Let’s Talk About Sex

with Kaity, Amy, Laila & Brianna
Disclaimer - we aren’t doctors haha :) 
- We are second year medical students 
- We are not physicians or experts in this field
Let’s Talk Science - What is it?

Non-profit, national organization

UBC and UVic affiliated

Focused on providing education to communities in sciences, technology, engineering and mathematics
1. Sex & Gender
2. Hormone Cycles
3. Contraception & Protection
4. Sexually Transmitted Infections
Sex & Gender
Sex

Typically refers to how someone is assigned at birth given their anatomy and chromosomes/genetics

- Male
  - Born with testes and a penis
- Female
  - Born with a uterus and a vagina
- Intersex
  - Born without a clear differentiation between male and female anatomically or genetically

Important: this does not necessarily dictate their gender identity

http://www.sexandu.ca/lgbttq/gender-identity/
Male and Female Anatomy

More Detailed Female Anatomy

- Clitoris
- Urethra
- Vagina
- Labia majora
- Labia minora
- Anus

https://myhealth.alberta.ca/Health/Pages/conditions.aspx?hwid=tp0815
Gender Identity

Someone’s most “inner concept” of if they are male, female, in between or neither

Cisgender: the sex assigned at birth matches the gender identity

Transgender: the sex assigned at birth does not match the gender identity

... And more

Important: Gender identity does not dictate your sexual orientation or attraction

Sexual Orientation

*Sexual orientation often refers to sexual attraction*

- **Heterosexuality**
  - Attraction between people of opposite sex or gender

- **Homosexuality**
  - Attraction between people of the same sex or gender

- **Bisexuality**
  - Attraction to both males and females

- **Pansexuality**
  - Attraction to all sexes or genders

- **Asexuality**
  - No sexual attraction to any sexes or genders

[http://www.sexandu.ca/lgbtq/sexual-orientation/]
The Genderbread Person v3.3

Gender is one of those things everyone thinks they understand, but most people don’t. Like Inception. Gender isn’t binary. It’s not either/or. In many cases it’s both/and. A bit of this, a dash of that. This tasty little guide is meant to be an appetizer for gender understanding. It’s okay if you’re hungry for more. In fact, that’s the idea.

**Identity**

How you, in your head, define your gender, based on how much you align (or don’t align) with what you understand to be the options for gender.

**Gender Expression**

The ways you present gender, through your actions, dress, and demeanor, and how those presentations are interpreted based on gender norms.

**Biological Sex**

The physical sex characteristics you’re born with and develop, including genitalia, body shape, voice pitch, body hair, hormones, chromosomes, etc.

**Sex**

Sexually Attracted to

<table>
<thead>
<tr>
<th>Women</th>
<th>Females</th>
<th>Femininity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nobody</td>
<td>(Men/</td>
<td>Males</td>
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<tr>
<td></td>
<td>Males)</td>
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</table>

Romantically Attracted to

<table>
<thead>
<tr>
<th>Women</th>
<th>Females</th>
<th>Femininity</th>
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</thead>
<tbody>
<tr>
<td>Nobody</td>
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<td>Males</td>
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<tr>
<td></td>
<td>Males)</td>
<td></td>
</tr>
</tbody>
</table>

For a bigger bite, read more at http://bit.ly/genderbread
Female Hormone Cycle
Ovarian Physiology

Women are born with all of the eggs they will have in their lifetime

From birth onwards, primary follicles (eggs) undergo apoptosis (self-death)

- At birth, \(~2\) million follicles
- By puberty (avg 13 yrs; range: 10.5–15.3), \(~400,000\) remain
- Average female will ovulate \(500x\) in her lifetime
- Menopause (avg 51 yrs): 12 months of no menstrual cycles
- Post-menopause: 0 eggs

GnRH = Gonadotropin Releasing Hormone
LH = Luteinizing Hormone
FSH = Follicle Stimulating Hormone
Ovarian Cycle

3 Phases:
1. Follicular phase
2. Ovulatory phase
3. Luteal phase
1. Follicular Phase

- Increase in Estrogen
• Initial increase in FSH leads to estrogen production, and eventually a spike

LH = Luteinizing Hormone

FSH = Follicle Stimulating Hormone
2. Ovulatory Phase

- Increase in Luteinizing Hormone
- Ovulation
- Spike in estrogen level leads to POSITIVE FEEDBACK (normally negative) on anterior pituitary, and leads to a spike in LH
- 1–2 days after the LH surge, ovulation occurs
- Progesterone levels increase in response to luteinizing hormone

LH = Luteinizing Hormone

FSH = Follicle Stimulating Hormone
- Spike in estrogen level leads to POSITIVE FEEDBACK (normally negative) on anterior pituitary, and leads to a spike in LH
- 1-2 days after the LH surge, ovulation occurs
- Progesterone levels increase in response to luteinizing hormone

LH = Luteinizing Hormone
FSH = Follicle Stimulating Hormone
3. Luteal Phase

- Increase in Progesterone
- Rupture of the follicle initiates a series of chemical changes
  - Immediate decrease then subsequent rise in estrogen levels
- Increase in progesterone (preparing the endometrium for a fertilized egg), then rapid decrease with no fertilization

LH = Luteinizing Hormone

FSH = Folicle Stimulating Hormone

How can a menopausal woman help a pre-menopausal woman who has infertility?
GnRH = Gonadotropin Releasing Hormone
LH = Luteinizing Hormone
FSH = Follicle Stimulating Hormone
Contraception & Protection
61% of Canadian women have had an unintended pregnancy

~SOGC Survey 2017
Male Contraception?

