs (discharge reported or on exam, dysuria +/-urethral irritation; controls = no sx/signs; men with GC exclude.	Urethral swab for GS and cx; Urine CT, MG, MH, TV, GV, UP, UU, NG, N mening, Strep pneumo, H. flu, adeno, HSV1/2 by mPCR/RLB.	Prevalence of pathogens in men with and without sx/signs; role of UU in NGU	urethritis defined as ≥ 5 PMN/hpf on gs	N=505 evaluable; smear available for 491. Cases older, more likely vaginal sex (study enrolled MSM and MSW). NGU not assoc with oral sex; Pathogen prevalence in controls vs cases: CT (3 vs 18.7%); MG (0.8 vs 4.5%); UU (8.4 vs 12.3%); UP (6.3 vs 5.6%); H. flu (5.1 vs 7.1%); MH (3.4 vs 1.9%); HSV-1 (0.8 vs 1.9%). CT and MG associ with NGU. UU assoc with NGU but not statis. sign on UV analysis. UU was sign asso with urethral dc on exam and dysuria. UU assoc with NGU on MV analysis (among men without another pathogen detected (OR 2.0;1.1-3.9; p=0.03). UU assoc with microscopic urethritis, even stronger assoc with mixed infections excluded (OR2.6,1.3-4.9;p=0.008); 35% of CT, 60% UU and 50% MG infection with < 5 PMN/hpf; UU more likely assoc with NGU in men with female partners, esp unprotected vag sex.	Good	4-Epi
Nelson PLoS ONE 2010	Cross-X	Men > 18 yo, asymptomatic {no discharge or dysuria and < 5 PMN/hpf in FVU, no antibiotics at least 7d) at an STD clinic in Indiana (N=19)	16S rRNA PCR and DNA sequencing STI = GC, CT, MH, MG, UU; GC and CT with Genprobe Aptima TMA and rest with sequencing	Characterize microbial communities in first catch urine from cohort sexually active high risk males	STI and associated microbiome composition	Urine from sexually active men often contains complex microbial communities and the composition of the urine communities is related to STI. Men with STI more likely to have sneathia, gemella, aerococcus, anaerococcus, prevotella and veillonella, etc.	Good	4-molecular epi
da Costa, Int J STD AIDs, 2010	Cross-X, ?time-fram	HIV+ men (148 attending urologic visits and 75 in HIV outpt clinic), Sao Paulo, Brazil	MG urine PCR	Prevalence of MG by urine PCR in HIV+ men	MG PCR+, behavioral and demo data	N=223 men, 13 (5.8%) MG+. Mean age 43. MG+ more stable partners compared to MG- (NS); 61.5% MG positive men asymptomatic (57.1% MG - men asympto). No diff by CD4/HIV VL.	Poor - no testing for other pathogens; symptoms not specified, no indicators of inflammation, need more info about study popln (specifically group seeking urologic services)	3-epi (HIV+)

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Berntsson, Int J STD AIDS 2010	Case-control, 2004-2007	Men attending STI clinic in Sweden; with ≥ 5 PMN/hpf by methylene blue stain = cases; Controls with ≤ 2 PMN/hpf and no symptoms.	Urethritis group tested for EBV, HSV1/2, CMV, adeno, UU biovar 2 (1,2,or3) from swab. Urine for MG and CT (CT SDA, all other organisms PCR). Controls tested for EBV and UU, CT and MG (not tested for other viruses as none of cases had them).	Prevalence of pathogens in men with and without sx/signs	Prevalence of pathogens in men with and without sx/signs	N=112 urethritis cases and 103 controls, median age 28 and 30, respectively. Cases more likely to have had previous STI. 21% cases and 6% controls had EBV ($p < 0.01$); No other viral pathogens detected in cases. 15% cases and 3% controls with CT ($p < 0.01$). 6% cases and 1% controls with MG ($p = 0.06$). 10% of cases and controls had UU. 15% CT cases, 12.5% MG cases, 47.6% UU had < 5 PMN/hpv. EBV viral load sign higher in urethritis cases vs controls. EBV viral load similar when only pathogen vs co-infection with other pathogen (i.e. CT). 16 out of 30 time EBV isolated with another pathogen (CT, MG, UU)	Good - no data on oral sex	4-Clin Dx
Soni 2010, Sex Trans Infect	Cross-X, 2/2008-7/2008	HIV+ and HIV- MSM in Brighton GUM clinic	Demographics/behavior/sx/exam/FVU and anoscopy-obtained rectal swabs for GC/CT NAAT; MgPa PCR with confirmatory PCR of Mg249 gene	Prevalence of urethral and rectal MG in MSM and associations with sx, signs, behavior and STI	Prevalence of GC/CT/MG, predictors	438 MSM - overall prevalence MG 6.6% (2.7% {12/438} FVU and 4.4% {19/438} rectal). MG sign assoc with HIV+ (OR 7.6; 3.2,18.7; $p < 0.001$) and more prevalent than GC and CT in HIV+MSM. MG+ 7.8% urethra and 14% rectal in HIV+ vs 1.4% and 1.8% in HIV- men, respect. MG+ urethra assoc with dysuria ($p < 0.001$) but rectal infxn not assoc with rectal sx. All smears in sx men > 20 PMN/hpf. CT overall 7.8% - 3.7% urethra and 5.6% rectal; GC overall 5% - 2.3% urethra and 3.2% rectal.	Good	4-Clin Dx
Ondondo 2010, Sex Trans Infect	Subanalysis of Ureaplasma sp on specimens from case-control study, 12/98-8/99	Case-control popln from Seattle STD clinic (hetero men 16-49); cases urethral d/c on exam plus ≥ 5 PMN/hpf GS. Controls = no sx or signs.	PCR testing for UP and UU (archived urine)	Eval role of UP and UU in NGU	UU and UP prevalence in cases and controls and MV predictors of infxn	43% of cases (N=51) and 50% of controls (N=59) pos by undifferentiated Ureap cx; PCR cases - 31(26.1%) UU; 17 (14.3%) UP and PCR controls - 19 (16.2%) UU and 34 (29.1%) UP. Median age 27.5 UU and 26 UP; UU + less likely white and more likely to have prior urethritis. Weak assoc UU to NGU aOR 2.3{1.04-4.9}. Assoc streng w younger age (< 28 y) of white race (OR 5.4;1.3-22.2). UP negatively assoc with NGU aOR 0.4{0.2-0.8}	Good	4-Epi
Mena 2009, CID	RCT, 2/02-4/04	Men with NGU (sx or d/c plus ≥ 5 PMN/hpf; no GC), attending LA STD clinic	doxy 100mg BID or Azith 1gm po x 1	Compare efficacy of azithro vs doxy for MG	F/u 10-17d (2nd f/u 31-41d for MG+); MG PCR (dot blot); clinical and micro failure; clinical failure rx azith 500mg/250 mg x 4d	197 randomized to azith and 201 to doxy. MG in 78 (20%; 18% in azith and 21% in doxy group); Similar rates of f/u (79% doxy vs 72% azith). 17 (55%) of doxy men MG+ at initial f/u compared to 3 (13%) azith group ($p = 0.002$). 14 (82%) in persistently infected doxy group no sx/signs/ < 5 PMN. 1 azithro rx failure sx. Doxy adhere high. 2 in doxy group with late f/u with clinic and micro failure. 27 men seen at initial f/u returned for 2nd f/u. 8 of 11 infected men in doxy had clinical failure and both infected in azithro failed clinically. 7 of 10 recurrences in MG+ but clinically cured at initial f/u; 24% of clinical failures doxy vs 8% azithro. 5 men with rx failure given 5d azithro returned and 2 with MG. LTF following rerx	Good, not blinded to drug	4-rx study
Deguchi 2009, J Infect Chemo	Cross-X, 7/2006-9/2006	Japan, FSW 18-47	Vag swab and throat washing tested for GC, CT, MG, MH, UP and UU (NAATS)	Determine prevalence STI in throat and vag and predictors	Prevalence	403 FSW, all performed fellatio; GC vag 7(1.7%) and 16 (4%) throat; CT 29 (7.2%) vag and 8 (2%) throat; MG 7 (1.7%) vag and 0 in throat; MH 79 (19.6%) vag and 5 (1.2%) throat; UP 161 (40%) vag and 1 (0.2%) throat; UU 41 (10.2%) vag and 3 (0.7%) throat. GC and CT infection in pharynx was assoc with genital infxn.	Fair, large sample size but test perform of throat wash not clear	3 - epi

