Contraception

And the villain still pursues her.
Who needs contraception?

- Those at risk for unintended pregnancy
  - Heterosexually active
  - Do not want to become pregnant
  - But could become pregnant if they (or their partners) do not use a contraceptive method correctly and consistently

- Sexually-active individuals with female anatomy and cycles engaging in sex with male-typical individuals and not using any form of contraception have about an 85% chance of getting pregnant over a one year time period.
Who uses contraception?

- 10% of female-bodied individuals at risk for unintended pregnancy are not currently using any form of contraception.
  - Most of these (18%) are 15-19 years old – that means 82% of at-risk teens are using some form of contraceptive
  - Fewest (9%) are 40-44 years old
Who uses contraception?

- These stats generally are referring to cis-gender women and it’s not at all clear how transmen fit these stats.
- Transmen using androgen but still menstruating should assume they continue to ovulate.
Who uses contraception?

- Ethnic/racial differences in % of at-risk women using some form of contraception:
  - 83% of African-American
  - 91% white or Hispanic
  - 90% of Asian American

- Need to remember that there are differences in access – insurance, cost, etc., and effectiveness/side-effects

- Original testing was done mostly in white and Asian women
Contraceptive Methods

- Total abstinence from heterosexual intercourse
- Hormonal contraceptives
- Mechanical/Barrier contraceptives
- Timed Abstinence
- Sterilization
Contraceptive Methods

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Contraceptive Methods

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Contraceptive Methods

- Hormonal contraceptives
  - most commonly used form of contraception by women in the US
  - 2015 – 34% of women at risk for pregnancy use some form of hormonal contraception (does not count hormonal IUD*)

*Guttmacher Institute Report - Oct. 2015
Hormonal Contraceptives

- Use of synthetic estrogen and/or synthetic progestin to control the monthly cycle
  - Estrogen and progestin
  - Progestin Only
Hormonal Contraceptives

Hormones can be administered in various ways:

- **pills** –
  - Combination pill: both estrogen and progestin
  - Minipill: just progestin
    - taken for 21 days (various manufacturers and names)
    - 3 months (Seasonique)
    - or indefinitely (Lybrel).

- **injections** - progestin only (DepoProvera given once every 3 months)
Hormonal Contraceptives

- implantable capsule - progestin only (Implanon/Nexplanon – effective for up to 3 years (some sites say 4 years))
  - considered a LARC (Long Acting Reversible Contraceptive)
  - Use has increased dramatically in last 5 years but still only about 3%
Hormonal Contraceptives

- **patch** - both estrogen and progestin (OrthoEvra or Xulane, one patch per week)
  
  *Effectiveness compromised in women weighing over 198 lbs.*
Hormonal Contraceptives

- **vaginal ring** – both estrogen and progestin (NuvaRing, one ring per month (3 weeks in/one without))
Actions of Estrogen in Contraceptives

- Inhibits ovulation through inhibiting production of GnRH
  - Results in low FSH and low LH, little or no follicle growth, and low estrogen.
Actions of Progestin in Contraceptives

1. Inhibits LH and FSH production by the anterior pituitary
   Prevents ovulation (slightly less effective than estrogen but still very effective).

2. Stimulates the production of a thick, pasty cervical mucus
   difficult for sperm to penetrate
3. **Inhibits capacitation of sperm**
   Capacitation is an enzyme initiated change in sperm required before fertilization can occur.

4. **Slows the rate of ovum transport through the oviduct**

5. **Prevents adequate build-up of the endometrium of the uterus making implantation unlikely**
Effectiveness

- Extremely effective whether combination or progestin only

- Effectiveness higher for methods that reduce potential for human error (implant vs daily pill)
More effective
Less than 1 pregnancy per 100 women each year

Less than 1 per 100
- Vasectomy
- Female Sterilization
- IUD
- Implant

2-8 per 100
- LAM (Breastfeeding)
- Shot
- Pill
- Ring
- Patch

15-25 per 100
- Male Condom
- Diaphragm
- Female Condom
- Cervical Cap
- Sponge
- Fertility-Awareness Based Methods

About 30 per 100
- Withdrawal
- Spermicide

Less effective
About 30 pregnancies per 100 women each year

A/B:
A = always used correctly
B = not always used correctly

www.plannedparenthood.org
Risks

- Estrogen-containing contraceptives
  - increased risk of blood clots, stroke and heart attack
    - major risk is for women over age 35 or for women under age 35 who smoke
    - Risk may be higher for the patch and with the ring than for other delivery forms.
    - Risk also higher for those using Yaz-type pills, especially women over the age of 35.
Risks

- Estrogen-containing contraceptives
  - effect on risk of breast cancer is unclear
Risks

- Progestin-containing contraceptives
  - may increase plasma lipids which has been associated with increased risk of cardiovascular disease
Risks

- Progestin (drospirenone) in Yaz-type pills has both anti-androgenic and anti-mineralocorticoid actions.
  - Can result in elevated potassium levels
  - Should not be taken by women who have high potassium or who have kidney or liver problems that might affect potassium level.
Risks

- Use of hormonal contraceptives associated with later diagnosis of depression and use of antidepressants
  - Based on analysis of medical records of over 1 million women age 15-34 in Denmark followed from 2000-2013.
  - Effects biggest for adolescents (15-19)
  - Effect decreases with length of use of contraceptive

Skovlund et al. (2016) Association of hormonal contraception with depression. *JAMA Psychiatry* (Published online Sept. 28, 2016)
Risks

- Data relating hormonal contraceptive use and later diagnosis of depression is correlational.
  - Can’t assess causality
  - Perhaps factors associated with being sexually active that increase the likelihood of using hormonal contraception and increase the risk of developing depression
Advantages of Hormonal Contraceptives

- **Serious advantages:**
  - Reduces the risk of ovarian cancer during and after use.
  - Reduces the risks of endometrial and colorectal cancers during use.