Efficacy and Safety of an Injectable Combination Hormonal Contraceptive for Men


DOI: http://dx.doi.org/10.1210/jc.2016-2141
Received: May 18, 2016
Accepted: August 29, 2016
First Published Online: October 27, 2016

Conclusions:

The study regimen led to near-complete and reversible suppression of spermatogenesis. The contraceptive efficacy was relatively good compared with other reversible methods available for men. The frequencies of mild to moderate mood disorders were relatively high.
EFFECTIVENESS OF FAMILY PLANNING METHODS

*The percentages indicate the number out of every 100 women who experienced an unintended pregnancy within the first year of typical use of each contraceptive method.

**MOST EFFECTIVE**

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
<th>Pregnancy Rate per 100 Women in a Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implant</td>
<td>0.05%</td>
<td>Less than 1</td>
</tr>
<tr>
<td>Intrauterine Device (IUD)</td>
<td>0.2% LNG</td>
<td>6-12</td>
</tr>
<tr>
<td></td>
<td>0.8% Copper T</td>
<td></td>
</tr>
<tr>
<td><strong>PERMANENT STERILIZATION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>0.5%</td>
<td>18 or more</td>
</tr>
<tr>
<td>(Abdominal, Laparoscopic, and Hysteroscopic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.15%</td>
<td></td>
</tr>
<tr>
<td>(Vasectomy)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**REVERSIBLE**

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injectable</td>
<td>6%</td>
</tr>
<tr>
<td>Pill</td>
<td>9%</td>
</tr>
<tr>
<td>Patch</td>
<td>9%</td>
</tr>
<tr>
<td>Ring</td>
<td>9%</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>12%</td>
</tr>
</tbody>
</table>

**REVERSIBLE**

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Condom</td>
<td>18%</td>
</tr>
<tr>
<td>Female Condom</td>
<td>21%</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>22%</td>
</tr>
<tr>
<td>Sponge</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>24%</td>
</tr>
</tbody>
</table>

**LEAST EFFECTIVE**

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condoms</td>
<td>21%</td>
</tr>
<tr>
<td>Fertility Awareness-Based Methods</td>
<td>24%</td>
</tr>
</tbody>
</table>

Other Methods of Contraception: (1) Lactational Amenorrhea Method (LAM): is a highly effective, temporary method of contraception; and (2) Emergency Contraception: emergency contraceptive pills or a copper IUD after unprotected intercourse substantially reduces risk of pregnancy.

Adapted from World Health Organization (WHO) Department of Reproductive Health and Research, Johns Hopkins Bloomberg School of Public Health, Center for Communication Programs (CCP), Knowledge for Health project.

Sperm and Ejaculation

- **Sperm**: male reproductive cell
  - Sperm can live up to 5 days inside a woman’s reproductive tract

- **Pre-ejaculate**: bodily fluid that comes out of the penis during sexual activity before orgasm
  - In some males, there is sperm present in pre-ejaculate along with other fluids

- **Ejaculate**: bodily fluid that comes out of the penis upon orgasm
  - Contains sperm and other fluid components

[Link](https://www.stayathomemum.co.uk/my-kids/conception-and-fertility/using-a-sperm-donor)
Fertility Based Awareness

Abstaining from sex or using condoms on fertile days

- CDC states that this method has a 24% failure rate

- Some other sources would argue that certain variations of this method are highly effective (when done correctly)

- Method based on timing of ovulation, changes in cervical secretions and changes in basal body temperature
  - This can be challenging measures to monitor

- Luteal phase of the ovarian cycle is generally fixed and ovulation occurs ~14 days before the beginning of next menses - need to have a reliable and consistent cycle in order to predict properly

https://www.cdc.gov/reproductivehealth/contraception/index.htm
Frank-Herrmann P. et al. 2007 Human Reproduction
Withdrawal

Removing the penis from the vagina before ejaculation during sexual intercourse

- One of the least effective methods for preventing pregnancy
- Timing can be tricky
  - Because sperm can live in the reproductive tract for days, this increases the chances of pregnancy around the time of ovulation (even if you think you're having sex in the safe zone)
- Does not protect against sexually transmitted infections (STIs)

http://americanpregnancy.org/getting-pregnant/can-you-get-pregnant-with-precum/
Spermicide

Product that kills sperm that is placed into the vagina prior to sexual intercourse

- According to the Centre for Disease Control (CDC), spermicide results in a 28% chance of pregnancy
- The spermicide causes the sperm to get stuck at the entrance of the uterus (at the cervix)
- Considered one of the least effective forms of contraception
- Can be combined with condoms or other birth control methods
- Does not protect against STIs

https://www.plannedparenthood.org/learn/birth-control/spermicide
https://www.cdc.gov/reproductivehealth/contraception/index.htm
External (Male) Condoms

Barrier method; sheath that goes onto the penis prior to and during sexual activity - can be used for oral, vaginal and anal sex

- The CDC estimates external condoms result in 18 pregnancies per 100 women in a year
  - If used perfectly every time, rates as high as 98% efficacy have been reported
  - In reality, this is not accurate

- They are a very effective method to reduce transmission of STIs

https://www.plannedparenthood.org/learn/birth-control/condom/how-effective-are-condoms
https://www.cdc.gov/reproductivehealth/contraception/index.htm
External (Male) Condoms Continued

- Latex-free condoms available for those with sensitivity or allergies
  - Latex, polyurethane and natural condoms
- Condoms can only be used once (cannot be reused)
- Do not use more than one at a time
- They do come with expiration dates (check these before use)

**TIP:** using water-based lubricants helps increase sensitivity and decrease the likelihood of breakage

How to put on a condom

1. Check the expiry date & take the condom out of the packet carefully. Don't use scissors or your teeth!

2. Pinch the air out of the top of the condom. Make sure it is not inside out – the rim should be on the outside.

3. Put the condom on top of the erect penis. Put it on BEFORE it touches a partner’s mouth or genital area.

4. Roll the condom down to the base of the penis. Wear it the whole time you are having sex.

5. Take the condom off once the penis has been withdrawn completely but while it is still erect. Don't wait around too long to pull out as this risks semen spilling out, or the condom slipping off.

