Sexually Transmitted Infections in Adolescents

Lydia A. Shrier, MD, MPH

Division of Adolescent/Young Adult Medicine
Children’s Hospital Boston, Harvard Medical School
Boston, Massachusetts
Question

What is the most common STI in adolescents?
Case #1: Genital Bumps

Sexually active 17 year old complains of itchy vaginal bumps
Human Papillomavirus (HPV)

- Most sexually active persons acquire HPV
- Transmitted by skin-to-skin contact
- More than 40 types can infect anogenital tract
  - Low-risk – can cause Pap changes, rarely serious
  - High-risk – can cause low- and high-grade changes
- Most HPV infections asymptomatic, subclinical, or unrecognized
- Most cases transient and resolve spontaneously
  (HPV DNA no longer detectable in 1-2 years)
Visible Genital Warts (condyloma acuminata)

- 90% HPV types 6,11 (can be infected w/multiple types)
- Incubation period 3 weeks – 8 months
- Flat, papular, or pedunculated lesions on mucosa
- Commonly around vaginal introitus, under foreskin of uncircumcised penis, on shaft of circumcised penis
  - Also cervix, vagina, urethra, anus, perineum, scrotum
- Painful, friable, or pruritic
- Can spread, get very large, distort anatomy, or obstruct urethral meatus
- May persist or recur (30%-70%) despite treatment, regress spontaneously (20%-30%), or undergo malignant transformation
Differential Diagnosis of Genital Bumps

- Condyloma lata (secondary syphilis)
- Scabies
- Molluscum contagiosum
- Pearly penile papules
- Vestibular papillomatosis
- Other: seborrheic keratoses, verruca vulgaris, skin tags
Secondary syphilis - condyloma lata

Moist
May be ulcerated
Spirochetes on dark field exam
Condyloma acuminata
PRURITIC!
Lesions also on hands and legs, very pruritic
Small, waxy, round papules
Small, uniform, multiple lesions only on corona
Pearly, soft, easily separated, linearly arrayed, confined to vestibule

Question

What would you do to diagnose HPV in this patient?
Testing for HPV

- **Diagnosis of genital warts made by** inspection

- **Acetic acid:**
  - Usually turns HPV-infected mucosa white, but not specific for HPV

- **HPV DNA test for cervical cancer screening of women >30**
  - Detects DNA in people actively shedding, designed to determine if woman has or will develop CIN 2, 3
  - No culture

- **Serology**
  - Only 50%-70% of people with HPV DNA develop antibodies, would not change management

- **Pap smear**
  - Won’t indicate whether lesions HPV+
How would you manage this patient’s lesions?
Management of Genital Warts

**Treatment**
- Goal is to remove symptomatic warts
- Won’t eradicate HPV, but may induce wart-free period
- Likely decreases infectivity
- No one treatment is better than the others
- Most warts respond within 3 months
- May result in pigment changes, scarring, pain

**Expectant management may be OK for some**

**Pap smear per routine**

**Counseling – condoms only partially protective**

**Partner: Routine STI evaluation**

**Follow-up: 3 months useful**
Treatment of Genital Warts

Chemical or physical destruction
    Immunologic therapy
    Surgical excision

Patient-applied
- Podofilox 0.5% solution or gel (Condylox)
- Imiquimod 5% cream (Aldara)
- Sinecatechins 15% ointment (Veregen)

Provider-applied
- Cryotherapy w/liquid N or cryoprobe, Q 1-2 wks
- Podophyllin resin 10%-25% in a compound of tincture of benzoin
- Tri- or Bichloroacetic acid (TCA or BCA) 80-90%
- Surgery
Case #2: Dysuria and Genital Sores

15 year old girl with dysuria, urinary retention, and vaginal sores

Has also had 1 day of fever, vomiting, body aches, and abdominal pain
Marked edema of the labia distorting the anatomy
Mucosa macerated, edematous, erythematous, copious yellow-green discharge
What’s your tentative diagnosis?
Herpes Simplex Virus (HSV)

