**Mycoplasma genitalium:**
An emerging pathogen

Melanie Bissessor
Melbourne Sexual Health Centre
33 year old heterosexual male presents with a one week history of clear urethral discharge, tingling and dysuria.

One week prior had UPVIC with regular girlfriend of one year.
Two weeks prior had UPVIC with casual sex partner.
Last STI screen 2003-NAD.
Examination

- Red meatus
- Clear mucoid discharge from urethra
- Testes/scrotum/anus nad
Investigations

- Urethral swab
  - Microscopy: > 5PMN per HPF
  - no GNDC seen
  - Gonococcal culture

- FPU for Chlamydia and MG-NAAT
Treatment

- Presumptively treated as Chlamydia *trachomatis*
- Azithromycin 1g stat
- Abstain or no genital contact for one week
- Ring for results in one week
Results

• Telephone results consult:
  MG Positive
  Chlamydia negative
  GC culture negative

• Asked to inform partners TCI for testing and treatment
• Advised MG TOC in one month
One month later:

After initial treatment felt well but symptoms recurred

Tingling and dysuria
Mild meatal redness
No d/c noted

Did not tell partner about MG
• FPU taken for MG and chlamydia
• Presumed to be re-infection and treated with Azithromycin 1g again
• Advised importance of treating all contacts
• No sex until one week after partners are treated
• MG TOC in one month
22 yr old girlfriend came in for assessment and treatment
Occasional dyspareunia only
Has had a PV discharge but thought this was normal
Regular menses. Slightly heavy. No dysmenorrhoea or lower abdominal pain
Contraception: condoms
No previous STIs. Normal pap to date
Examination:

- No lower abdominal tenderness
- Vulva /vagina: nad
- PV: mild CET only
- Speculum examination: red ++ with mucoid discharge from cervix. Swabs taken for chlamydia and MG
- Bimanual: nad
Treatment:

- Treated as contact of MG
- Azithromycin 1g stat
- Advised MG TOC in one month

- Cervical swab confirmed MG
• Boyfriend returns one month later for MG TOC.
• Has not had sex since last consult
• Concerned re his persistent urethral symptoms i.e. tingling and dysuria
• Examination: red meatus only
• FPU for Chlamydia and MG
Treatment

- Presumed to be azithromycin resistant MG
- Treated with moxifloxacin 400 mg i daily x 10 days
- Advised to ensure girlfriend returns for her MG TOC
- No sex until after girlfriend receives her treatment with Moxifloxacin
- No sex with casual partners either!
- Girlfriend attends.
- Still has chronic vaginal discharge – unconcerned
- Examination: persistent discharge from cervix
- Swab for Chlamydia and MG
- Treated as azithromycin resistant MG
- Moxifloxacin 400 mg i daily x 10 days
Results

- MG positive in both FPU and cervical swabs
- Chlamydia negative
One month later:

- Both return for MG TOC
- Both asymptomatic
- Resumed sexual relations
- FPU and cervical swab taken
- Results: negative
Mycoplasma genitalium

- Smallest free-living bacterium
- Genome 521 genes
- Second complete bacterial genome ever sequenced
- First isolated in 1980 from 2/13 men with NGU
- Difficult to culture
- Fastidious with slow growth (>50 days)
- Few isolates available
- Non-human primate studies
  - produced urethritis in male chimps
  - re-isolated & transmitted
**M. genitalium and NGU**

- Established cause of NGU
- Higher prevalence in acute NGU than controls\(^1\)\(^-\)\(^6\)
- PCR assays have shown it causes 9-25% of cases of NGU\(^4\),\(^7\),\(^8\)
- Combined OR = 5 (4-7) for NGU
- Co-infection with chlamydia uncommon\(^3\),\(^4\)
- Similar clinical features to chlamydia \(^2\)\(^-\)\(^4\)
- Higher Mg DNA load associated with NGU\(^9\)


Courtesy to Jorgen Jensen for figure
Etiologies of non-gonococcal urethritis

- *Chlamydia trachomatis*
- *Mycoplasma genitalium*
- *Ureaplasma spp.*
- *Trichomonas vaginalis*
- *Herpes simplex virus*
- *Adenovirus*
- Rare causes: *N. meningitidis*, *H. influenzae*. *E. coli*
**M. genitalium** and cervicitis