6. Make putting on a condom part of the fun! Ask your partner to put it on for you, and keep stimulating each other as the condom goes on.

AVERT.org

https://www.avert.org/infographics/how-use-condom
**Internal (Female) Condoms**

*Barrier method; goes inside the vagina prior to sexual intercourse*

- According to Options for Sexual Health, internal condoms are 95% effective with perfect use - but with typical use, they are 79% effective.

- They are a very effective method for prevention of STIs.

*Note: dental dams can be used for oral sex to cover the genitalia to prevent STIs*

http://www.newkidscenter.com/How-to-Use-Female-Condolm.html
Dental Dams

https://www.cdc.gov/condomeffectiveness/Dental-dam-use.html
Diaphragm

Soft dome that is used with spermicide and is placed high in the vagina prior to sexual intercourse

- Options for Sexual Health states that the perfect use is 94% effective and 84% effective if used typically

- Diaphragm acts as a barrier between the cervix and the ejaculate to prevent sperm from traveling into the uterus
  - Spermicide is placed inside the dome prior to insertion into the vagina
  - Diaphragm must be kept in vagina at least 6 hours post-intercourse

- Needs to be fitted by a physician to ensure proper coverage
- Not an effective method for prevention of STIs

https://sites.path.org/rhtech/silcs-diaphragm/silcs-features/
The Ring

A small, flexible ring that is placed in the vagina for 3 weeks, then is removed for 1 week

- NuvaRing (generic name: etonogestrel/ethinyl estradiol vaginal ring)

- CDC states 9% failure rate

- Contains a progestin and an estrogen to help prevent pregnancy by releasing low amounts of hormones

- The major advantage of this method is that you do not need to worry about it everyday

- Not an effective method for STI prevention

https://www.nuvaring.com/how-nuvaring-works/
https://www.optionsforsexualhealth.org/birth-control-pregnancy/
birth-control-options/hormonal-methods/combined-hormonal-contraceptives/using-nuvaring
The Patch

**Patch that is placed on the skin to allow for transdermal transfer of hormones**

- CDC quotes a 9% failure rate

- Contains a progestin and an estrogen
  - Works by stopping ovulation and causing cervical mucus to thicken (making it harder for sperm to pass)

- Need to change patch once a week for three weeks; one week break
  - Buttocks, upper outer arm, upper body (except breasts) or abdomen

- Not an effective method for preventing STIs

https://www.cdc.gov/reproductivehealth/contraception/index.htm
The Shot

*Long-acting birth control that is injected every 12 weeks*

- Very effective form of birth control; 97–99% effective between typical and perfect use
- Known as “Depo-provera” or “medroxyprogesterone”
- Contains a progestin only
  - Stops ovulation, thickens cervical mucus and thins endometrial lining
- Does **not** protect against STIs


If I’m not ovulating because I’m on contraceptives, does that mean menopause will happen later for me?
- Time of menopause - mostly genetic
- Has nothing to do with how many times a person ovulates
- Follicles are mostly lost through atresia
The Pill

● WHEN USED CORRECTLY:
  Oral Contraceptive Pills are >99% effective

● Can be in the forms of either progestin only or estrogen + progestin

How does it work?

- Inhibits gonadotropin secretion via negative feedback on pituitary & hypothalamus
  - Prevention of ovulation
- Continuous exposure to progesterone and estrogen leads to thin, fragile endometrial lining

The Pill

“I forgot to take my pill last night...what should I do?!”

- Preventive rather than curative, therefore no on-going reinforcement
- Forgetting pills is common, especially in the adolescent age group

## If ONE pill has been missed (48–72 hours since last pill in current packet or 24–48 hours late starting first pill in new packet)

**Continuing contraceptive cover**
- The missed pill should be taken as soon as it is remembered.
- The remaining pills should be continued at the usual time.

**Minimising the risk of pregnancy**
Emergency contraception (EC) is not usually required but may need to be considered if pills have been missed earlier in the packet or in the last week of the previous packet.

## If TWO OR MORE pills have been missed (>72 hours since last pill in current packet or >48 hours late starting first pill in new packet)

**Continuing contraceptive cover**
- The most recent missed pill should be taken as soon as possible.
- The remaining pills should be continued at the usual time.
- Condoms should be used or sex avoided until seven consecutive active pills have been taken. This advice may be overcautious in the second and third weeks, but the advice is a backup in the event that further pills are missed.

## Minimising the risk of pregnancy

<table>
<thead>
<tr>
<th>If pills are missed in the first week (Pills 1–7)</th>
<th>If pills are missed in the second week (Pills 8–14)</th>
<th>If pills are missed in the third week (Pills 15–21)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC should be considered if unprotected sex occurred in the pill-free interval or in the first week of pill-taking.</td>
<td>No indication for EC if the pills in the preceding 7 days have been taken consistently and correctly (assuming the pills thereafter are taken correctly and additional contraceptive precautions are used).</td>
<td>OMIT THE PILL-FREE INTERVAL by finishing the pills in the current pack (or discarding any placebo tablets) and starting a new pack the next day.</td>
</tr>
</tbody>
</table>
Intrauterine Device (IUD)