Serotypes 1 and 2
- Distinction influences prognosis, counseling
- At least 50 million infected with HSV-2 in the U.S.
  (1.4% 14-19 → 10.5% 20-29)
- Type 1: up to 50% of genital herpes, milder course

Clinical Presentation
- Asymptomatic
- Vaginal/penile discharge
- Vulvar edema
- Perineal pain
- Painful/itchy ulcers, vesicles
- Dyspareunia
- Urinary outflow obstruction
- Tender lymphadenopathy
- Systemic symptoms

Differential Diagnosis
- Syphilis (√ serology)
- Chancroid (consider culture)
- Other infxn (Gr+ cocci, EBV)
- Trauma – Behcet’s
<table>
<thead>
<tr>
<th>Clinical Features of Initial Infection</th>
<th>HSV-1</th>
<th>HSV-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indistinguishable</td>
<td></td>
<td></td>
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<tr>
<td>Duration Genital Lesion (Initial) –days</td>
<td>18.8 ± 6.5</td>
<td>21.5 ± 6.8</td>
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<tr>
<td>Time to First Recurrence (Median)</td>
<td>&gt; 6 months</td>
<td>83 days</td>
</tr>
<tr>
<td>Average Recurrences/Year</td>
<td>0.24</td>
<td>3.96</td>
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Multiple lesions, vesicle and ragged ulcers

Primary HSV
HSV cervicitis
Several vesicles
Erythema and streaking

HSV
Cluster of vesicles
Crusted lesions
Cluster of vesicles
Oral herpes
Primary HSV
Primary syphilis - chancre

Painless, smooth rolled edges
Chancroid

Beefy, granular base, red margin

Like HSV, painful and ragged edges, but deeper + larger and \(<50\%)\) tender

inguinal lymphadenopathy
Recurrent, associated with oral canker sores, otherwise well
Recurrent aphthous ulcers
Recurrent oral and genital ulceration, also has uveitis
Behçet’s disease
2-week history of sore throat and a tender, stiff neck
EBV-associated ulcus vulvae acutum
How would you diagnose HSV in this patient?

A. History and physical examination
B. Tzanck preparation
C. HSV culture
D. HSV PCR
E. Pap smear
F. Non-type-specific HSV serology
G. Type-specific HSV serology
Diagnosis of Genital HSV

Use type-specific tests

- If mucocutaneous lesions: Cell culture or PCR
  - Sensitivity of culture low esp. w/recurrent lesions, as lesions heal
  - Type culture isolates

- Weeks after infection: Type-specific IgG serology
  - +HSV-2 → anogenital infection
  - Useful if recurrent or atypical genital symptoms w/neg culture, clinical diagnosis w/o lab confirmation, partner with genital HSV
  - Consider for persons presenting for STD eval (esp if multiple partners), those with HIV, and MSM at increased risk for HIV
  - General screening debated but currently not indicated

Do NOT use

- Inspection, Tzanck prep, Pap (not sensitive or specific)
- Non-type-specific IgG serology (most people HSV-1 + by age 30)
- IgM antibody (low Sn/Sp, not type-specific, can be + w/recurrences)
Question

What would you use to treat this patient?
Management of Genital HSV

Antiviral treatment to manage signs & symptoms
- Does not eradicate latent virus nor affect risk, frequency, severity of recurrences after discontinued
- Give orally (IV - severe disease, topical - minimal benefit)

Counseling
- Natural history, transmission and methods to reduce transmission, neonatal risk, coping with diagnosis

Recurrences (With genital HSV-2, 5-8/year common)
- Triggers: Stress, fatigue, menses
- Prodrome (50%): Tingling, itch, burn, or pain at site of eruption ½ - 48 hrs before outbreak
Treatment of First Episode of HSV

- Newly acquired genital herpes can cause prolonged clinical illness with severe symptoms, even if initially mild manifestations.

- All patients with first episodes of genital herpes should receive antiviral therapy.

