Contraception

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Objectives

- Discuss the impact of unintended pregnancy in the United States
- Discuss the risks and benefits of various contraceptive methods

Unintended Pregnancy

- United States has one of the highest rates in the industrialized world
- Who is at greatest risk?
  - Poor and/or low-income
  - 19 years of age and younger
  - 4 out of 5 pregnancies unintended
  - However, women aged 15-17 showed significant decrease in unintended pregnancies
  - Cohabiting women

Unintended Pregnancy in the US

What’s the Impact?

<table>
<thead>
<tr>
<th>TABLE 1. Pregnancy-Related Outcomes in the United States: Role of Unintended Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every year, 6 million US women become pregnant; one half are unintended.</td>
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<tr>
<td>Every day, more than 10,000 US women give birth.</td>
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<tr>
<td>The Centers for Disease Control estimate that every day:</td>
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<tr>
<td>- 2,100 women die from pregnancy-related conditions.</td>
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<tr>
<td>- 2,000 women experience major pregnancy-related complications before labor begins.</td>
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<td>- 2,000 women have cesarean section delivery.</td>
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<tr>
<td>- 2,000 women experience major labor-related complications.</td>
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<td>Reducing unintended pregnancy would significantly reduce pregnancy-related morbidity.</td>
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</table>

![Figure 1. US Pregnancies: Unintended vs Intended](image)
Healthy People 2020
- Includes family planning goals
  - Increase intended pregnancies to 56%
  - Improve access to contraceptives
  - Long-acting, reversible contraception

Sexuality Education Programs
- Typically focused on either abstinence education or access to contraceptives
- A tale of two states
  - California refused federal abstinence education money
  - Texas focused on abstinence promotion

Online Resources to Share with Young People
- [http://www.goaskalice.columbia.edu](http://www.goaskalice.columbia.edu)
- [http://www.sexetc.org](http://www.sexetc.org)
- [http://www.scarleteen.com](http://www.scarleteen.com)
- [http://www.isis-inc.org](http://www.isis-inc.org)
- [http://www.webmd.com/sex-relationships/default.htm](http://www.webmd.com/sex-relationships/default.htm)
- [http://www.cdc.gov/sexualhealth](http://www.cdc.gov/sexualhealth)

Abstinence and Non-Coital Sex
- Wise, healthy choice at any life stage
- Often ineffective against pregnancy and STI prevention
- Role of the Health Care Provider
  - Assess relationship history and sexual behavior
  - Screen for risk of sexual coercion
  - STI-risk
  - Pregnancy counseling
  - Patient choice support
Progestin-Only Pills

- Contains only progestin hormones
- Only take one tablet per day
- Possibly less-effective than combined oral contraceptive pills
- Safe for all women
- Irregular bleeding

Progestin-Only Pills: Mechanism of Action

- Ovulation inhibited
- Cervical mucous thickened and decreased in amount
- Reduces cilia activity in fallopian tube
- Alters endometrium

Review of Ovulation

Progestin-Only Pills: Pros and Cons

Advantages

- Safety
- Few contraindications
- Recommended to breastfeeding women between 6 weeks and 6 months postpartum
- Improved menstrual symptoms
- Immediate reversibility
- Non-contraceptive health benefits
- Simple, fixed, daily regimen

Disadvantages

- Pills MUST be taken as directed
- Menstrual cycle disturbances
- May increase ovarian cysts
- Lack of protection from STIs
- Side effects of weight loss, nausea, headaches

Combined Oral Contraceptive Pills (COCs)

- Gold standard for birth control for last 50 years
- Considered one of the 10 greatest public health achievements of the 20th century by the CDC
- Up to 82% of sexually active women have used COCs
- Each year, 1 million COC users get pregnant in the US

COCs: Mechanism of Action

- Progestin
  - Suppresses release of gonadotropin releasing hormone
  - Suppresses LH surge
  - Thickens cervical mucus
- Estrogens
  - Suppresses release of FSH from pituitary gland
COCs: Pros and Cons