Long-acting birth control that is placed in the uterus for 3–10 years

**Hormonal**  
Jaydess (3), Kyleena (5) & Mirena (5)

- Progesterone only, 0.2% yearly failure rate
- Must be inserted by a trained HCP
- Ovulation still occurs (~40%)
- Changes cervical mucus
- Thinning of endometrium
Intrauterine Device (IUD)

*Long-acting birth control that is placed in the uterus for 3-10 years*

**Non-Hormonal  Copper IUD (5-10)**

- Continuous, slow release of copper into the uterine fluid - toxic to sperm
- 0.8% yearly failure rate

Common Side Effects:
- Heavier, longer periods with spotting in between

The Implant

*Long-acting hormone-releasing rod that is placed under the skin for 3 years*

- Reported to be the most effective form of birth control - 0.05% yearly failure rate
- Progesterone-based rod that must be surgically implanted by a trained HCP
- Most common side effect:
  - Irregular bleeding in the first 6–12 months

- **NOT** an effective method against STIs
The Breastfeeding Mother

The Lactational Amenorrhea Method (LAM)

Can be over 98% effective, IF USED CORRECTLY
The Breastfeeding Mother

The Lactational Amenorrhea Method (LAM)

Can be over 98% effective, IF USED CORRECTLY

LAM is only effective if:

1. You have not started your period yet
2. You are breastfeeding exclusively, and not giving your baby any other food
3. You are breastfeeding at least every 4 hours during the day, and 6 hours during night
4. Your baby is less than 6 months old

If any of the above 4 criteria is not being met, you no longer have good protection, and another form of birth control should be used
Non-Contraceptive Benefits of Hormonal Contraception

Treatment of:

- menorrhagia (abnormally heavy or prolonged bleeding)
- dysmenorrhea (cramps!)
- PMS
- Acne
- Perimenopausal symptoms

Decreased:

- Anemia related to menstrual blood loss
- Risk of epithelial ovarian cancer
- Risk of endometrial cancer

Emergency Contraception

Plan A

Plan B
Emergency Contraception - Hormonal

Levonorgestrel (high dose progesterone)

A.k.a. “The morning after pill” “Plan B”

- Use within 72 hours for maximal benefit
- Can be used within 5 days of unprotected intercourse
- Effectiveness decreases if BMI >25
- Pregnancy rate = 2.2%
- Over the counter

How does it work?

- Interferes with ovulation
- Decreases likelihood of implantation
- NOT ABORTIVE
Emergency Contraception - Hormonal

Ulipristal Acetate (progesterone receptor modulator)

- Use within 72 hours for maximal benefit
- Can be used within 5 days of unprotected intercourse
- Effectiveness decreases if BMI >30
- Pregnancy rate = 1.3%
- Need a Rx

How does it work?

- Interferes with ovulation
- Decreases likelihood of implantation
- NOT ABORTIVE
Emergency Contraceptives - Non-Hormonal

Copper Intrauterine Device

*MOST EFFECTIVE* (<0.01% pregnancy rate)

- Use within 7 days
- First line if BMI >30
- Need office visit

How does it work?

- Copper ions toxic to sperm & ova
- Inhibits implantation IF a blastocyst reaches uterus
- NOT ABORTIVE

Canadian Medical Association Journal 2016
Sexually Transmitted Infections (STIs)
Meet Taylor

Taylor is:
- 22 years old
- 3rd year student
- studying Kinesiology
- Most likely to be found taking a “study break” watching funny dog videos
You and Taylor bond over your love of funny dog videos and become BFF’s. “Remember how I had that awkward date at the start of the year? The one with the hot sauce explosion incident? They kept messaging me, and they were pretty funny, so it’s been nice. A few weeks ago we slept together and had sex – and we didn’t use protection. Yesterday I asked if they have ever been tested for STI’s (which they haven’t) and neither have I – what should I do?”
STI’s and Ageing

15–29 years olds vs 40–59 year olds (1997–2007, Canada)

Chlamydia:
87% vs 166%

Gonorrhea:
133% vs 210%

Syphilis:
5x growth vs 11x growth

Sexually Transmitted Infections - What are they?

- Infections (bacterial or viral) that are (often) passed through sexual contact
- Variable symptoms
- Variable duration of symptoms

**Bacterial:**

- Can be “cured” with treatment
- Can be infected multiple times, even if you previously received treatment

**Viral:**

- Cannot be “cured”, but can be suppressed
- Once infected, infected for life

**Examples:**

- Gonorrhea
- Chlamydia
- HSV
- HPV
- HIV
- Syphilis

This is not an exhaustive list
“Does STI testing hurt?”

No!
STI Testing

STI testing is often quick, painless, and free

Different tests for different STIs:

- Swab sample
  - Oral, anal, genital
- Urine test
  - Most accurate if you have not urinated for 2 hours before the test
- Blood test

<table>
<thead>
<tr>
<th>STI and other tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia</td>
</tr>
<tr>
<td>Gonorrhea</td>
</tr>
<tr>
<td>Syphilis</td>
</tr>
<tr>
<td>HIV</td>
</tr>
<tr>
<td>Herpes Simplex Virus (HSV)</td>
</tr>
<tr>
<td>Hepatitis A</td>
</tr>
<tr>
<td>Hepatitis B</td>
</tr>
<tr>
<td>Hepatitis C</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Women Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial Vaginosis (BV)</td>
</tr>
<tr>
<td>Pap Test</td>
</tr>
<tr>
<td>Trichomoniasis</td>
</tr>
<tr>
<td>Vaginal yeast</td>
</tr>
</tbody>
</table>

STI Testing Checklist

Here is a list of tests that you might get. You can show it to your health care provider to figure out which tests you need.

Call ahead if you have questions about:

- If you need ID (BC driver’s license, BC ID, a student card)
- Care card (MSP) or other health insurance.
- Costs if you do not have a BC Care Card.