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Gaydos Sex Transm Infect 2009 (85:438-440)	Cross-sectional, Baltimore STD clinic. Every 5th man approached, acceptance >85%	Baltimore STD clinics, men age 19-34/	Urine and 2 swabs for gram stain, GC/CT (urine TMA), TV and MG PCR and TMA (urine); TV and MG had to be + by both tests to count as +	Prevalence of urethritis pathogens	Urethritis (>=5PMN/hpf), pathogen prevalence	N=290; 153(52.8%) with urethritis and 137 (47.2%) without urethritis. Mean age 26.9, 96.9% black, Men with urethritis more likely to be contacts to STD, have symptoms. Overall prevalence, CT (20.3%), NG (12.8%), TV (3.4%), MG (15.2%). Prevalence by pathogen in those with and without urethritis - CT (32.7 vs 6.6%), NG (24.2 vs 0), TV 5.2 vs 1.4, MG (22.4 vs 7.3). At least 1 organism detected in 67.3% with urethritis vs 14.6% without. In men with urethritis, 5.9% co-infected with CT/MG and 5.9% co-infected with CT/NG. CT and MG sign assoc with urethritis on MV analysis (p<0.001) while TV was not. MG only pathogen in 14.4% men with urethritis	Good	5 - epi
Zeighami Int J STD AIDS 2009	Case-control?; 2/2005-6/2005	Tehran, Iran Infertility clinic; Men 21-50 with infertility at least 1 yr; control men 20-40 presenting for check-up.	Ureaplasma urealyticum DNA by PCR in semen	Prevalence of UU in semen among infertile and healthy men; UU influence on semen quality	UU Prevalence, Semen quality; species-sp primers used to diff. UU and UP	N=100 infertile and 100 healthy men; 9(9%) if infertile men vs 1% healthy men with UU; 3% infertile men vs 2% healthy men with UP. Volume, sperm count and normal sperm morphology lower in UU+infertile men vs UU-infertile men; differences in semen quality by UU vs UP not sign but trended towards worse with UU	Fair - very small sample, not clear how controls chosen, no measure of inflammation in either group	3-epi
Nye 2009 Am J Obstet Gyn	Cross-X	Males >=18, Alabama STD	Males (N=298) had 2 urethral swabs and one 25mL FVU. Specimen order randomized weekly	Se, Sp, PPV, NPV for urthral swabs and urine	Test performance	N=298 males, TV 4% by culture and 13.4% by ATV TMA; MALES PCR urethral swab from 54.8-91.7% se; 95.5-100 sp; PCR urine from 47.6-91.7% se and 96.9-100% sp; ATV swab from 91.7-96%se and 86.7-96.5%sp; ATV urine from 73.8-96% se and 91.9-98.4% sp, depending on algorithm used	Excellent	5 - DX
Wetmore 2009, J Adolesc Health	Cross-X, Wave III National Long Study of Adoles Health	5,447 men 18-27	Questionnaire (interviewer and ACASI), LCR (urine) for GC/CT) PCR for TV and MG	Estimate prevalence urethritis and compare correlates of idiopathic cases vs pathogen-mediated cases	Prevalence (GC/CT/TV/MG) and predictors; urethritis based on sx (24 hr/12mo) dysuria or d/c	Mean age 22y; 76% white; 86% hs diploma; 1.2% men reported urethritis sx/24hr and 3.7% in 12mo and of those with sx day of interview, 17.6% with known pathogen and >80% no pathogens (no breakdown by pathogen). On MV analyses, men with idiopathic urethritis 10-fold more likely to report STD dx, yet 7-fold more likely to report fewer or no vag sex partners compared to those without sx or pathogens.	Excellent	5-epi though need pathogen-sp prevalence
Chalker 2009, J Med Micro	Test performance substudy with case-control study, 3/2007-6/2007	Validation of mg219 gene assay and clinical study of 280 men {130 case males with NGU, 150 control males without NGU} 23 fem partners all >16yo from local sexual health dept.	mg219 assay compared to mgpa PCR	Determine performance of mg219 assay; describe relationship of MG+ to NGU	Se and sp of mg219 assay; NGU predictors	Amplif of DNA and signal production from 15 other species of human mycoplasmas and 14 other viruses and bacteria did not occur. Se 100% and sp 99.5% with PPV 80% and NPV 100%; mg219 gene found in all strains MG. MG+ 3.9% (11/280) male spec, in 7.7% (10/130) NGU cases and 0.7% without urethritis; MG assoc with NGU (p<0.01) and non-CT/non-GC NGU (prev 10.5%;p=0.0005). MG not found in 23 females or their 23 partners; CT in 54/280 (19.3%) males - 33.8% (44/130) NGU males vs 10/150 (6.7%) male controls. CT in 6/23 (26.1%) women and 6/23(26.1%) their partners - 100% concordance	Good	4-test performance and epi