Advantages
- Effectiveness
- Safety
- Rapid reversibility
- Decreased dysmenorrhea
- Decreased menstrual blood loss
- Reduces PMS symptoms
- Reduces risk of post-ovulatory ovarian cysts
- Mittelschmerz relief
- Ovarian, endometrial cancer risk reduced

Disadvantages
- Daily administration
- Expense
- Access challenges
- No protection against STIs
- Abdominal pain
- Chest pain
- Headaches
- Eye problems
- Severe leg pain

Contraceptive Patch and Vaginal Contraceptive Ring

- Highly effective
- Does not require daily use
- With patch: serum estrogen levels higher than with COCs
- With ring: serum estrogen levels lower than with COCs

Contraceptive Patch: Pros and Cons

Advantages
- Convenience
- Adheres well under a variety of conditions
- Verifiable
- Cycle control
- No significant weight gain
- Rapidly reversible
- No significant metabolic effects
- No effect on sexual function

Disadvantages
- Risk of VTE (similar to COC)
- Skin reactions
- Breast discomfort
- Headache
- Nausea

Pill Warning Signs

- Abdominal pain
- Chest pain
- Headaches
- Eye problems
- Severe leg pain

Contraceptive Patch: Mechanism of Action

- Transdermal patch applied to buttocks, upper arm, lower abdomen, or upper torso
  - Ortho Evra, approved in 2002
  - Mimics 28 dosing schedule of COCs
- Suppresses gonadotropins and prevents ovulation
- Thickens cervical mucous
- Women use 3, 7-day patches for 1 week each, and then have a 7-day patch free interval

Vaginal Contraceptive Ring: Mechanism of Action

- Soft, transparent, flexible ring
- Kept in place for 21 days; removed for 7 day ring-free period
- Ovulation suppressant
- Increases viscosity of cervical mucous
- Thins endometrium
### Injectable Contraceptives

- Progestin-only
- Private and convenient
- Menstrual cycle changes can lower discontinuation rates
- Not associated with increased risk of fragility fractures

### Injectable Contraceptives: Mechanisms of Action

- Inhibits ovulation
- Suppresses FSH and LH and eliminates LH surge
- Thickens and decreases cervical mucous
- Prevents sperm penetration
- Time of ovulation after discontinuation
  - 15 to 49 weeks from last injection

### Injectable Contraceptives: Pros and Cons

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>No estrogen</td>
<td>Menstrual cycle disturbances</td>
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<tr>
<td>Reversible</td>
<td>Weight gain</td>
</tr>
<tr>
<td>Effective for obese patients</td>
<td>Depression</td>
</tr>
<tr>
<td>Decreased risk of endometrial cancer</td>
<td>Not possible to discontinue immediately</td>
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<tr>
<td>Absence of menstrual bleeding</td>
<td>Delay in return to fertility</td>
</tr>
<tr>
<td>Improvement of menstrual symptoms</td>
<td>Requires return visits every 3 months</td>
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<tr>
<td>Fewer sickle cell crises</td>
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<tr>
<td>Less pain with endometriosis</td>
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<tr>
<td>No adverse effects on breastfeeding</td>
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### Vaginal Contraceptive Ring: Pros and Cons

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<th>Disadvantages</th>
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<tr>
<td>Convenience</td>
<td>Headache</td>
</tr>
<tr>
<td>Vaginal hormone delivery</td>
<td>Vaginal symptoms</td>
</tr>
<tr>
<td>Rapidly effective</td>
<td>Nausea</td>
</tr>
<tr>
<td>Reversible</td>
<td>Breast tenderness</td>
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<tr>
<td>No weight gain</td>
<td></td>
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<tr>
<td>Can be used with tampons</td>
<td></td>
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<tr>
<td>Latex-free</td>
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<tr>
<td>Can start at 6 weeks postpartum with breastfeeding women</td>
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</table>

### Contraceptive Implants: Implanon

- Thin rods or tubes containing progestin-only hormone
- Works for at least 3 years
Contraceptive Implants: Mechanisms of Action

- Suppresses ovulation
- Thickens cervical mucous
- Impedes sperm penetration
- Decreases system estradiol levels