Things your health care provider will ask you about:

Your health care provider may ask you some personal questions about sex. You might be asked about sex partners, ways you have sex and condom use. You don’t have to share anything you do not want to, but the information you give will help the health care provider decide what tests are best for you. You have a choice about what testing you will have done.

Provided by:

SMARTSEX RESOURCE

BC Centre for Disease Control

https://www.instagram.com/p/m5bv90AZ3s/
https://smartsexresource.com/topics/sti-testing-checklist
Choose Your Own Adventure #1

- Unknown STI status of your sexual partner(s)
  and/or

- Non specific changes (genitoanal itch, painful urination, tender abdomen)
  and/or

- No symptoms
Gonorrhea

“The Clap”
Gonorrhoea

Culprit: *Neisseria Gonorrhoeae*

What type of STI? Bacterial

How is it transmitted?
- Oral, genital, anal sex

Who?
- Males > Females (2:1)
- Ages 20–29 (BC)
- Gradual & steady increase in cases in Canada and BC since 1997
Gonorrhoea

Why the increase in rates?
Are the rates increasing or is more being detected?

Changes in condom use?

Changes in testing methods?
E.g Urine tests
E.g Inclusion during Chlamydia testing

Changes in public perception of STIs?

http://www.bccdc.ca/util/about/annreport/default.htm
Gonorrhoea

Symptoms appear:

- 2–7 days after contact

Looks & feels like:

- Discharge (yellow-white) & itch at the site of infection
- Possible burning sensation when urinating
- Asymptomatic
Gonorrhoea

Symptoms appear:
- 2–7 days after contact

Looks & feels like:
- Discharge (yellow-white) & itch at the site of infection
- Possible burning sensation when urinating
- Asymptomatic

People with penises are more likely to be symptomatic
- E.g. Testicular pain/swelling

For people with vaginas symptoms might be mistaken for a bladder or vaginal infection
- E.g. Lower abdominal pain
Gonorrhoea

**Symptoms appear:**
- 2-7 days after contact

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- Discharge (yellow-white) & itch at the site of infection
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- E.g. Lower abdominal pain

...and oral gonorrhea might be mistaken for strep throat!

Super Gonorrhea Is Spreading: What’s Oral Sex Got To Do With It

Chlamydia

“The Silent Infection”
Chlamydia

Culprit: *Chlamydia trachomatis*

What type of STI? Bacterial

How is it transmitted?
- Oral, genital, anal sex

Who?
- Most commonly reported STI in BC
  - Gradual & steady increase in Canada since 1998
- Female > Men (2:1 ratio)
- Young adults aged 20–29, followed by adolescents aged 15–19 years

https://www.islandsexualhealth.org/
http://edguidance.com/sti/chlamydia-the-silent-disease/
Chlamydia - “The Silent Disease”

2. Genital chlamydia case reports in BC and Canada, 1991 to 2014

<table>
<thead>
<tr>
<th>Year</th>
<th>BC Rate</th>
<th>Canadian Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>1992</td>
<td>180</td>
<td>220</td>
</tr>
<tr>
<td>1993</td>
<td>200</td>
<td>240</td>
</tr>
<tr>
<td>1994</td>
<td>220</td>
<td>260</td>
</tr>
<tr>
<td>1995</td>
<td>240</td>
<td>280</td>
</tr>
<tr>
<td>1996</td>
<td>260</td>
<td>300</td>
</tr>
<tr>
<td>1997</td>
<td>280</td>
<td>320</td>
</tr>
<tr>
<td>1998</td>
<td>300</td>
<td>340</td>
</tr>
<tr>
<td>1999</td>
<td>320</td>
<td>360</td>
</tr>
<tr>
<td>2000</td>
<td>340</td>
<td>380</td>
</tr>
<tr>
<td>2001</td>
<td>360</td>
<td>400</td>
</tr>
<tr>
<td>2002</td>
<td>380</td>
<td>420</td>
</tr>
<tr>
<td>2003</td>
<td>400</td>
<td>440</td>
</tr>
<tr>
<td>2004</td>
<td>420</td>
<td>460</td>
</tr>
<tr>
<td>2005</td>
<td>440</td>
<td>480</td>
</tr>
<tr>
<td>2006</td>
<td>460</td>
<td>500</td>
</tr>
<tr>
<td>2007</td>
<td>480</td>
<td>520</td>
</tr>
<tr>
<td>2008</td>
<td>500</td>
<td>540</td>
</tr>
<tr>
<td>2009</td>
<td>520</td>
<td>560</td>
</tr>
<tr>
<td>2010</td>
<td>540</td>
<td>580</td>
</tr>
<tr>
<td>2011</td>
<td>560</td>
<td>600</td>
</tr>
<tr>
<td>2012</td>
<td>580</td>
<td>620</td>
</tr>
<tr>
<td>2013</td>
<td>600</td>
<td>640</td>
</tr>
<tr>
<td>2014</td>
<td>620</td>
<td>660</td>
</tr>
</tbody>
</table>

*2014 Canadian rate is not available

5. Genital chlamydia case reports in BC by age group and gender, 2014

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14 yrs</td>
<td>57</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>15-19 yrs</td>
<td>1,726</td>
<td>417</td>
<td>2,143</td>
</tr>
<tr>
<td>20-24 yrs</td>
<td>2,972</td>
<td>1,945</td>
<td>4,917</td>
</tr>
<tr>
<td>25-29 yrs</td>
<td>1,722</td>
<td>1,345</td>
<td>3,067</td>
</tr>
<tr>
<td>30-34 yrs</td>
<td>1,236</td>
<td>538</td>
<td>1,774</td>
</tr>
<tr>
<td>35-39 yrs</td>
<td>534</td>
<td>47</td>
<td>581</td>
</tr>
<tr>
<td>40-49 yrs</td>
<td>16</td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td>50-69 yrs</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>70+ yrs</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

* Other - transgender and gender unknown
“Can you have a chlamydia infection if you have no symptoms?”