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Moi 2009 Sex Transm Infect	Cross X	Norway N=8468 M STD w sx or micro+ or risk	PCR CT, Mg	Assoc of Mg w NGU	NGU sx	Assoc Mg w sx OR=4.3; w micro OR=4.7 Pt w NGU sx: 21.9% CT, 8.5% Mg Pts w/o sx 7% CT, 2.1% Mg Overall 11.7% CT, 3.7% MG, 0.5% both 36% w/ sx --> 60% micro+; 63% w/o sx --> 41% micro+	Good (See also Dx)	4-Clin Dx
Bamberger 2008 IDSA abstract (L-659)	Cross-X, retrospective 2000-2005	Soldiers attending STD clinic and control group civilian teens and adults, Israel	PCR GC/CT. UU (?mode detection)	STD prevalence amongst soldiers	Pathogen prevalence in soldiers vs civilians and assoc with clinical	215 soldiers; ? #civilians; UU prevalence 34.9% in soldiers vs 20.7% of civilian adults and 8.7% civilian teens (p=0.013 and 0<0.0001, respectively). Males with UU as sole pathogen reported d/c and dysuria more than males with no detected pathogen (21/42 (50%) vs 39/160 (24.2%), p=0.001 and 33/42 (78.6%) vs 90/160 (55.9%), p=0.007, respectively.	Fair - not clear UU dx method	2 - Clin dx
Black 2008 STI	Cross X 2004-06	So Africa N=664 M; 438 urethritis, 76 GUD, 152 HIV testers	GC and Tv cx; NAATs for CT, Mg	Etiol urethritis	Multi orgs	Sx urethritis: 19% CT, 62% GC, 5% Tv, 14% Mg GUD pts: 13% Ct, 16% GC, 20% Tv, 13% Mg Asx 8% Ct, 3% GC, 4% Tv, 7% Mg QRNG 13% --> 26%	Good; high morbidity N/A to US	3 - Epi [See also Dx sheet]
Edberg 2008 J Med Microbiol	Cross-X Dx test comp	Sweden STD clinic N=381 M, 298 F	Dx: 3 PCR tests	Compare tests	Prev Mg Sn/Sp of tests	Mg 7.1% in males, 7.7% in females PCR sens 68-97%	Good	4 - Epi
Gdoura 2008 J Androl	Case series	Tunesia infertile men N=104 ur/semen specimens	Dx PCT Ct, U/M	1. compare specimens 2. prevalence 3. assoc infert w inf	Ct, U/M	43% Ct+, 18% M+, 14%U+ Good correlation b/w urine & semen	Poor No control grp N/A to US	1
Jenson 2008 CID	Case series	Australia 7 men w NGU failed Az tx	Dx: Mg Cx	In vivo suscept to macrolides	MIC	All w MIC > 8; 3 dif genetic mutations Pre-/post-tx comparison implied induction/selection of mutation	Small #, compelling (See also tx sheet)	3 - Tx
Ma 2008 BMC Microbiol	Dx test study	N=74 pts, 31 partner pairs	STR/SNP	genotyping Mg, sexual transmission	Genotypes	Devlop genotype assay; 27 of 31 pairs w same type (4 of 74 unrelated Mg w same type)	Good	5 - Molec epi; STD
Martin 2008 Current Infect Dis Reports	Review					Evidence for different etiologies of NGU: Ureaplasma, Mg, trich, adeno, HSV	Excellent - consider for citation	5
Nassar 2008 Adv Med Sci	Case series	N=200 sterile pyuria; 96 M, 104 F	PCR Ct, Mh, Mg, Uu >10 PMN/HPF but cx neg	Etiol sterile pyuria	Multi orgs	Overall 10% Ct, 5% Uu, 3% Mh, 1% Mg In M, 5.5% Ct, 0.5% Uu, 0% Mh, 1% Mg	Applic to NGU?	2
Pittaras 2008 STD	Dx test study	Greece STD N=210 M w NGU	PCR	Specimen comparison FVU, urethral, skin swab	CT	22.4% CT+ Similar sensit b/w urine & urethral, skin less sensitive	OK	2 - Dx
Teague 2008 Int J STD AIDS	Cross X survey	Australia, NZ N=111 sexual hlth physicians	Self-report	Tx & mngmt NCNGU	Practices	62% provide PM 19% tested for etiol other than GC/CT Limited Mg, HSV, Tv, Uu testing	Good	2- Clin
Whetmore ISSTDR 2008	Case series	N=105 M w NGU Seattle STD	NAATs	Etiol NGU	Multi orgs	CT 26%, Mg 11%, Uu 15%, Up 8%, Tv 3%, No etiol 51%	Unpub	
Yu 2008 Hong Kong Med J	Cross X	Hong Kong N=98 M w sx NGU, N=236 asx M	PCR Mg Uu	Mg and Uu assoc w NGU	NGU	No assoc w NGU 50% of sx NGU was CT+ If CT excluded, Uu prev 2x in 47 NCNGU cases and Mg prev 10x	Poor (CT not considered)	2 - Clin
Yu 2008 Int J STD AIDS	Cross X	Hong Kong STD; N=274 M w/o sx	GS, GC cx, PCR for Ct, Mg, Uu	Prev asx M urethral inf	Ngu	36 pts w NGU: 17% Ct, 23% Uu, 14% Mg		2 - Epi, Clin
Agbakoba 2007 Niger J Clin Pract	Cross-x	Nigeria N=54 men w infertility	Dx: Cx of semen for mycoplasmas	Prev of M/U-plasmas in infertile men	M/U-plasma	14/54 (26%) w either M or Uplasma; multiple spp; assoc with lower sperm count	Small #s, no controls	1

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Al-Mutairi 2007 Int J Dermatol	Cross-X	Kuwait N=1096 STD pts w sx, N>500 M w d/c	Dx: WHO crit, GS, cx, NAAT	STD epi	Etiol: Ct, Gc	Overall: 32% GC, 24% NGU (4% Ct, 20% NSU)	N/A to US	1
Andersen 2007 Sex Transm Infect	Cross-X (97-98)	Denmark genl pop N=731 M, 921 F ages 21-23	Dx Mg NAAT	Prev Mg, RFs	Mg	2.3% F Mg+ 1.1% M Mg+ Assoc w multi ptrn; F assoc w new ptrn & ptrn w sx; M early coitarchy	Good Genl pop screening not warranted	4 - Epi
Barry ISSTDR 2007	Cohort	SF and Denver STD, N=413 M	NAATS Mg, Tv, Ct, GC	Etiol urethr and RF for Mg	Multi orgs	Prev 6.3% Mg, 2.2% Tv, 17.7% Ct, 8.8% GC Of NGU, 6.9% Mg, 2.4% Tv, 19.4% CT RF for Mg: hx GC, 5+ ptrns 16% of GC coinf w Mg	Unpub	
Davies 2007 Sex Health	Cross X	Indonesia N=273 M	GC cx, CT PACE 2	Prev STI	STI prev	GC 18.2%, Ct 10.1% Of NGU, 12.4% Ct Urethr sx predicted infection Also syphilis and HIV	N/A to US	2 - Epi
Gdoura 2007 BMC Infect Dis	Case series	Tunesia infertile men N=120 semen specimens	Dx PCR: Mg, Mh, Uu, Up	Correl b/w inf and semen abn	M/Uplasmas	Uu 15%, Mh 11%, Up 4%, Mg 5% Correl w/ semen abnorm	Poor No control grp	1
Hamasuna 2007 J Clin Microbiol	Dx test study	Japan	Dx: impr culture for Mg				Lab-based	N/A
Ivanov 2007 J Microbiol Immunol Infect	Case-control	Russia N=18 controls, N=24 cases asx NSU in men	Cx	Micro of asx NSU	Multi orgs	Coryneforms, coag-neg staph, strep in both Enerobact, enerococci, micrococci, staph aureus only in NSU	Poor test technol for excluding Ct, Ng, Mg	1
Kurahashi 2007 Int Urol Nephrol	Case series	Japan. N=96 M w CT ureth, N=98 M w NCNGU	CT PCR	Clin features of NGU	Assoc CU vs NCU	Sx: NCU > CU Incub: CU>NCU Oral sex, CSW assoc w NCU	No other etiol	2- Clin
Magbanua 2007 Sex Transm Infect	Case report	UK CT strain variant PCR/B-D neg but GP/alt PCR pos	NAATs	Characterize variant	DNA analysis	Plasmid-free variant Failed azithro, responded to doxy Het Afr M in UK		2
Manhart 2007 Am J Public Health	Cross X	National US sample Add Health N=1714 F, 1218 M ages 18-27	PCR/NAATs	Prev & RF for Mg	Mg, other STI	Mg 1.0%, GC 0.4%, CT 4.2%, Tv 2.3% RF Mg: sex, Afr Am, multi sex ptrns; no dif by gender or age	Good	5 - Epi
Manhart 2007 Clin Infect Dis	Letter							N/A
Masue 2007 Int J Urol	Dx test study	Japan N=163 specimens tested	PCR	Test validations	16 pathogens	49.7% pos, 6.7% mixed Only Ng, Ct, Mg, Mh, Uu detected (No Mf, Tp, Tv, etc)	Good	3 - Dx
McCathie 2007 Int J STD AIDS	Cross X	UK N=75 M NCNGU, 49% sx N=24 F	Expos to M ptrn with NCNGU	Prev Ct in F contacts	CT (MPC, PID)	26% of F CT+; higher (36%) if partner asx	Good, possible bias	4 - Clin Implications for ptrn tx AND for CT screening in asx M
Ondondo ISSTDR 2007	Case-control	Seattle STD N=119 cases NGU, N=117 controls, het M	Uu and Up NAATs	Assoc of Uplasmas w NGU	NGU	Uu 26% in cases, 16% in controls; adj OR 2.3 Up 14% in cases, 31% in controls	Unpub	
Ross 2007 Sex Transm Infect	Letter	Microscopy for NSU screen						N/A
Shahmanesh 2007 Sex Transm Infect	Letter	NSU screen (opposed)						N/A
Stamm 2007 STD	RCT N=170 men	WA STD	Dx Tx trial		Prev	CT: 42%, Mg 24%, Uu 28%	Good (See also tx sheet)	5
Tabrizi 2007 Sex Health	Case control	Australia N=329 M w NGU, 307 M w/o sx	PCR	Adenovirus and NGU	Multi orgs	Of cases, 12 (4%) w adenovirus CT: 20%, Mg 9%, HSV: 3%	Good	3 - Epi, Etiol