- Majority of studies support an association with cervicitis
- Independent of chlamydia (Ct) and gonorrhoea (Ng)
- Combined OR of 1.9 (1.5-2.5)

![Graph showing odds ratio and 95% confidence interval](image)
Sexual Transmission of *M. genitalium*

- Strong evidence that *Mycoplasma genitalium* is a sexually transmitted pathogen based on both:
  - concordance rates among partners (38-61%)\(^1\)\(^-\)\(^6\)
  - DNA typing showing the same sequence types among partners \(^6\)\(^,\)\(^7\)
- Several studies have shown persistent infection appears to be common
  - 25% of infections persisting >12 months in untreated women (up to 2-3 years)\(^8\)\(^,\)\(^9\)
  - Enhancing sexual transmission of Mg
- Persistence appears in part to be mediated by Mg’s ability to generate unlimited antigenic variants from its small genome
  - Enabling it to evade host defenses

Falk 2005\(^1\), Wickstrom 2006\(^2\), Keane 2000\(^3\), Anagrius 2006\(^4\), Thurman 2010\(^5\), Hjorth 2006\(^6\), Musatova 2009\(^7\), Iverson-cabral 2006\(^8\), Cohen 2006\(^9\), Ma 2007\(^1\(^0\))
M. Genitalium and Upper Genital Tract Infection in Women

- Contribution of Mg to upper genital tract (UGTI) in women more difficult to determine
- Increasing evidence Mg causes UGTI and adverse reproductive sequelae in women
- Cervicitis is a risk factor for progression to PID
- Non-human primate studies show Mg induces salpingitis\(^1\)
- Detected in a FT of female with salpingitis\(^2\)
- Causes morphological changes in ciliated FT cells\(^3\)
- Mouse models shows Mg causes\(^4\):
  - Persistent lower genital tract infection up to 77 days
  - Upper reproductive tract colonization as early as 3 days
  - Long-term infection in 65% of estradiol-treated mice.
  - >90% had PCR +ve samples from UGT (uterus & oviducts)
  - 60% developed a hydrosalpinx (3-10 weeks)
- Animal studies support persistent infection in the GT and pathological RT outcomes

\(^1\) Moller 1985, \(^2\) Cohen 2005, \(^3\) Baczynska 2007, \(^4\) McGowin 2010
# M. genitalium-associated endometritis/PID

<table>
<thead>
<tr>
<th>Authors</th>
<th>Population</th>
<th>Site(s) sampled</th>
<th>M. genitalium prevalence in cases</th>
<th>M. genitalium prevalence in controls</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohen 2002</strong></td>
<td>Kenya – STD clinic attendees &lt;14 days of pelvic pain</td>
<td>Endometrium +/- cervix</td>
<td>Lap-confirmed endometritis 16% (10/58)</td>
<td>Without endometritis 2% (1/57)</td>
<td>0.02</td>
</tr>
<tr>
<td><strong>Simms 2003</strong></td>
<td>UK – Hospital Case control PID study</td>
<td>Cervix</td>
<td>Clinically diagnosed PID 13% (6/45) (ct 27%, 12/45)</td>
<td>Tubal ligation 0/37 (no ct)</td>
<td>0.03</td>
</tr>
<tr>
<td><strong>Haggerty 2006</strong></td>
<td>US- Clinic and hospital pop. clinically suspected PID (PEACH)</td>
<td>Endometrium +/- cervix</td>
<td>Lap-confirmed non ct non gono endometritis 14% (7/50)</td>
<td>none</td>
<td>-</td>
</tr>
<tr>
<td><strong>Cohen 2005</strong></td>
<td>Kenya – hospital pop. clinically suspected PID</td>
<td>Endometrium +/- cervix</td>
<td>Lap-confirmed salpingitis 7% (9/123) + 1 FT</td>
<td>none</td>
<td>-</td>
</tr>
</tbody>
</table>
Mg is associated with Post-TOP PID

- Recent nested case control study of 2079 women presenting for TOP in Sweden
- Prevalence
  - M. genitalium = 2.5%
  - C. trachomatis = 2.8%
- M. genitalium strongly associated with post-TOP PID
  \[ OR = 6.29 \text{ (95\% CI 1.56–25.2)} \]
- No cases of PID in cases with chlamydia
  - Ct but treated pre-TOP, Mg testing delayed
- PID dx within 4 weeks of TOP (CDC guidelines)
- Increased risk for PID associated with M. genitalium infection after TOP suggests a causal relationship.