Yes.

The majority of patients infected with chlamydia are asymptomatic.

- Females are more likely to be asymptomatic than males:
  - 75% of infected females
  - 50% of infected males

Chlamydia is under diagnosed due to a lack of symptom presentation.

https://www.islandsexualhealth.org/
Chlamydia - “The Silent Disease”

Symptoms appear:

- If symptoms present → 3 weeks after exposure

Looks & feels like:

- People with penises:
  - Pain when urinating, itching, discharge, rarely pain and swelling of testicles

- People with vaginas:
  - Changes in discharge, burning during urination, breakthrough bleeding, and lower abdominal pain

https://www.islandsexualhealth.org/
https://evekit.com/healthinfo/ctng/
Gonorrhoea & Chlamydia

How is it tested for?
- Urine sample
- Swab samples
- Gonorrhoea-Chlamydia dual testing

How is it treated?
- Antibiotics
  - 1 dose (mostly), but full “therapeutic effect” takes 7 days to take place
- Antibiotic resistance is being observed for gonorrhoea
- Contact/treat any partners from previous 2 months

Outcomes:
- Not infectious after 7 days of (successful) antibiotic treatment
- Infection “cured”

<table>
<thead>
<tr>
<th>Chlamydia</th>
<th>Gonorrhoea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azithromycin 1g As a single dose OR Ceftriaxone 250 mg OR cefixime 800 mg PLUS</td>
<td>Doxycycline 100 mg For 7 days Azithromycin 1g All as a single dose</td>
</tr>
</tbody>
</table>

https://www.islandsexualhealth.org/
Chlamydia and Gonorrhea

Complications of Untreated Infections:

- Pelvic Inflammatory Disease

- Epididymitis = Prostate swelling
  - Rarely results in infertility

- Arthritis with Skin Lesions
  - Reiter’s Syndrome → rare complication

https://www.islandsexualhealth.org/
https://www.tes.com/lessons/kJtycFUIJWxQ/sti-pelvic-inflammatory-disease
The optimal screening interval is unclear:

- **< 25 years**
  - Chlamydia and Gonorrhea annually
  - HIV at one time

- **> 25 years**
  - HIV at one time
  - Other STIs (chlamydia, gonorrhea) if other risk factors

**Risk Factors:**

- New or multiple sex partners
- Sex partners with multiple concurrent partners
- Inconsistent condom use
- Previous or coexisting STI
- People who exchange sex for money or drugs
- MSM

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Choose Your Own Adventure #2

- You just noticed a few small, clustered “bumps” (on your mouth and/or genitoanal area) or
- You have no symptoms
HSV1 & HSV2

Herpes (Oral and Genitoanal)
**Herpes (HSV1, HSV2)**

**Culprit:** Herpes Simplex Virus (HSV1, HSV2)

- Most often: HSV1 (mouth), HSV2 (genitoanal)

**What type of STI?** Viral

**How is it transmitted?**

- Oral, genital, anal sex
- Condoms might be less effective at preventing passage than some other common STIs
- Mother–baby (during delivery)

**What are the trends?**

- 90% of the global population (HSV1 or HSV2)
- HSV1 is more common (~ 67% world population (WHO estimate))

**Risks:** Might increase risk of acquiring other STI’s (e.g. HIV)
Herpes (HSV1, HSV2)

Primary: No prior exposure
- Small cluster of vesicles (clear bumps), fever/aches, lymph nodes
- 2–14 days after contact
- Lasts 17–23 days

Non Primary: Prior exposure, but first clinical presentation
- Less obvious than primary (often)
- Lasts less than primary, ~16 days

Reactivation: Reactivation of latent (“sleeping”/”resting”) infection
- Triggered
- “Prodromal”/Early = Itching, tingling, vague discomfort
- Clusters of small vesicles (clear bumps)
- Lasts 9–11 days

http://www.yalescientific.org/2012/12/a-prime-new-strategy-for-herpes-vaccination/
“Can you pass herpes to another person if you have no symptoms?”

Yes.

= “Asymptomatic Shedding”

- Highest:
  - Within first few months of first outbreak
  - Approximately 1 week after an outbreak has cleared
  - Highest in the first year

Transmission is most likely to occur when the individual is asymptomatic.
Herpes (HSV1, HSV2)

How is it tested for?

- Symptomatic:
  - Sample swab from the vesicles/bumps
  - Fluid -> viral culture
  - Scrape -> visualization for “Tzanck” cells
- Asymptomatic:
  - Blood tests (rare) & not necessarily helpful

How is it treated?

- Primary/Non-primary
  - Treat when symptomatic
- Recurrent
  - Medication on hand for flare ups
- Commonly used medication:
  - Acyclovir (inhibits viral multiplication)

https://doi.org/10.1007/s00430-014-0358-x
HPV

Genital Warts and Cancer
Culprit: Human Papilloma Virus

- Highly contagious group of viruses
- Most common STI in the world
  - Estimated $\geq 70\%$ of sexually active people will have at least 1 HPV infection in their lifetime

What type of STI? Viral

How is it transmitted?