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Tosh 2007 J Adolesc Health	Cohort (2 year f/u)	Indiana N= 383 teen women; 117 M ptrns	PCR Mg, Ct	Clin correl and ptrn concordance	Mg	13.6% F Mg+ Assoc w # ptrns, CT No assoc w sx/signs 2 of 8 M ptrn of Mg cases also Mg+; 2.8% of ptrn of Mg- F were Mg+	Good	4 - Epi, STD
Valin 2007 Eur J Epidemiol	Case crossover cohort	France. M w sx urethritis N=121 (99 w multiple time points)	RFs	RF for urethritis	Urethritis (Gc, Ct, other, none)	RF: incr ptrns, decr condom use	Unconventional control group (cases at dif time)	3 - Epi
Van Howe 2007 Int J STD AIDS	Meta-analysis	30 articles	Circumcision	Urethritis (GC, Ct) assoc w circumcision	STI urethr	No assoc w GC, Ct SI decrease of NSU in uncircumcized (n.s.)	Good review	3 - Epi
Vesic 2007 Acta Dermatovenereo I APA	Cross X	Belgrade STI N=630 M w sx urethritis (320 w d/c, 310 w/o d/c)	GS PMNs Ng, Ct, Tv, Uu	Assoc w sx	Multi orgs	Discharge assoc w Ng, Tv, Ct & Uu D/C + PMNs 95% sensitive for pathogens GC 8.9% Ct 20.2% Tv 29% Uu 21.4%	Very high prevalence and coinfect rates	2 - Epi, Clin
Wetmore ISSTD 2007	Cross X	US NHANES N=5774 M 18-26	NAATs for NG, CT, TV, MG	RF for sx vs asx urethral inf	Sx and presence of org	Sx w pathogen 0.2% Sx ideopathic 1% Asx pathogen 6% (80% of urethritis asx)	Unpub	
Williams ISSTD 2007	Case series	Indiana N=272 dyads, N= 55 Mg dyads	NAATs Mg	Prev and concordance	Mg concordance	Overall Mg 9.6% F, 13.8% M (asx) 27% concordant for Mg (similar to CT, Tv)	Unpub	
Yokoi 2007 Clin Infect Dis	Cohort	Japan N= 390 M w GU	Coinfection	Etiol of post-GC urethritis	PGU	CT 22%, Mg 4.1%, Mh 2.1%, Up 8.5% Pts w NCNGU, Mg incr risk of PGU 15x	Good, but N/A to US	4 - Clin Cotreatmt of GU w abs for CT, Mg, Uu
Yoshida 2007 Sex Transm Dis	Case-control	Japan N=37 M w Uplasma only + N=30 M w Uplasma w/o urethritis	PCR for Up and Uu	Subtypes of Uu and Up assoc w NGU	Urethritis	Uu biovar 2 assoc w urethritis; Up biovar 1 not associated	Good	4 - Clin, Etiol (Uu as pathogen)
Bhaduri 2006 Int J STD AIDS	Letter	UK. 17 M asx NGU. 7 F contacts		Prev Ct in F contacts	Ct inf in F	4/7 F Ct+ Ct sexually trans even if asx in M	Poor	1
Bradshaw 2006 JID	Case-control	Australia STD N=636 M; 329 w sx	Dx: Ct, Mg, Uu, Up, HSV 1/2, adenovirus, Gv, Tv	Etiol NGU	9 inf orgs	Of M w sx: 20% Ct+, 9% Mg+, 4% ADV, 2% HSV-1. No assoc w Uu, Up, Gv. <1% trich Mg assoc w vag sex MSM oral sex etiol	Good	3 - Clin
Francis IDSA 2006	Cross X	SF STD N=500 MSM rectal specimens	NAATS Mg, Tv, Ct, GC	Etiol rectal inf	Multi orgs	5% Mg, 10% Ct, 11.4% Gc, 0.6% Tv Unk Mg assoc w proctitis		
Grzesko 2006 Med Wieku Roz	Review			Assoc Mplasma w infertility		Some evid of impaired male fertility; little data in women	N/A	N/A
Handsfield 2006 J Infect Dis	Letter	Re: Bradshaw 2006 JID						N/A
Hardick 2006 J Clin Microbiol	Dx test study	Baltimore N=286 male urine, 321 female SVS	Dx: Mg NAAT	PCR vs. TMA	Sens/spec, PPV/NPV	PCR sens/spec 91.8/99.5 TMA sens/spec 98.1/98.1	Good	4 - Dx
Hashimoto 2006 J Clin Microbiol	Cross-X	Japan N=183 HIV pos MSM	Dx: M/Uplasma	Eval test method Phylogen tree	M/Uplasma	17 (9.1%): 1% Mg, .5% Mh, 6.6% Uu, 2 mixed	Sm sample	2 - Epi
Hjorth 2006 J Clin Microbiol	Cohort	N=19 couples	PCR typing assay for Mg	Mg sex transm	Mg type	Validated discrim capacity of assay Types consistent b/w partners	Good	4 - STD

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Jensen 2006 Dan Med Dull	Review of Mg					Micro, detection, clinical, epi, transmission	N/A	N/A
Leung 2006 Int J STD AIDS	Cross X	UK N=680 M, 302 w urethritis	CT EIA, Mg PCR, Ng cx	Clin & RF compare Mg, Ct, Ng	Etiol of urethritis	5.3% Mg, 9.3% Ct, 4.0% GC; Sx assoc w all. No assoc w age or new ptrn	Good	4 - Clin
Maeda 2006 Int J Urol	Cross X	Japan STD, N=100 M, 66 w sx urethritis	Tv cx; urethr swab GC cx, PCR	Urethritis micro	Trich	All neg for trich; 28 GC, 14 Ct, 7 other etiol; 6 of 34 M w/o urethritis had + orgs	Good	4 - Epi Etiol
Manavi 2006 Int J STD AIDS	Cross X	UK N= 403 M w NCNGU; 99 F ptrns	CT LCR, PCR, GC cx	STI in ptrns of M w NCNGU	Prev CT	Ct: 19% (8% in ptrn of asx M); higher if ptrn sx; NCNGU may be false neg CT	Good	4 - Clin Implic for ptrn tx and CT screen in M
Massari 2006 Br J Gen Pract	Surv	France GP 1990-2003. Reported case M urethritis	Multi; MSM vs het cases	Incid M urethritis	Incid and etiol	Trend incr after 1996 25% Ct, 21% GC, 8% Mg, 5% Uu, 3% Tv, 32% other bacti	Good	3 - Epi
Nanda 2006 Expert Rev Anti Infect Ther	Review	Trich tx						N/A
O'Mahony 2006 Int J STD AIDS	Case report	NGU adenovirus w conjunctivitis	Adeno from eye specimens	Case	Adeno	Oral sex w CSW		2 - Clin
Rackstraw 2006 Int J STD AIDS	Case series	4 cases w Ct conjunctivitis post ejaculate in eye	Ejac in eye	CT conjunct	CT	Good evidence for cause-effect, but only 1 of 4 genital specimens CT+		2 - Clin
Ross 2006 Sex Transm Infect	Review	Mg as STI				Screening premature; Tx Az > doxy Az 5-day course > stat Moxiflox x 10 d alternative		N/A
Simms 2006 Int J STD AIDS	Surv 1994-2001	UK GP STI reports	ICD-9 NSU dx (not org-specific)	Trends	NSU	Peak ages 15-24 and 25-44; M>>F		3 - Epi
Takahashi 2006 J Infect Chemother 12:269	Cross X	Japan N=100 asx M (75% sexually active)	PCR urine	M & Uplasmas	CT M/Uplasmas	1% Mg, 4% Mh, 12% Uu, 23% Up, 6% Ct Uu, Up assoc w sex	Good	3 - Epi
Takahashi 2006 J Infect Chemother 12:283	Cross X	Japan N=154 M w urethritis or NAAT+ for CT/GC	NAATs	Compare clin aspects GU, CU and NCNGU	Etiol of urethritis	29% Ct, 29% NCNGU, 42% Ng; Incr sx w Ng	Good	3 - clin
Taylor ISSTD 2006	Case series	New Orleans STD N=115 couples	NAATs	Etiol and concordance	% Inf (CT, GC, Mg); concurrent inf in couples	M F Cples CT 18 11 6 GC 20 16 13 Mg 13 16 10 4 of 12 couples concurrent for MG genotypes and have same pattern	Unpub	
Wiggins 2006 Int J STD AIDS	Cross X	Switzerland N=50 M urethritis; 37 control M	Leuko on FCU by cytometer and anti CD45 Ab assay	Assoc of leuko w urthritis	Clin sx/signs	Incr leuko w urethritis, d/c, dysuria, Ct, Ng		2 - Clin
Wroblewski 2006 J Clin Microbiol	Cross X	N = 284 F, 352 M Seattle STD	Mg NAAT	Compare TMA and PCR for Mg	Prev; sens and specificity	Mg 8-14% W (dep on specimen); vag swab best Vag swab sensit 84-91% Mg 9% in M Specif >99.5%	Good	4 - Dx, Epi
Zdrodowska-Stefanow 2006 Adv Med Sci	Cross X	Poland N=541 F gyn/STI clinics	IST-2 test for Uu, Mh	Prev Uu, Mh	Prev	29.8% Uu, 3.7% Mh		2 - Clin