- 7-10 days of:
  - Acyclovir 400 mg PO TID or 200 mg PO 5x/d or
  - Famciclovir 250 mg TID or
  - Valacyclovir 1 g PO BID
Treatment of Recurrent Genital Herpes

**Daily Suppressive Therapy**
- If pt wants or if frequent recurrences or to reduces risk of transmission to uninfected partners
- Acyclovir 400 mg or Famciclovir 250 mg PO BID or Valacyclovir 500 mg or 1 g PO QD
- Reassess need for suppressive therapy annually

**Episodic Treatment**
- Acyclovir or Famciclovir or Valacyclovir
- Variable dosing QD-TID x 1-5 days
- Start with prodrome or w/in 1 d of lesions - give Rx
Case #3: Vaginal Discharge

Sexually active 17 year old girl complains of abnormal vaginal discharge
Question

How would you evaluate this patient?
Differential Diagnosis of Vaginal Discharge

- Physiologic discharge
- Bacterial vaginosis
- *Candida* vulvovaginitis
- Trichomoniiasis
- Cervicitis
- Foreign body (e.g., tampon)
- Reaction to irritant (vaginal sprays, soaps)
- Allergic vaginitis
- Mullerian anomalies
- Other (e.g., genital HSV)
Frothy yellow discharge
Punctate cervical hemorrhages
(“strawberry cervix”)
Motile flagellated organism
Trichomoniasis

Symptoms
- Diffuse, malodorous, yellow-green vaginal discharge + vulvar irritation. Can have no symptoms.

Signs
- Strawberry cervix, pH >4.5

Diagnosis
- Immediate evaluation of NS wet prep (sensitivity 60%-70%)
- Point-of-care tests (OSOM Trichomonas Rapid Test, Affirm™ VP III; sensitivity 78%-90%, specificity 95%-99%)
- Culture (most sensitive, specific, $)
- APTIMA T. vaginalis Analyte Specific Reagents (ASR) by Gen-Probe

Treatment
- Metronidazole or Tinidazole 2 g PO x 1 (86-100% efficacy)
- Alternative: Metronidazole 500 mg PO BID x 7 days
- No alcohol during and until 24-72 h after medication, treat partner

The most common non-viral STI worldwide!
Cervicitis

- Purulent or mucopurulent endocervical exudate visible in endocervical canal or on an endocervical swab specimen and/or
- Sustained endocervical bleeding easily induced by gentle passage of cotton swab through os
- Leukorrhea (>10 WBC/hpf on microscopic examination of vaginal fluid) associated with chlamydial and gonococcal cervical infection
Question

Which organisms might be responsible for this patient’s cervicitis?
Cervicitis Evaluation

- *Chlamydia trachomatis* (CT), *Neisseria gonorrhoeae* (GC), *Mycoplasma genitalium*, other (e.g., HSV)

- Highest rates of CT and GC in young women and men 15-24
  - Can also cause urethritis, Bartholinitis, inflammation of Skene’s gland, pelvic inflammatory disease, perihepatitis, epididymitis, proctitis, pharyngitis, conjunctivitis, reactive arthritis syndrome, disseminated GC
  - Associated w/ ectopic preg, infertility, chronic pelvic pain, neonatal infxn

- NAATs for CT and GC: PCR, SDA, TMA
  - Vaginal swab optimal, but urine, urethral, cervical, ThinPrep all OK, too

- Also evaluate for BV and trichomoniasis
  - Because sensitivity of microscopy to detect *T. vaginalis* low, symptomatic women with cervicitis + microscopy negative for trichomonads should have further testing
Question

Your patient’s bimanual exam was normal. Vaginal wet prep showed leukorrhea.

Do you wait for her test results or presumptively treat her?