- Skin to skin contact during oral, genital, and/or anal sex (penetration not necessary)
- Sharing toys
There are over 100 different types of HPV

- More than 40 types are sexually transmitted

High versus Low Risk Types

- High Risk Types ➔ cancer and precancerous lesions
  - HPV 16 and 18 = most cases
- Low Risk Types ➔ genital warts
  - HPV 6 and 11 = 90% of cases

https://www.islandsexualhealth.org/
HPV

Symptoms appear:

- Most people will be asymptomatic

Looks & feels like:

- Visible genital warts or precancerous changes in the cervix, external genitalia, anus, and/or mouth

- Itchiness, discomfort during penetrative intercourse, bleeding with intercourse

https://www.islandsexualhealth.org/
http://www.wartalooza.com/general-information/what-are-hpv-warts
HPV

How is it tested for?

- Genital warts → visual inspection

- High Risk strains → abnormal PAP tests
  - Pap testing = cervical cancer screening test
  - Done by collecting cervical cells and testing for any cellular changes

Did you know...

HPV is associated with approximately 150 cases of cervical cancer per year, in BC alone!
HPV

Cervical Changes

Normal  LSIL  HSIL  Cervical cancer

Normal cervix  Normal cervical cells
Cervical dysplasia  Cancerous or pre-cancerous cervical cells

LSIL = Low grade change
HSIL = High grade change
Revised Cervical Cancer Screening Policy (2016)

- Start Age = 25 years old + sexually active
- Screening Interval = 3 years if normal
- Repeat Cytology = 12 months for low grade abnormalities

- Screening not required if never had sexual contact of any kind
- More frequent testing for those with heightened risk
How is it treated?

- There is no cure for HPV
  However,

- Many will clear the infection on their own within 18 months

But the virus may remain dormant in the body and reactivate

Treatment options are directed to changes in the skin and/or mucous membranes:

- Genital warts can be removed by a health care provider
  - Cryotherapy or self-applied medication

- Cervical changes are closely monitored
  - Abnormal cells may be surgically removed or destroyed (colposcopy)
HPV Prevention

- 3 different vaccines that protect against certain types of HPV
  1. Gardasil 4
     a. HPV 6 and 11 and HPV 16 and 18
  2. Gardasil 9
     a. HPV 6, 11, 16, 18, 31, 33, 45, 52, and 58
  3. Cervarix
     a. HPV 16 and 18
     b. No protection against genital warts

Each vaccine is a series of 3 injections given over the course of 6 months.

Neither vaccine will treat HPV infections present at the time of vaccination!

- Follow regular cervical screening guidelines
Gardasil 9 is provided as part of the no cost vaccination series to children in grade 6.

And, as of September 2017...

**Recommended** for people with cervixes aged 9 - 45 years and people with penises aged 9 - 26 years

But, the cost of the vaccine is not funded.

Cost = approximately $300 for series

Talk to your family physician

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[Healthlink BC](https://www.healthlinkbc.ca/healthlinkbc-files/hpv-vaccines)
[The Smart Hacks](http://www.thesmarthacks.com/2015/08/i-just-got-shot.html)
[BC extends free HPV vaccinations to Grade 6 boys](http://www.cbc.ca/news/canada/british-columbia/b-c-extends-free-hpv-vaccinations-to-grade-6-boys-1.3925222)
Choose Your Own Adventure #3

- Your doctor recommended an annual bloodwork screen for bloodborne infections and/or

- You have no symptoms
HIV

Human Immunodeficiency Virus
**HIV**

**Culprit:** Human Immunodeficiency Virus

**What type of STI?** Viral

HIV is spread through direct contact with certain body fluids from someone who has HIV:

+ Blood
+ Semen and pre-seminal fluid
+ Rectal fluids
+ Vaginal fluids
+ Breast milk

Approximately 20–25% of people in Canada are unaware of their HIV infection

https://i.pinimg.com/originals/0b/7a/a7/0b7aa740db07471f361e619adab46725.png
https://i.pinimg.com/originals/0b/7a/a7/0b7aa740db07471f361e619adab46725.png
https://www.avert.org/hiv-transmission-prevention/myths
HIV

1. Exposure to HIV
2. HIV crosses the epithelial layer of the mucous membrane
3. HIV infects the immune cells and starts replicating
4. HIV enters the blood and lymph vessels
5. HIV spreads to other parts of the body
6. Permanent HIV infection

Figure 1. Risk from a single exposure to HIV

Higher risk
- Receptive anal sex (1.4%)
- Receptive vaginal sex (0.08%)
- Insertive anal sex (0.06-0.62%)
- Insertive vaginal sex (0.04%)

Factors that can increase risk:
- Higher viral load
- STIs
- Some vaginal conditions
- Tearing and abrasions
- Menstruation, other bleeding

Factors that can decrease risk:
- Lower viral load
- PEP and PrEP
- Circumcision
- Lubrication

Lower risk
- Oral sex (?)
HIV

What is HIV?

- Retrovirus
  - RNA (not DNA)
  - Special “machinery” required
- Is needy and dependent
  - Cannot exist on its own! Needs host cells to multiply
- Hijacks an important cell type in the immune system so that it can multiply
  - CD4 T Lymphocytes
- And then persistently and gradually destroys these cells
**HIV: Phases of Infection**

1. **Infection after initial contact**
   - Asymptomatic
   - Contractable? Yes

2. **Primary/Acute Infection**
   - When: 2–6 weeks after exposure
   - What: 90% are symptomatic
   - Symptoms last for: 1–2 weeks
   - Contractable? Yes

3. **Chronic Infection**
   - When: after the primary infection phase has resolved; persistent & progressive
   - What: Asymptomatic
   - Contractable? Yes

4. **Untreated, long term**
   - At a CD4 count of 200/mm³ the viral infection becomes classified as: **Acquired Immunodeficiency Syndrome (AIDS)**
   - Immune system severely weakened
   - Susceptible to infections that our bodies are normally able to defend against
   - Contractable? Yes

HIV

How is it tested for? Blood test
- 2 part diagnosis
- During the “window period”, the initial screening might be negative
  - Window period depends on the test (newer tests = ~2.5 weeks)

How is it treated?
- Anti-retroviral therapy (oral)
  - 3 drug combination
- Goals:
  - Not curative, instead:
  - Suppress/reduce “viral load” in order to:
    - Restore/preserve immune function
    - Reduce transmission

[Sources]
http://img.thebody.com/legacyAssets/37/08/4.2.1.4.overview.gif
"Can HIV transmission be prevented?"