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Anagrus 2005 Sex Transm Infect	Cross-X	Sweden STD pts, N=445 F, 501 M Ptrns = 26F, 26M	Dx PCT Ct, Mg	Epi & clin of Mg & Ct Ptrn inf	Ct, Mg Prev & assoc w sx	F: Ct 4%, Mg 6.3% M: Ct 5.4%, Mg 6% Mg assoc w sx, high ptrn concordance (45%, 38%)	Good Mg common cause ureth/cerv (~10%) Mg sexually transmitted	4 - Clin, STD
Berger 2005 J Urol	Letter	Editor comments on abstracts (Gaydos JCM 2004, Jensen STD 2004)				1. NAATs better than cx 2. Sens >95%, specif 95%	N/A	N/A
Butler 2005 Sex Transm Infect	Letter							N/A
Dolapci 2005 Saudi Med J	Case-control	Turkey, N=63 M w sx, N=58 M w/o sx	Dx PCR Ct, GC, Mg, Mh, Uu	Etiol NGU	1. Inf orgs 2. comps	10% Gc, 6% Ct, 6% Mg, 5% Uu, 3% Mh No dif b/w cases & controls	Poor; under-powered	1
Falk STI 2005	Cross X	Sweden N=465 F STD pts, 59 gyn pts	NAAT Mg, Ct			STD F: 10% Ct, 6% Mg Gyn F: 2% Ct, 0% Mg No dif in sx/signs (Ct v. Mg) 56% of M ptrn of Mg+ were Mg+; 59% of M ptrn of Ct+ were Ct+	Good	4 - Clin Ptrn tx
Fernando 2005 Int J STD AIDS	Case-control	UK STD, N=189 M NGU & 83 M PCR+	Dx clinical & PCR	Tx & Ptrn notif differences	Tx for Ct PN	Tx 100% vs 98% PN 89% vs 90% Dx at visit better		2
Iser 2005 Sex Transm Infect	Case-control	Australia, het men, N=80 cases w sx, 79 controls w/o sx	PCR CT, Mg, Uu, others	Factors assoc w/ NGU sx	Multi orgs Behaviors	CT OR=27, Mg OR=6.1, Gardenerella OR=9, Strep OR=3.2; No assoc w Uu; PMN>=5 not predictive of CT Sx NGU assoc with >1 ptrn, anal sex OR=3.5; not oral sex	Good	3 - Clin
Jurstrand 2005 J Med Microbiol	Dx test study	Sweden, N=398 males, 301 females	Dx Mg	rtPCR c/w conventional PCR	Sens/spec	Males: 72.2%/99.7% Females: 68.2%/98.6% (cx/ur)	Good	4 - Dx
Kent 2005 Clin Infect Dis	Cross-X	SF MSM N=5539 at STD, 895 at GMHC	Dx Ct and GC	Rectal, urethral, pharygeal infections	Prevalence Ct/GC by site	Ct(R)=7.9%, CT(U)=5.2%, CT(P)=1.4% GC(R)=6.9%, GC(U)=6%, GC(P)=9.2% 53% of CT and 64% of GC asx and at non-urethral sites (missed unless screened)	Good	5 - Epi
Kissinger 2005 Clin Infect Dis	RCT	New Orleans, N=977 men w urethritis	Arms: PDPT, PR, book-enh PR	Comp PM strategies	PN, ptrn tx, and reinf (in a subgrp of 38%)	Ptrn Tx Reinf PR 35.0 42.7 BEPR 45.8 14.3 PDPT 55.8 23.0	Good	5 - PS
Mandar 2005 Scand J Urol Nephrol	Case-control	Estonia N=121 pts w chronic prostatitis, 40 controls	PCR Mh, Mg, Uu, Up, in semen	Mplasmas in CP	Mplasmas	Incr in case vs controls: 25% vs <5%. Up most common		N/A
O'Mahony 2005 Int J STD AIDS	Letter	Discussion of utility of urethral GS in screening asx M				No data		N/A
O'Mahony 2005 Int J STD AIDS	Letter	No data						N/A
Sadiq 2005 Sex Transm Infect	Case-control	UK N=20 cases urethritis (GC & NGU), 35 controls All HIV+, not on ART	Urethritis	Effect of urethritis on seminal HIV	seminal HIV levels	Incr HIV in GC, Ct, but not NSU After tx, decr in HIV levels	Good, small #s NSU (7)	4 - Clin
Stevens-Simon 2005 J Pediatr Adolesc Gynecol	Review CT					Epi, risk, clin, NAAT+ clin correl w complications unknown		N/A

Author/ Year/ Journal	Study Design	Study Pop. Type/Setting	Exposure/ Intervention (Diagnostic)	Study Objective	Outcome Measures	Reported Findings	Design Analysis Quality/Bias	Subjective Quality Rating
Svenstrup 2005 J Clin Microbiol	Dx test study	N=246 male urethr swabs	quant rtPCR for Mg	Test performance and validation	Gold stnd: conventnl PCR	Sens 95%; specif 96%; Mg + correl w sx of d/c, dysuria	Good	4 - Dx
Taylor-Robinson 2005 Int J STD AIDS (p. 89)	Letter	Routine urethral smear (favor)						N/A
Taylor-Robinson 2005 Int J STD AIDS (p. 768)	Letter	NCNGU				Importance of Mg		N/A
Wasef Int J STD AIDS 2005	Cross X	UK, N=280 M NGU	GS, Urine micro	Value of urine test for NGU	NGU	35% 5-10 PMNs 56% >10 PMNs 9% <5 PMNs, but >=10 PMNs on urine Recomm urine micro if GS neg for sx M	Good (see Dx)	4 - Clin
Watson 2005 Int J STD AIDS	Letter	Screening for asx NCNGU				Oppose		N/A
Watson 2005 Int J STD AIDS+B66	Letter							N/A
Yoshida 2005 Sex Transm Dis	Case-control	Japan N=106 Uu+ M w urethritis, N=30 Uu + w/o urethritis	PCR Uu serovars	Subtypes of Uu assoc w NGU	Urethritis	Only subtype 1 assoc w urethritis independent of Ct and Mg (serovars 2,5,8,9)	Good	4 - Clin, Etiol (Uu as pathogen)
Donovan 2004 Int J STD AIDS	Letter	Discussion of urethral smear as screening (oppose)						N/A
Krieger 2004 J Urol	Case series	N=135 men w chronic prostatitis w/o urethritis	Dx: PCR on biopsy, Mg, Ct, Tv	Orgs found in CP	Multi orgs	8% w/ either Mg, Ct, Tv	No controls	1
Nusbaum 2004 J Am Osteopath Assoc	Review	STI Dx and TX						N/A
Watson 2004 Int J STD AIDS	Letter							N/A