Bjartling BJOG 2010
**M. genitalium and Tubal Factor Infertility**

Two studies examined assoc between Mg and TFI

<table>
<thead>
<tr>
<th>Authors</th>
<th>Population</th>
<th>Antibody Assay</th>
<th>Seropositivity in women with TFI</th>
<th>Seropositivity in women with non-TFI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clausen 2001</td>
<td>308 Danish women with infertility</td>
<td>Immunoblot – Ab against MgPa of <em>M. genitalium</em></td>
<td>22% (29/132)</td>
<td>6% (11/176)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Svenstrup 2007</td>
<td>194 Danish women with infertility</td>
<td>Immunoblot – Ab against MgPa of <em>M. genitalium</em></td>
<td>17% (5/30)</td>
<td>4% (7/164)</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Mounting evidence supports a convincing role for Mg in:

- Endometritis/Salpingitis/PID
- ?tubal factor infertility
Mg and adverse pregnancy outcomes

• Limited data on adverse outcomes in pregnancy
• Labbe conducted a case control study in Guinea-Bissau
  – 1014 West African pregnant women
  – Cervical Mg detected in 6%
  – No assoc with premature delivery, spontaneous abortion, stillbirth
• Hitti conducted a case control study in Peru
  – Cervical Mg detected in 3% of 1328 antenates
  – Significantly associated with preterm birth (<37 weeks) (AOR=2.5, 1.2-5.0)
• More data examining the association between Mg and pregnancy outcomes clearly needed

Labbe 2002, Hitti 2010
Rectal Infection with *M. genitalium*

<table>
<thead>
<tr>
<th>Authors</th>
<th>Population</th>
<th>Rectal <em>M. genitalium</em> prevalence (%)</th>
<th>Rectal symptoms and signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taylor Robinson 2003</td>
<td>28 MSM attending an STD clinic with and without urethritis</td>
<td>3/28 (10.7%, 2.8-26.5%)</td>
<td>Unavailable</td>
</tr>
<tr>
<td>Francis 2008</td>
<td>500 consecutive rectal specimens from North American MSM attending an STD Clinic</td>
<td>27 (5.4, 3.6-7.7%)</td>
<td>Rectal infection not significantly assoc. with symptoms or proctitis. Associated with HIV</td>
</tr>
<tr>
<td>Bradshaw 2009</td>
<td>Cross sectional study of 521 Australian MSM attending male only saunas</td>
<td>8/497 (1.6, 0.8-3.0)</td>
<td>All asymptomatic</td>
</tr>
<tr>
<td>Soni 2009</td>
<td>438 MSM attending an STD clinic</td>
<td>19/412 (4.6, 2.6-6.8)</td>
<td>Rectal infection not significantly assoc. with symptoms or proctitis. Associated with HIV</td>
</tr>
</tbody>
</table>

Mg appears to predominantly asymptomatic in the rectum

Most prevalent in HIV infected individuals

More data needed to determine whether routine screening in MSM should be included in recommendations

Limited studies, Mg appears to be uncommonly detected in the pharynx
M. genitalium and HIV infection

• Mg likely to play a role in HIV transmission
  – Evokes an inflammatory response and mucosal disruption\(^1\)-\(^3\)
  – High loads associated with increased HIV-1 Cx shedding\(^4\)
  – Mg attaches to HIV-infected Lc & promotes HIV budding\(^5\)

• A recent meta-analysis reported a strong association between HIV & Mg in 17/19 cross sectional studies\(^6\)
  – Mg-infected individuals twice as likely to be HIV positive
    [summary OR=2.0 (1.4-2.8)]
  – Studies adjusting for sexual risk show even stronger assoc
    between HIV & Mg
  – One prospective study - HIV increased risk of incident Mg in
    in Kenyan SW\(^7\)

• Significant association with HIV infection but need further
  prospective studies to address causal relationship between HIV
  and Mg

\(^1\)Tully 1986, \(^2\)Zhang 2000, \(^3\)Taylor-robinson 1985, \(^4\)Manhart, \(^5\)Phillips 1992,
\(^6\)Mavedzenge 2009, \(^7\)Cohen 2006
How do we test for M. genitalium?