Contraceptive Implants: Pros and Cons

**Advantages**
- Ease of use
- Discreet
- Relief of dysmenorrhea
- Relief of endometriosis
- No estrogen
- Reversible
- Cost-effective
- No adverse affect on acne
- Few metabolic effects
- No known clinical effect on breastfeeding or infant development

**Disadvantages**
- Uterine bleeding abnormalities
- Rare insertion and removal complications (<1%)
- Possible weight gain
- Ovarian cysts
- No protection against STIs
- Possible drug interactions

Intrauterine Contraceptives (IUC)

- Safe for most women, including teens and HIV-positive patients
- Few contraindications
- Provides long-term pregnancy protection
- Promptly reversible
- Non-contraceptive health benefits

Comparing IUC Mechanisms of Action

**Copper**
- Increases copper ions, enzymes, prostaglandins, and white blood cells in uterine and tubal fluids
- Impairs sperm function
- Prevents fertilization
- 12 years

**Mirena**
- Thickens cervical mucous
- Suppresses endometrium
- Impairs sperm function
- Often impairs ovulation, due to systemic absorption of Levonorgestrel.
- 5 years

IUC Comparisons

**Advantages**
- Good safety record
- Few contraindications
- Long-term protection
- Rapid reversibility
- Cost-effective
- Convenient
- Private
- High user satisfaction
- Easy placement and removal
- Reduced risk of endometrial cancer

**Disadvantages**
- Menstrual disturbances
- Cramping and pain with placement
- Expulsion of IUC

**Rare**
- Infection
- Pregnancy complications
- Uterine perforation

Male Condoms

- Latex condoms shown to reduce risk of pregnancy and STIs
- Protects future fertility through STI prevention
- Practice of wearing decorative sheath over penis traced back to 1350 BC
- 18th century: made from dried animal intestines
Male Condoms: Mechanism of Action

- Physical barrier
- Blocks passage of semen

Male Condoms: Pros and Cons

Advantages
- Variety of shapes, colors, and thickness
- Protection against STIs
- Accessible
- Low cost
- Delayed ejaculation
- Portability
- Minimal side effects
- Available without prescription

Disadvantages
- Reduced sensation
- Problems with erection
- Embarrassment and potential mistrust
- Lack of cooperation or responsibility for birth control
- Latex allergy
- Lack of spontaneity

Vaginal Barriers

- Female-initiated contraceptive
- Removed by the woman, gives greater control in use
- Several options: sponge, female condom, diaphragm, cervical cap
- Female condom approved by the FDA in 1993

Vaginal Barriers: Mechanism of Action

- Interferes with sperm transport into female upper genital tract
- Female condom mechanically blocks sperm
- Diaphragms and cervical caps physically block sperm; addition of spermicide kills sperm
- Contraceptive sponge contains spermicidal agent

Vaginal Barriers: Pros and Cons

Advantages
- No hormones
- No systemic side effects
- Immediate protection
- Purchased OTC
- Female condom offers protection against STIs
- Diaphragm: lower risk of cervical dysplasia and cancer

Disadvantages
- Local skin irritation
- UTI
- Removal a nuisance
- Noise with female condom
- Messy use with spermicide
Female and Male Sterilization

- Considered one of the safest, most effective, and cost-effective contraceptive methods
- Female: transabdominal and transcervical approaches possible
- 220 million couples worldwide use tubal sterilization or vasectomy as chosen contraceptive method
- Patients should be advised to consider these procedures permanent

Sterilization: Pros and Cons

**Advantages**
- Permanence
- Highly effective
- Safe
- Quick recovery
- Lack of long term side effects
- Cost effective

**Disadvantages**
- Permanence
- Surgical procedure
- Potential regret
- Expense high at time of procedure
- No protection against STIs

Emergency Contraception

- Substantially reduces woman's chance of pregnancy after unprotected intercourse
- Emergency contraception pills
  - Must be taken within 5 days of unprotected intercourse
- Copper-releasing IUD
  - Within 5 days of unprotected intercourse
  - Reduces risk of pregnancy by more than 99%

Resources