SUMMARY OF EPI DATA FOR URETHRITIS, NGU AND ASX MALES

	Location	Organism Tested and % Positive									
		GC	Ct	Mg	Tv	Uu	Mh	Up	HSV	Adeno	Unknown
Urethritis, incl GU	So Africa	62	19	14	5						
	Kuwait	32	4								
	US	8.8	18	6.3	2.2						
	EU	8.9	20		29	21					
	UK	4	9.3	5.3							
	Japan	28	14		0						
	EU	21	25	8	3	5					
Kumar ISSTDR 2011 P3-S1.20	India	24	7	33	0	34					
	Japan	42	29								
	US	20	18	13							
Gaydos, Balti STD STI 2009	US	12.8	20.3	15.2	3.4						
	EU	10	6	6		5	3				
	US Range	9 to 20	18	6 to 13	2						
	Total Range	4 to 62	4 to 29	5 to 14	0 to 29	5 to 21					
NGU	EU		22	8.5							
	US		26	11	3	15		8			
	HK		50								
	HK		17	14		23					
	US		19.4	6.9	2.4						
	US					26		16			
	Austral		20	9					3	4	
Manhart CID 2013	US		24	13	2	23					
Schwebke CID 2011	US		43	31	13						29
	Japan		22	4			2.1	8.5			
	Austral		20	9	<1				2	4	Unknown
	US Range		19 to 26	7 to 11	2 to 13	15 to 26		8 to 16			
	Martin Paper		15 to 40	15 to 25	10 to 20	10 to 20	n.a.	n.a.	2 to 3	2 to 4	25 to 40
	Total Range		17 to 50	4 to 14	<1 to 3	15 to 26	2	8 to 16	2 to 3	4	
Asx M (STD)	EU		7	2.1							
	So Africa		8	7	4						
	EU		22	7							
	US					16		31			
	US			13.8							
	Japan		6	1		12	4	23			
	US			9							

	EU		5.4	6						
	US MSM	6	5.2							
	US Range	6	5	14 to 24		16 to 28		31		
	Total Range	6	5 to 22	1 to 24	4	12 to 28	4	23 to 31		
Asx M (pop)	EU			1.1						
	US	0.4	4.2	1	2.3					
Asx M (ED waiting) - Gillespie	US									
microscopic urethritis			8.3	9.1	2.9	30.3		33.3		
No microscopic urethritis			1.5	2	0.5	20.2		23.3		
GC-infected	US			16						

NGU Summary of Diagnostic Criteria and Supporting Data

Reference	Study Details	Recommendations	Rationale & Notes on Current Threshold	Limitations	Quality
Black 2008 STI	So Africa high prev pop N=438 M w sx of urethritis 8% of GC had < 5 PMN 77% of CT only had < 5 PMNs 55% of Mg only had < 5 50% of Tv only had < 5 20% of mixed inf had < 5 PMNs	Syndromic tx in high prevalence areas	Criteria of ≥ 5 for tx misses signif proportion of disease	High prevalence population; reduced inflamm response?	3
Bradshaw 2008 PLoS one	Australia N= 161 M w Mg+; 36% had < 5 PMNs/HPF		Criteria of ≥ 5 misses a third of Mg	Not focus of paper	3
Moi STI 2008	N=8468 M STD pts in UK tested for Ct and Mg Objective: assoc Ct & Mg w sx & micro. Prev Ct 22% of sx, 7% of asx; Mg 9% sx, 2.1% asx. 41% of asx men with >9 PMN/HPF. >30 PMNs 34.5% CT; 11.8% Mg 10-30 PMNs 17.4% Ct; 6% Mg 5-9 PMNs 5.6% Ct; 3.3% Mg c/w 1.9% Ct and 1.1% Mg with 0-4 PMNs		Criteria of ≥ 5 misses 6% of Ct and 9.8% of Mg (overall sx & asx included; higher % missed among asx)	Large sample, well-designed. Combined sx and asx in some analyses which doesn't mimic real world gram stain	4
Hogdahl 2007 Int J STD AIDS	Sweden STD, N=416 men, 417 women (sx & asx) Dx: Mg+ (PCR); 6.5% of women, 6.7% of men LE and/or smear pos in 23/26 (89%) men; 21/23 (91%) women 5 pts with CT included	Screen w LE and smear Smear ≥ 4 PMN/HPF in men, ≥ 30 in women	LE or smear ≥ 4 identifies 89% men w Mg	Small sample size.	4
Urbina ISSTD 2007	Denver STD N=4673 M w dc on exam or urethral sx AND gram stain Compared #WBC/HPF to CT NAAT result. Overall 25% CT+, 15% GC+ Low prev for 0-1 & no GS (<6%), but 15.8% for WBC 2-4, 20.9% for WBC 5, >30% for WBC >5	Reduce threshold for WBC to 2/HPF	Increase sensitivity for CT Criteria of >5 PMN misses 10% of Ct Estim 10% of CT in M treated earlier; overtreat 4.5% of CT-neg M	Specific to STD pop May be signif number unnecessarily treated. Not yet published.	3

Reference	Study Details	Recommendations	Rationale & Notes on Current Threshold	Limitations	Quality
Vesic 2007 Acta Dermato	Belgrade N=630 M w sx; 320 w d/c; 310 w/o d/c Ng 8.9%, Tv 29%, Ct 20%, Uu 21% Micro >=5 assoc w pathogen (Ct, Ng, Tv, Uu) <u>Sens/Spec PPV/NPV</u> w/ d/c: 98%/48% 89%/88% w/o d/c: 72%/94% 93%/74%	Tx based on d/c plus micro results (misses < 10%)	Micro w poor sensitivity in M w/o d/c	Pathogen distrib may not mimic US populations	2
Bradshaw 2006 JID	Australia N=636 M w/ & w/o sx urethritis case-control Of 63 Ct+ NGU, 68% had >=5 PMNs; of 31 Mg+ NGU, 63% had >=5 PMNs		If context of sx NGU, micro at >=5 misses a third of Ct & Mg infections		3
Coble 2006 Scand J Clin Lab Invest	Sweden STD clinic, N=422 men, 456 women Dx outcome: CT infection (Cx+ or PCRx2+) 10.9% men, 7.7% wom CT+ <u>Sens/Spec PPV/NPV</u> PCR(m) 94/99.7 97.7/91.4 PCR(f) 91.4/99.5 94.1/99.4 GS/LE(m) 100/42 GS/LE(f) 85.7/38.2	Screen using GS/LE at >=4 PMN/HPF, reflect to NAAT if pos	Reduces NAAT testing (by less than 50%); may be cost-efficient; Confirm test performance for NAATs	Non-Ct etiology not considered. High sensit of cx c/w PCR concerning for poor NAAT performance.	4
Takahashi 2006 J Infect Chemother	Japan N=154 M w urethritis (sx or Ct/Ng+) Examined PMNs on urine sed Of GU, 84% had 15+PMN; 8% 5-14 Of CU, 42% 15+ PMNs; 33% 5-14 Of NGNCU, 22% 15+ PMNs; 29% 5-14 PMNs, 47% 1-4 PMNS		Urine sed criteria >=5 insensitive for Ct, and non-Ct urethritis.	No measure of Mg	3
Wiggins 2006 Int J STD AIDS	Switzerland N=87 M w/ and w/o urethritis Quant PMNs on FCU Defined ureth as >=5 PMNs on smear or >=10 PMN on FCU GS		GC w/ highest avg leukos; CT 2nd; no infection lowest	N/A due to technology -- leuko counter	2
Anagnius 2005 STI	Sweden N=445 F, 501 M Ct 4%, Mg 6.3% Mg assoc w urethritis and cervicitis Micro + defined as >=5 PMN/HPF Mg in men: 61% among Sx+/Micro+; 32% amg Sx-/Micro+ Similar % for Ct infections		Using sx alone to drive work-up misses a third of infections in men. Adding micro or NAAT increases sensitivity	Small sample size.	3