• Diagnosis
  - Difficult to culture, rely on NAATs
  - Until recently no commercially available NAAT assay
  - Testing previously limited to research studies and specialized services that have adopted in house PCR assays
    • target either the MgPa gene or the 16srRNA gene (multi-target PCR described)\textsuperscript{1-4}
    • Comparative study - real time MgPa gene PCR more sensitive than conventional and real time 16srRNA PCR\textsuperscript{5}
  - Research use only assay TMA (Gen probe)

• Most suitable specimen
  - Low loads of *M. genitalium* not uncommon in genital tract
  - Sensitivity is an issue with assays
    - FVU more sensitive than urethral swab in men\textsuperscript{6}
    - Somewhat conflicting evidence in women
    - FVU, Cx or HVS all suitable (combined FVU+Cx most sensitive)\textsuperscript{5,7}

\begin{itemize}
  \item \textsuperscript{1}Hardick 2006, \textsuperscript{2}Yoshida 2002, \textsuperscript{3}Jensen 2004, \textsuperscript{4}Wroblewski 2006 \textsuperscript{5}Edberg 2009 \textsuperscript{6}Jensen 2004 \textsuperscript{7}Jurstrand 2005
\end{itemize}
# Mg prevalence in the population

<table>
<thead>
<tr>
<th>Authors</th>
<th>Population</th>
<th>M. genitalium prevalence</th>
<th>C. trachomatis prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manhart</strong></td>
<td>18-27 yr North American</td>
<td>W 0.8% (0.4-1.6%)</td>
<td>4.5% (1.4-13.5%)</td>
</tr>
<tr>
<td>2007</td>
<td>n=2932 (NHANES)</td>
<td>M 1.1% (0.5-2.4%)</td>
<td></td>
</tr>
<tr>
<td><strong>Andersen</strong></td>
<td>21-23 yr Danes</td>
<td>W 2.3% (1.3-3.2%)</td>
<td>8.4% (6.6-10.2%)</td>
</tr>
<tr>
<td>2006</td>
<td>n=1652 (Pop Ct screening programme)</td>
<td>M 1.1% (0.3-1.9%)</td>
<td>5.6% (3.9-7.3%)</td>
</tr>
<tr>
<td><strong>Walker</strong></td>
<td>16-25 yr Australian women n=1116</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>(National CIRIS in GP)</td>
<td>2.2% (1.2-3.1%)</td>
<td>4.9% (2.9-7.0)</td>
</tr>
<tr>
<td><strong>Hay</strong></td>
<td>16-27 yr British students n=2246</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>(POPI)</td>
<td>3.4% (2.7-4.3%)</td>
<td>5.8% (4.9-6.8)</td>
</tr>
</tbody>
</table>
## Treatment of *M. genitalium*

- *M. genitalium* lacks a cell wall - intrinsically resistant to beta lactam antibiotics
- In vitro reduced susceptibility to tetracyclines & specific fluoroquinolones
- In the absence of widespread testing for Mg, most cases get presumptively exposed to doxycycline or azithromycin during Rx for cervicitis/urethritis
- Two clinical studies show doxycycline is less effective than azithromycin