With what?
Presumptive Treatment for Cervicitis

Presumptively treat for **CT** if at increased risk (age <25, new/multiple partners, unprotected sex, ?follow-up), no NAAT
- Azithromycin 1 g PO x 1 or Doxycycline 100 mg PO BID x 7 days

Concurrent presumptive therapy for **GC** if prevalence is >5% in patient population (younger age, living in certain facilities)
- Add Ceftriaxone 250 mg IM x one dose
Rationale for Current GC Treatment Recs

Rationale for 250 mg dose instead of 125 mg
- Increasing geographic distribution of isolates with decreased susceptibility to cephalosporins in vitro
- Ceftriaxone treatment failures
- Ceftriaxone 250 mg more efficacious for pharyngeal infection (often unrecognized)
- Simpler to have one dose regardless of anatomic site

Rationale for ceftriaxone over cefixime
- Ceftriaxone 250 mg higher and more sustained bactericidal level vs. cefixime 400 mg
- Oral cephalosporins limited efficacy for pharyngeal infections
- Decreasing susceptibility of GC to cefixime (8/10/2012)
Treatment Once Results Known

- +CT, treat for GC on basis of GC NAAT result
- +GC, always co-treat for CT (*regardless of CT NAAT result*)

Rationale for routine CT co-treatment
- High frequency of co-infection
- Routine co-treatment with doxy or azithro might also hinder development of antimicrobial-resistant GC
- Azithro might enhance treatment efficacy for pharyngeal infection if using oral cephalosporins
Follow-up of CT and GC Infections

Test-of-cure generally not recommended

- Exception for CT: Pregnant women or if ? compliance, symptoms persist, or reinfection suspected (3 weeks after treatment, by NAAT)
- If symptoms persist after treatment for GC, culture and test gonococci isolates for antimicrobial susceptibility, consider other organisms
- If cefixime used to treat GC, culture or NAAT (with confirmatory culture if +) in 1 week

Evaluate, test, treat partners within 60d of patient’s symptoms or diagnosis (or last)

Re-screen in 3 months
Sexually active 16 year old boy complains of purulent penile discharge
You suspect urethritis.

How do you evaluate this patient?
Diagnosis of Urethritis in Men

Clinicians should document urethritis:

- Mucopurulent or purulent discharge
- Gram stain of urethral secretions demonstrating ≥5 WBC per oil immersion field
  - Preferred rapid diagnostic test for urethritis
  - GC infection if WBC have Gram-negative intracellular diplococci (GNID)
- WBCs in first-void urine
  - Positive leukocyte esterase test
  - Microscopic examination of sediment demonstrating ≥10 WBC per high power field
Question

You visualize the purulent penile discharge and send a first-void urine for NAAT testing for GC and CT. You cannot perform a Gram stain.

Do you wait for his test results or presumptively treat him?

With what?
Management of Urethritis in Men

- **Documented urethritis**
  - Gr stain WBCs + GNID → Treat for GC and CT
  - Gr stain WBCs, no GNID → Treat for CT, other
  - No Gram stain → Treat for GC and CT

- **Can’t document urethritis**
  - Treatment should be deferred
  - Test for GC and CT
  - Empiric treatment for GC and CT if patient at high risk and unlikely to return for follow-up (**adolescents***)
Treatment of Urethritis in Men

GC urethritis (GNID or +GC test)
- Ceftriaxone 250 mg IM
  *Plus CT treatment if not excluded by negative NAAT*

Nongonococcal urethritis (NGU; inflammation w/o GNID)
- *C. trachomatis* (15%-40%), *Mycoplasma genitalium* (15%-25%)
  - *Trichomonas vaginalis*, HSV, adenovirus, enteric bacteria, other
- Azithromycin 1 g PO single dose or Doxycycline 100 mg PO BID x 7 days

Recurrent or persistent urethritis
- Retreat, expand testing (Trich)
- Metronidazole or Tinidazole 2 g PO or Azithromycin 1 g PO single dose
- Moxifloxacin 400 mg PO QD x 7 days highly effective against *M. genitalium*
References

- Denver STD/HIV Prevention Training Center
- Morse, Moreland, Holmes, Taylor. CD-Atlas of Sexually Transmitted Diseases and AIDS