Reference	Study Details	Recommendations	Rationale & Notes on Current Threshold	Limitations	Quality
Geisler 2005 Sex Transm Dis	Alabama STD, N=2629 men with PMN and NAAT data; sx and asx N=353 CT+; 82% GS+ N=462 GC+; 94% GS+	>=5 PMN/HPF --> tx (82% of CT, 94% of GC) 0-4 PMN/HPF, but sx+ or contact --> tx (6% of CT, 1% of GC) 0-4 PMN/HPF, no sx --> no tx (12% of CT, 5% of GC)	High rate of missed infections - importance of NAAT testing	Good	5
Iser 2005 STI	Australia, het men, N=80 cases w sx, 79 controls w/o sx PCR Ct, Mg, Uu, others		No assoc of PMN >=5 and Ct (OR=1.7) Discharge hx or d/c on exam assoc w Ct (OR=3.9); Hx NGU (OR=2.4)	Good	3
Wasef Int J STD AIDS 2005	UK; Cross X; N=280 M w Ngu 35% 5-10 PMNs; 56% >10 PMNs; 9%<5 PMNs, but >=10 PMNs on urine	Recomm urine micro if GS neg for sx M	9% of sx NGU would be missed with GS alone	Good	4

REVIEWS AND EDITORIALS

Horner 2007 Int J STD AIDS	Review role of LE	Smear > LE for screening for asx NSU			
Horner 2007 STI	Editorial re: screening for asx NSU Risk for CT/MG accdg to sx/signs+	Screen w NAAT Smear for sx men LE on FVU for asx	Earlier dx and tx; increase ptrn tx; screen in HIV+ may reduce HIV transm; high NPV for Ct and Mg		
Shahmanesh 2007 STI	Review of studies examining etiol of NGU and sensitivity of micro for asx M Ct prev: 7.4-27%; Mg prev 9-12.5%; no pathogen 63-85% (5 studies) Missed inf in asx M if no micro: 2.9-8.2% Ct, 1.6-2.9% Mg LE has PPV of 20%; sensit 66%, specif 77%.	Delayed dx of Ct (assume NAAT screening) is 17-36%.	Clin signif of Mg in asx M unproven.		
Brook 2005 Int J STD AIDS (Letter)		>=10 PMN/HPF if asx >= 5 PMN/HPF if sx	Incr sensit & specif for asx CT	No %s provided	
Horner 2005 Int J STD AIDS	Review screening for asx NSU Smear+LE vs NAAT NAAT alone misses urethritis that is CT -, Mg+, ~10 of CT+	Smear+LE screen (plus NAAT)	Earlier dx and tx; increase tx of NAAT- NSU, increase ptrn tx, screen in HIV+ may reduce HIV transm		
O'Mahony 2005 Int J STD AIDS	Editorial re: Wasef article		Focus on Ct and Gc as important etiologies		
Taylor-Robinson 2005 Int J STD AIDS	Editorial re: Mg & NGNCU in asx M		Favors serious examination of Mg as pathogen and syndromic treatment of NGNCU		

Reference	Study Details	Recommendations	Rationale & Notes on Current Threshold	Limitations	Quality
Watson 2005 Int J STD AIDS	Editorial re: NSU screening in asx M		Opposed		

NGU (and Mg) Treatment Studies

Reference	Study Details	Men			Women		
		Azithro	Doxy	Other	Azithro	Doxy	Other
Bjornelius 2008 Sex Transm Infect	Norway/Sweden Open tx trial (not RCT) N=152 men, 60 women PCR Mg	Az 1 g x 1 33/39 (85%)	200+100 x 8 d 13/76 (17%)	(Doxy failures) Az 500+250 x 4 46/47 (95%)	Az 1 g x 1 15/17 (88%)	200+100 x 8 d 10/27 (37%)	(Doxy failures) Az 500+250 x 4 6/6 (100%)
Bradshaw 2008 PLoS One	Australia Cohort N=161 M & 30 F w Mg TOC at 1 mo	Az 1 g x 1 101/120 (84%)		(Az failures) Moxiflox 400 QD x 10 d 10/10 (100%)	No stratification by gender		
Jenson 2008 CID	Australia N=7 cases Mg that failed Az; Dx: cx for MG Case series			Mox 400 QD x 10 d 7/7 (100%)			
Jernberg 2008 Int J STD AIDS	Norway Retro cohort N=452 M & F Mg (4.5%) TOC at 4-5 wks	Az 1 g x 1 144/183 (79%)		Az 500 + 250 x 4 76/98 (78%) Az 1 g + 1 g in 5-7 d 28/38 (74%) Oflox 200 BID x 10 25/45 (56%) (Az or oflox failures) Moxiflox 400 QD x 7 d 27/27 (100%)	No stratification by gender		
Takahashi 2008 J Infect Chemother	Japan N=55 pts NGU Observational 42 w sx CT, MG, Uu	Az 1 g x 1 51/55 (93%)			Note: Microbio cure in 33/46 (72%) positive for Ct, Mg, Up or Uu and clinical cure in 18/19 (95%) neg for all.		
Maeda 2007 Int J Urol	Japan N=100 men Neg for Ct, Mg, Mh, Up, Uu Outcome: clinical cure, no inflam			Levo 100 TID x 7 90% Gati 200 BID x 7 88% Minocycline 100 BID x 7 75% Clarithro 200 BID x 7 91%	Overall: 88% All persistant sx/sn resolved w 2nd course		
Stamm 2007 Sex Transm Dis	WA, RCT N=170 men w Ngu CT, Mg, Uu TOC at 2 & 5 weeks NAAT	Az 1 g x 1 2 wk: 7/7 (100%) 5 wk: 6/7 (86%)		Rifalazil 2.5, 12.5, 25 0/6, 0/8, 0/5 Total 0/19 (0%)	Of note: Rif 85% effective agst Ct; similar to Az (83%). Rif not effective for Mg or Uu. Low rate of eradication for Ct may be NAAT-related		
Wikstrom 2006 Sex Transm Infect	Sweden, not RCT N=78 males persistent NCNGU failed doxy tx N=32 Mg+ PCR TOC at 3 wks	Az 1 g OR 1.5 g over 5 days 20/20 (100%)	(Orig tx w doxy: 200 + 100 x 8 d)	Erythro 500 BID x 10 d 2/5 (40%)	Small numbers		

Bradshaw 2006 EID	Australia Case series PCR Mg, TOC at 1 mo	Az 1 g 23/32 (72%)		(Az failures) Moxifloxacin 400 x 10 d 9/9 (100%)	Based on C&S, appeared related to high MIC for azithro, erythro, clarithro		
Topic 2006 J Chemother	Croatia RCT N=46 men, 54 women; dx CT by cx; TOC at 4 wks	Az 1 g 13/20 (65%)		Az 3 g (1/wk x 3 wks) 22/26 (85%)	Women		
					Az 1 g 23/26 (88%)		Az 3 g (1/wk x 3 wks) 26/28 (93%)
Yasuda 2005 Clin Infect Dis	Japan N=97 men w Mg + NGU Design unclear			Levo 100 TID x 7 5/16 (31%) Levo 100 TID x 14 9/18 (50%) Gatiflox 200 BID x 7 22/24 (92%) Gatiflox 200 BID x 14 6/6 (100%) Tosufloxacin 150 TID x 14 5/7 (71%)			
Mroczkowski ISSTD 2005	New Orleans STD RCT N=78 M w Mg+ NGU F/u at 10-17 d, 31-48 d	Az 1 g x 1 21/25 (84%)	Doxy 100 BID x 7 11/36 (36%)				