### Studies evaluating 1g Azithromycin for treatment of *M. genitalium* infection

<table>
<thead>
<tr>
<th>Author</th>
<th>Population</th>
<th>Regimen</th>
<th>M. genitalium Cure Rate</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mena 2009</td>
<td>US STD Clinic attendees</td>
<td>Doxy 100mg bd 7 d</td>
<td>45% (28-64%)</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>RCT of NGU (n=54)</td>
<td>Azithro 1g stat</td>
<td>87% (65-97%)</td>
<td></td>
</tr>
<tr>
<td>Bjornelius 2007</td>
<td>Scandinavian Open multicentre study (n=159)</td>
<td>Doxy 200mg + 100mg 8 d</td>
<td>22% (15-31%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Jernberg 2008</td>
<td>Norwegian STD Clinic attendees (n=183)</td>
<td>Azithro 1g stat</td>
<td>79% (72-84%)</td>
<td>-</td>
</tr>
<tr>
<td>Bradshaw 2006</td>
<td>Australian STD Clinic attendees in NGU Study (n=32)</td>
<td>Azithro 1g stat</td>
<td>72% (55-85%)</td>
<td>-</td>
</tr>
<tr>
<td>Bradshaw 2008</td>
<td>Australian STD Clinic attendees (n=120)</td>
<td>Azithro 1g stat</td>
<td>84% (77-90%)</td>
<td>-</td>
</tr>
</tbody>
</table>

An 85% efficacy at best for a first line regimen not acceptable
# Alternative therapies for *M. genitalium*

<table>
<thead>
<tr>
<th>Author</th>
<th>Population</th>
<th>Regimen</th>
<th>M. genitalium Cure Rate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bjornelius 2007</strong></td>
<td>Scandanavian Open multicentre study</td>
<td>Azithro 1g stat (n=56)</td>
<td>86% (75-93%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azithro 500mg d1 + 250mg d 4d after doxy failure (n=53)</td>
<td>96% (88-99%)</td>
</tr>
<tr>
<td><strong>Jernberg 2008</strong></td>
<td>Norwegian STD Clinic attendees Open study</td>
<td>Azithro 1g stat (n=183)</td>
<td>79% (72-84%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azithro 500mg d1 + 250mg d 4d (n=98)</td>
<td>78% (69-85%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azithro 1g d1 + 1g d5-7 (n=38)</td>
<td>74% (58-86%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azithro 500mg + 250mg 4d as 2nd-3rd line Rx (n=23)</td>
<td>34% (18-56%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moxifloxacin 400mg d 7d as 2nd-4th line Rx (n=27)</td>
<td>100% (89-100%)</td>
</tr>
<tr>
<td><strong>Bradshaw 2006</strong></td>
<td>Australian STD Clinic attendees in NGU Study</td>
<td>Azithro 1g stat (n=32)</td>
<td>72% (55-85%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Azithro 1g weekly 3 weeks as 2nd line Rx (n=3)</td>
<td>0% (0-63%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moxifloxacin 400mg d 10d as 2nd -3rd line Rx (n=9)</td>
<td>100% (72-100%)</td>
</tr>
<tr>
<td><strong>Bradshaw 2008</strong></td>
<td>Retrospective review of STD Clinic attendees</td>
<td>Azithro 1g stat (n=120)</td>
<td>84% (77-90%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Moxifloxacin 400mg d 10d as 2nd -4th line Rx (n=21)</td>
<td>100% (87-100%)</td>
</tr>
</tbody>
</table>
Azithromycin failure with *M. genitalium*

- Characteristic of *M. genitalium* azithromycin failures to experience persistence of symptoms\(^1\)-\(^4\)
  - 91% of treatment failures had persistent urethral symptoms vs. 17% of controls, \(p<0.0001\)\(^1\)

- Moxifloxacin 400 mg d for 7-10 days - 100% cure rates in observational studies\(^1,5,6\)
  - expensive
  - not available in many settings
  - rarely associated with serious side effects
  - moxifloxacin failure has been observed in 2 cases
  - ?3\(^{rd}\) line option

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\(^1\)Bradshaw 2008, \(^2\)Bradshaw 2006, \(^3\)Maeda 2001, \(^4\)Wikstrom 2006, \(^5\)Bradshaw 2008, \(^6\)Jernberg et al. 2008
Mechanism of Azithromycin resistance

- 8 *M. genitalium* strains from pts failing 1g azithromycin
  - isolated by cell culture
  - subject to antimicrobial susceptibility testing\(^1,^2\)
  - MICs confirmed macrolide resistance
    - MIC > 8 µg/l for azithromycin
    - MIC > 32 µg/l for erythromycin
- Sequencing from clinical specimens identified three different mutations in region V of the 23S rRNA gene (positions 2058 and 2059)
- Sequencing of PCR products from pre and post azithromycin specimens in 9 pts failing 1g of azithromycin\(^2\)
  - 7 of 9 specimens lacked the mutation in the pre-treatment specimen
- Resistance induced by inappropriate dosage of azithromycin

\(^1\)Bradshaw EID 2006  \(^2\)Jensen  CID 2008
How widespread is Azithromycin resistance in M. genitalium?