- **Less serious (but important) advantages:**
  - Non-intrusive - does not interrupt sex act
  - Easy to use
  - Highly effective
Advantages of Hormonal Contraceptives

- More advantages:
  - Reduce menstrual blood loss - may result in amenorrhea (particularly progestin-only contraceptives)
  - Reduced dysmenorrhea
  - Beyaz has folate to help prevent brain defects in pregnancies occurring during and immediately after Beyaz use.
Advantages of Hormonal Contraceptives

- Becoming easier to access?
  - OR and CA allowing pharmacists to prescribe hormonal contraceptives
  - Move to make hormonal contraceptive over-the-counter
    - ?? insurance payment

- Becoming harder to access?
  - Risk of loss of insurance coverage
  - Public clinics which prescribe or provide contraceptives closing or at risk of closing
Disadvantages of Hormonal Contraceptives

- No protection from sexually transmitted diseases including HIV.
- May cause irregular menses or amenorrhea.
- Reduced estrogen levels may reduce bone density especially if woman is amenorrheic (Jury is still out on this.).
Menses Check-in

Why Periods? Why can't Mother Nature just text me and Be like, "Whaddup Girl?, You ain't pregnant. Have a great week. Talk to ya Next Month."
Male Hormonal Contraceptives

- Ongoing research
  - Testosterone-only or testosterone/progestin
  - Delivery: injection, implant, pill, patch
  - Effectiveness and side effects unclear
Male Hormonal Contraceptives

- How they work
  - Androgen-only
  - Progestin w/ androgen replacement
  - GnRH antagonist w/ androgen replacement
  - Adjudin – non-hormonal – disrupts sperm maturation in testes
RISUG (reversible inhibition of sperm under guidance)

- Injection of a polymer gel into the vas deferens after a local anesthetic
- Gel breaks sperm apart making them incapable of fertilization
- Last up to 10 years
- Can be reversed earlier with injection of another substance
- RISUG in human trials in India
Vasalgel

- US developed version of reversible “vasectomy”
- Gel injected into vas deferens
- Sperm cannot pass through
- Still in animal testing
Emergency Contraception

- For use after unprotected intercourse
- **IUD** must be inserted within 120 hours (5 days) of unprotected sex to be effective
- **Pills** must be started within 3-5 days after unprotected sex to be effective (depending on type used).
Emergency Contraception – Plan B and Next Choice

- Identical – Plan B better known. Now also a number of generic alternatives.
  - involves taking the synthetic progestin, levonorgestrel
  - Available over the counter to women over the age of 14.
Emergency Contraception – Plan B and Next Choice

- Progestin (levonorgestrel) similar to regular hormonal contraceptives but a higher dose (e.g., 1.5 mg vs 35 micro g/regular pill; ~42 times higher)

- 89% effective if taken within 72 hours (3 days) after unprotected intercourse. Will reduce likelihood of pregnancy for up to 120 hours but effectiveness declines over time.
Emergency Contraception – Plan B and Next Choice

- Will not interfere with an established pregnancy.
- Reduced effectiveness in women with BMI over 25 and may be ineffective if BMI over 30.
Emergency Contraception
Mechanisms of Action – Plan B

1. Prevents ovulation through inhibition of LH/FSH.
2. Slow rate of ovum or sperm transport through the oviduct.
3. Reduces sperm viability to reduce the likelihood of conception.
4. Reduces endometrial build-up (unsuitable for implantation).
Emergency Contraception - Ella

- By prescription only
- Contains ulipristal acetate – progesterone agonist/antagonist – some progesterone like actions, some anti-progesterone actions.
- Blocks or delays ovulation and inhibits progesterone action at uterus.
- Must have pregnancy test before using. Can’t be used if already pregnant.
- Effective up to 120 hours (5 days) after unprotected sex.
- Effective in women with BMI up to 35.
Emergency Contraception - IUD

- Copper T - ParaGard
- Inserted up to 5 days after unprotected sex
- Very effective in preventing pregnancy
# What’s the Best Emergency Contraception for You?

<table>
<thead>
<tr>
<th></th>
<th>Best</th>
<th>Very good</th>
<th>Good</th>
</tr>
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<tbody>
<tr>
<td><strong>Effectiveness</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>When to Use</strong></td>
<td>Up to 5 days after unprotected sex.</td>
<td>Up to 5 days after unprotected sex.</td>
<td>Up to 3 days after unprotected sex. Less effective on days 4 and 5, but you can still use it.</td>
</tr>
<tr>
<td><strong>Who Can Use</strong></td>
<td>All women.</td>
<td>All women (unless breastfeeding). Less effective for women with a BMI over 35.</td>
<td>All women. Less effective for women with a BMI over 25. May not work for women with a BMI over 30.</td>
</tr>
<tr>
<td><strong>How to Get</strong></td>
<td>Inserted by a doctor or nurse at a health center.</td>
<td>By prescription from a doctor or nurse.</td>
<td>Most brands are available to anyone over the counter without prescription.</td>
</tr>
<tr>
<td><strong>Extra Information</strong></td>
<td>Provides very effective ongoing birth control for up to 12 years.</td>
<td>After using, use back up birth control (like a condom) for 14 days.</td>
<td>Do not use if you’ve already used ella since your last period.</td>
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