META (Mg only) Azithromycin 1 g: 0.82

OTHER TREATMENT RELATED ARTICLES

Babear 2008 Clin Micro Infect	France In vitro activity Moxiflox, FQs, tet, macrolides N=54 U spp; 54 Mh, 14 Mg, 44Ct				Moxi at <=1mg/L inhib 90% of all isolates		
Taylor-Robinson 2008 CID	Editorial re: Jenson 2008 Mg tx						
Waites 2008 Antimicrob Agents Chemo	Investigational drug (FQ) DC-159A in vitro activity N=151 M spp & U spp				Variable effect of macrolides & clinda DC-159A 2nd to Moxi for activity agst Mg, Mg and Ct		
Hamasuna 2005 Antimicrob Agents Chemother	In vitro molecular methods for susceptibility testing				1. Az most active > clarithro > erythro 2. FQs: moxiflox > cipro & levo 3. Tet/doxy w decreased susceptibility		
D'Cruz 2005 J Antimicrob Chemother	In vivo studies of antiviral stampidine Effective agst adenovirus						
Aydin 2005 Chemotherapy	AbxR in Uu (and GC) isolates Turkey				High rates of PCN and TetR in GC Uu: telithromycin & clarithro > azithro (4x) >> erythro (16x)		

Author/ Year/ Journal	Study Design	Study Pop. Type/Setting	Exposure/ Intervention (Diagnostic)	Study Objective	Outcome Measures	Reported Findings	Design Analysis Quality/Bias	Subjective Quality Rating
Ito 2012, Inter J Urology	Cross X, retrospect , 1/2006- 6/2010	Japan, N=56 men <40yo w clinical epididymitis, confirmed with ultrasound	Urethral smear for gs/GC cx, FVU WBC quant, bacterial cx, NAAT for CT, PCR for MG, MH, UP, and	Prevalence of genital mycoplasmas and ureaplasmas in acute epididymitis	Multi orgs	GNR - 2 (3.6%); GPC = 23 (41.1%); GC = 3 (5.4%); CT = 28 (50%); MG = 5 (8.9%); MH = 6 (10.7%); UU (biovar 1) = 6 (10.7%); UP (biovar 2) = 5 (8.9%); none = 9 (16.1%); Cases with GC	Good (no direct aspirates of epididymi)	4 - clin dx
Gatti 2008 Pediatr Rev	Review	Focus on torsion	--	-	--	DDx (children/adol)	n/a	2
Ludwig 2008 Andrologia	Review	Prostatitis, epidid, orchitis	--	--	--	>90% unilat; young & STI risk vs older w E.coli/UTI risk >half no org US tx recomm	n/a	3
Tracy 2008 World J Urol	Case series 99- 05	Virginia hosp N=455 M w acute epidid ages 3-88; N=167 age 18-35; N=254 age >35	ICD-9	Compliance w CDC GL	Dx and Tx	Overall 12% of adults CT+; 17% of age 18-35 Ct+ (but limited testing) 30% w bacteria <35% w w/u c/w CDC 50% age 18-35 tx for CT 85% age >35 tx for enterics (cipro, bactrim)	Good; limitations w ICD-9 def; large series	4
Tracy 2008 Urol Clin North Am	Review	--	--	--	--	Good review of etiol, presentation, diagnostics, treatment	n/a	5 consider inclusion
Anderson ISSTD 2007	Cohort	N=5000 M screened CT, 9980 M not screened	CT screening	Effect of screening on complications	Epidid (and PID)	HR=1.25 (.7-2.2) for epidid in control group No effect of screening on epidid (or PID)	Unpub (limited)	
Bohm ISSTD 2007	Cohort; med data	US N=16,039 M w epidid		Risk of recurrent epidid	Multi episodes	11.9% w >1 episode Incr recurr w #episodes	Unpub (limited)	

Author/ Year/ Journal	Study Design	Study Pop. Type/Setting	Exposure/ Intervention (Diagnostic)	Study Objective	Outcome Measures	Reported Findings	Design Analysis Quality/Bias	Subjective Quality Rating
Garthwaite 2007 Ann R Coll Surg Engl	Case series	N=53 acute epidid- orch in ER, UK	Clinical dx	Determine clinical mnmt of epidid	Compliance w dx & tx guidelines	Median age 35 Dx via urine cs, CT PCR uncommon Inapprop tx w cipro 47%, cipro+doxy 21%	small, specific to ER	3
Gatti 2007 Semin Pediatr Surg	Review	Focus on torsion	--	--	--	DDx (table 1) useful Epidid (bacti): slow onset over days, N/V rare; Etiol: GC/CT, non-STI coliforms, viral incl mumps, adeno, entero, influ, parainflu	n/a	3
Kropp 2007 Can Fam Physician	STI guidelines	Canada	--	--	--	Same as US	n/a	n/a
Liu 2007 Kaohsiung J Med Sci	Case series	Taiwan N=87 males <26 w acute scrotum; 38 w epidid	Presentation	Characterize acute scrotum	Final dx	EO: age 17+/-8 yrs 26% w pyuria; 58% w fever; ultrasound useful	Good	3
Makela 2007 Scand J Surg	Case series	Finland N=388 males <18 w acute scrotum	Presentation	Characterize acute scrotum (children)	Final dx	10% epidid	Good	3
Varga 2007 Urol Int	Case series	Serbia N=256 males <18 w acute scrotum; 110 w epidid	Presentation	Characterize acute scrotum (children)	Final dx	~1/2 torsion ~1/2 orchepi	Good	3
Chen 2006 Int J STD AIDS	GP visit data	Australia N=54,200 visits 1998-2003; data on 258 cases (Study also incl PID)	Clinical dx	Trends in GP visits for epidid c/w CT reporting trends	Epidid	Despite incr in CT incid, no change in epidid trends; 1.9% req hospitalization; 28% age 15-34; highest incid age 25-29	Good	3

Author/ Year/ Journal	Study Design	Study Pop. Type/Setting	Exposure/ Intervention (Diagnostic)	Study Objective	Outcome Measures	Reported Findings	Design Analysis Quality/Bias	Subjective Quality Rating
Furuya 2006 Int J Urol	Case report	Japan. 2 pts w Ct+ seminal vesiculitis	Clinical dx	Describe new clinical entity		May precede epididymitis		2
Gift 2006 Sex Trans Dis	Insurance claim data - cost	US 1998-99, N=6929 claims	ICD-9	Cost of epidid/orchitis	Estim cost	\$368 <age 13 \$242 age 13-40 \$291 age 41+ total \$8.7 mil annually	Good	3
Abul 2005 Med Princ Pract	Case series	Kuwait N=40 w acute scrotum; 24 w epidid	Clinical dx	Ddx acute scrotum	Final dx	24 epidid, mean age 41, insidious onset Of 24, 14 w fever, 10 dysuria, 13 pyuria, 17 leukocytosis Of 14 w cx, 4 E.coli, 10 sterile Complications: abscess (2), necrosis (1)	Good	2
Manavi 2005 Int J STD AIDS	Case series	Edinburgh 1998- 2003, N=108 w epidid	Clinical dx	Audit management	Approp dx and tx	Half < age 35 Tx cipro in M<35; only 8 CT tests done. Need oflox, partner management	Good, but outdated	2
Nickel 2005 Urology	Case series	Canada urol clinics, N=57 w chronic epidid	Clinical dx	Characterize chronic urol conditions	Clinical correlates	Mean age=41; avg duration = 2.5 years	Good	2
Bayasgalan 2004 Asian J Androl	Case- control	Mongolia; N=430 M w infertility; 191 w abn semen, 239 w nl semen	STI hx, med and behav risks	RF for infertility	Semen abnormalities	RF for abn semen: STI hx, epidid, orch, injury OR azospermia 5.6 for GC, 7.6 for other STI	Good, but may not apply	2