YES.

Extremely well, actually.
HIV: Prevention

Can we cure/completely clear HIV from a person?  
- No

Can we prevent it from being passed person to person?  
- Yes
HIV: Prevention

Can we cure/completely clear HIV from a person?
- No

Can we prevent it from being passed person to person?
- Yes

Passing: “Undetectable = untransmittable”

- Science: Breakthrough of the Year (2011)
  - ART with discordant couples
  - 96% Reduction in HIV Transmission
- JAMA (2016):
  - 1116 discordant couples, no condoms
  - ZERO transmission of HIV

Acquiring:

- Pre-exposure prophylaxis (PrEP, 1 tablet daily)
  - 90% reduction (sexually acquired)
  - 70% reduction (injection drug users)
- Post-exposure prophylaxis (PEP; within 72 hours)
  - Less common
  - “Emergency” use

https://www.avert.org/infographics/undetectable-equals-untransmittable
Syphilis

“The Great Imitator”
Culprit: *Treponema Pallidum*

**What type of STI?** Bacterial

**How is it transmitted?**
- Skin to skin contact with syphilitic sore during oral, genital, and/or anal sex
- Transplacentally to fetus

**Who?**
- Rates began to increase in 2011
- Majority of BC cases are male, MSM
- Adults aged 25–39


https://www.islandsexualhealth.org/
Syphilis

Symptoms appear:

- Initial sore appears 3 - 90 days post exposure
  - May not be recognized
- Without treatment individuals can enter a prolonged asymptomatic phase

Looks & feels like:

- Varies based on stage of infection

https://www.islandsexualhealth.org/
https://www.lifeline.de/krankheiten/syphilis-id39870.html
Infections are divided into several stages

- **Primary** (3 - 90 days post contact)
  - Lesion (chancre) is painless; may not be readily apparent
  - High proportion of individuals do not recall primary lesion

- **Secondary** (2 - 12 weeks)
  - Large spectrum of clinical manifestations

https://www.islandsexualhealth.org/
http://www.bestdentalhospital.com/mouth-sores.html
http://www.sterlingmedicaladvice.com/straight-no-chaser-syphilis-the-great-minicicker/
Syphilis

Infections are divided into several stages

- Early Latent (< 1 year duration)
  - Asymptomatic
  - Considered infectious because of the 25% chance of relapse to secondary stage

- Late Latent (> 1 year duration)
  - Asymptomatic
  - Considered non-infectious
Syphilis

Infections are divided into several stages

- Tertiary
  - Neurosyphilis (2 - 20 years post exposure)
    - Asymptomatic or symptomatic
  - Cardiovascular (10 - 20 years post exposure)
    - Aortic aneurysm, aortic regurgitation, coronary artery ostial stenosis
  - Gumma (1 - 46 years)
    - Tissue destruction of any organ

https://www.islandsexualhealth.org/
https://www.slideshare.net/shahparind/syphilis-and-neurosyphilis-101
Syphilis

How is it tested for?

- Blood Tests
- Swabs of sores

How is it treated?

- Antibiotics → Benzathine penicillin G
  - Single dose (IM injection)
- Abstain from sex for 14 days after treatment started

Outcomes:

- Follow-up blood tests every 6 months for 3 years
  - More often if HIV +
- Treatment will not undo the damage caused by syphilis in the late stage

https://www.islandsexualhealth.org/
https://smartsexresource.com/topics/syphilis
https://www.healthnewsreview.org/review/strong-recap-on-cancer-blood-test-should-have-challenged-survival-claims/
HIV, Syphilis, Gonorrhea, and Chlamydia are reportable infections.

You will be asked about previous sexual partners from the last 3 to 12 months.

This will be reported to public health anonymously.

All partners will need to be tested and treated.

STI testing notification methods:

- In person
- Via public health
Expedited Partner Therapy

If you have been diagnosed with some STI's (e.g. Chlamydia) not only can you access treatment...

- But your partner(s)/sexual contact(s) can as well
  - Without needing to meet with the medical provider!

Why?

- Prevent passing to another person
- Prevent the possibility of your partner passing the STI back to you
STI Testing in Victoria BC

UVIC Health Clinic (Peterson Health Centre)
- Phone: 250-721-8492
Reception phone answered 9am – 12 pm and 1-3pm

Island Sexual Health
- 101-3960 Quadra Street, near McKenzie and across from Bottle Depot and White Spot

Victoria Youth Clinic

Walk in clinics, Family Doctor.. Etc.
Take Home Messages

- There are many contraceptives available out there - talk to your health care provider, and choose what works for YOU

- Many STIs are asymptomatic so regular screening is important!

- Aside from barrier methods, contraceptives are not effective against STIs
Animation on birth control and how hormones work to prevent pregnancy

https://www.arhp.org/hormonalcontraception/
Thank you!
Avert


Canadian Guidelines on SEXually Transmitted Infections (including their mobile app)

Catie

Centers for Disease Control and Prevention


Island Sexual Health Website

Government of Canada (Public Health – STI Facts and Information)

HealthLink BC


SexandU.ca


Options for Sexual Health Website