- Limited data to date
- Scandinavia data suggests may be influenced by national NGU treatment guidelines
  - Sweden adheres to doxycycline first line for NGU
  - Denmark & Greenland to azithromycin

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
<th>Macrolide resistance mediating mutations detected by pyrosequencing assay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden†</td>
<td>181 Mg infected STD clinic attendees</td>
<td>3 (1.6, 0.4-4.4%)</td>
</tr>
<tr>
<td>Denmark†</td>
<td>415 Mg infected GP and STD clinic attendees</td>
<td>162 (39, 34.4-43.4%)</td>
</tr>
<tr>
<td>Greenland*</td>
<td>9 Mg infected participants in a sexual health project</td>
<td>9 (100, 71.7-100.0%)</td>
</tr>
</tbody>
</table>

National first line therapy for NGU could be major determinant of macrolide resistance in *M. genitalium*

†Data courtesy of Jorgen Jensen, * Law ISSTD 2009
Can we avoid increasing azithromycin resistance?

- Testing for Mg is not widely available, majority of cases currently not diagnosed
- In settings where 1g azithromycin is first line therapy for NGU
  - most Mg cases are presumptively exposed
  - resistance only likely to increase.....
  - extended azithromycin not likely to be effective 2\textsuperscript{nd} line
  - Moxifloxacin only effective 2\textsuperscript{nd} line agent......
- In settings where doxycycline is first line therapy, limited data suggests
  - ? less azithromycin resistance
  - ?extended azithromycin more effective – but is it sufficiently effective
- Should we be reviewing our first line Rx for NGU
  - Doxy vs extended azithromycin.......?????
- First step is to determine the prevalence of azithromycin resistance in our population........\textit{in progress in Melbourne}
Who should be tested for Mg?

- Limited availability of commercial assay, greatly limits testing for Mg and incorporation into clinical guidelines
- Guidelines recommend considering Mg in cases of urethritis and cervicitis
- However, most experts add PID and proctitis
- MSHC routinely tests cases with urethritis, PID, or cervicitis (proctitis)
- Not as prevalent as chlamydia in the general population
- Appears to be as prevalent as chlamydia/gonorrhoea in asymptomatic attendees in some clinical services internationally\(^1\)
- Importantly, increasing evidence for adverse sequelae in women
- Discussion about screening in STD and HIV clinic populations is starting to occur

\(^1\)Ross sti 2009
What is new about *M. genitalium*?

- No longer a controversial pathogen
  - Established cause of urethritis and cervicitis
  - DNA typing has established sexual transmission
  - High concordance within sexual partnerships
- What is new is that....
  - More convincing evidence to support a role in UGTI in women
  - Mounting evidence to support a role in rectal infection, predominantly asymptomatic in MSM
  - Rarely detected in the pharynx
  - Evidence emerging of an association with HIV-1 infection
  - Concerning evidence that our 1st line therapy for urethritis/cervicitis (1g azithromycin) may not be sufficiently effective for Mg
  - Limited data from population studies suggests it is consistently less prevalent than Ct
  - Clinic-based data suggests it is a common pathogen in symptomatic and asymptomatic attendees
Where to now with *M. genitalium*?

- Affordable commercial assays for *M. genitalium* clearly needed to increase access to testing and inform both clinical practice and research.
- Improved understanding of the prevalence of azithromycin resistance in Mg in populations using azithromycin and doxycycline to inform future treatment trials.
- More data on the adverse sequelae of Mg in women (PID and TFI) and response to therapies in women.
- Prospective studies to address causal relationship b/n HIV and Mg.
- Testing indicated in symptomatic urethritis/cervicitis/PID.
- Give consideration to screening & Rx of individuals in high prevalence and risk settings.
- Testing in Melbourne is available through the Dept. of Molecular Microbiology, The Royal Women’s Hospital.
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  • Catriona Bradshaw

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  • Jimmy Twin

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  • Jorgen Jensen

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