Updates on Contraceptive Technology Part 2

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Training Course in Sexual and Reproductive Health Research
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# Comparing Effectiveness of Family Planning Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>More effective</th>
<th>Less effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implants, IUD, female sterilization</td>
<td>After procedure, little or nothing to do or remember</td>
<td>About 30 pregnancies per 100 women in one year</td>
</tr>
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<td>Vasectomy</td>
<td>Use another method for first 3 months</td>
<td></td>
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<tr>
<td>Injectables</td>
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## How to make your method more effective

- **Implants, IUD, female sterilization**: After procedure, little or nothing to do or remember.
- **Vasectomy**: Use another method for first 3 months.
- **Injectables**: Get repeat injections on time.
- **Lactational Amenorrhea Method** (for 6 months): Breastfeed often, day and night.
- **Pills**: Take a pill at the same time each day.
- **Patch, ring**: Keep in place, change on time.
- **Condoms, diaphragm**: Use correctly every time you have sex.
- **Fertility awareness methods**: Abstain or use condoms on fertile days. Standard Days Method and Two-Day Method may be easier to use.
- **Withdrawal, spermicides**: Use correctly every time you have sex.
Outline and Objectives

- Description of the method
- Mechanism of action
- Effectiveness
- Eligibility criteria
- Benefits and side effects
- Interventions for associated effects
Methods

- Combined oral contraceptives
- Progestin only pills
- Injectable contraceptives, progestin-only
- Injectable contraceptives, combined
- Hormonal implants
- IUDs (copper bearing)
- LNG IUS
- Male and female condoms
- Other barrier methods
- Fertility awareness, lactational amenorrhea
- Emergency contraception
- Tubal libation and vasectomy
- Other methods
Copper Intrauterine Contraceptive Devices (IUDs or IUCDs)

Copper T 380A
What is a Copper IUD?

- Small plastic device with copper sleeves or wire around it, inserted through the vagina and cervix into the uterus
  - Safe
  - Highly effective
  - Long acting (up to 12 years)
  - Require trained provider to insert and remove
Copper-bearing IUD

TCu-380A, “Copper T” is most widely used copper IUD

Multiload 375
Copper T: Mechanism of Action

Prevents fertilization by:

- Impairing the viability of the sperm
- Interfering with movement of the sperm

Source: Ortiz, 1996
Copper IUDs: Characteristics

- Safe and highly effective
- Require no user action
- Long-acting (up to 12 years)
- Rapid return to fertility
- No systemic effects
- Other health benefits

Potential side effects

- Require pelvic exam
- Trained provider needed to insert and remove
- Possible pain or discomfort during insertion
- Do not protect against STIs/HIV

Rare complications

Source: CCP and WHO, 2011
Copper IUDs: Possible Side Effects

Some women may experience:

- More cramps and pain during menstruation
- Increased or prolonged menstrual bleeding
- Bleeding between menstrual periods

Side effects are most common during the first 3–6 months.

Copper IUDs: Health Benefits

IUDs are known to:

- Reduce risk of ectopic pregnancy
  - Rate in all IUD users is 12 in 10,000 (2 in 10,000 for Copper T380A users)
  - Rate in women using no contraception is 65 in 10,000

- Help protect against endometrial cancer

Copper IUDs
Potential Complications

- Perforations—Very rare, 1 in 1,000 insertions
  - Linked to skill and experience of provider
  - Reduced through supervised training

- PID—Rare, most due to gonorrhea or chlamydia at time of insertion

- Expulsions—Related to provider skill, age and parity of woman and insertion factors
### Timing of Insertion

<table>
<thead>
<tr>
<th>Interval</th>
<th>Expulsion Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>(more than 6 weeks after delivery)</td>
<td>Low (3% for skilled provider)</td>
</tr>
<tr>
<td>Immediate postpartum</td>
<td>Slightly higher</td>
</tr>
<tr>
<td>(within 10 minutes)</td>
<td></td>
</tr>
<tr>
<td>Early postpartum</td>
<td>Moderately higher</td>
</tr>
<tr>
<td>(between 10 minutes and 48 hours)</td>
<td></td>
</tr>
<tr>
<td>Late Postpartum</td>
<td>High - Generally not recommended</td>
</tr>
<tr>
<td>(48 hours to 4 weeks)</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Chi, et al, 1985.
## Who Can Initiate Copper IUDs

### WHO MEC category 1 and 2 examples

<table>
<thead>
<tr>
<th>WHO MEC Category</th>
<th>Conditions (selected examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Category 1</strong></td>
<td>≥20 years, cervical ectopy, uterine fibroids without distortion of the uterine cavity, irregular bleeding without heavy bleeding, breastfeeding &gt; 6 weeks, history of PID</td>
</tr>
<tr>
<td><strong>Category 2</strong></td>
<td>Menarche to &lt;20 years, nulliparous, heavy or prolonged bleeding, severe dysmenorrhea, anemia, HIV/AIDS infection, with or without ARV therapy</td>
</tr>
</tbody>
</table>

### Who Should Not Initiate Copper IUDs

**WHO MEC category 3 and 4 examples**

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<thead>
<tr>
<th>WHO MEC Category</th>
<th>Conditions (selected examples)</th>
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</thead>
<tbody>
<tr>
<td>Category 3</td>
<td>48 hours to &lt;4 weeks postpartum, ovarian cancer/if initiating use, high individual risk of STI/ if initiating use</td>
</tr>
<tr>
<td>Category 4</td>
<td>pregnancy, unexplained vaginal bleeding (prior to evaluation), current PID or cervical infection, endometrial or cervical cancer/if initiating use</td>
</tr>
</tbody>
</table>

Timing of IUD Insertion

Interval insertion
- Within the first 12 days of menstrual cycle
- Any other time if woman is not pregnant

Postpartum insertion
- Immediately after vaginal or cesarean delivery if no infection or bleeding complications
- Within 48 hours or delay at least 4 weeks

Postabortion insertion
- Immediately or within 12 days if no infection

Side Effects

- **Common side effects:**
  - Heavier and/or prolonged menstrual bleeding
  - Menstrual cramping
  - Spotting between periods

- **Side effects:**
  - Are not signs of illness
  - Usually become less within the first 3–6 months
Correcting Misconceptions

IUDs:
- Rarely lead to PID
- Do not increase risk of STIs, including HIV
- Do not work by causing abortion
- Do not make women infertile
- Do not move to the heart or brain
- Do not cause birth defects
- Do not cause pain for either partner during sex
- Significantly reduce risk of ectopic pregnancy

Signs of Possible IUD Complications

- Bleeding and severe abdominal cramping within a few days post-insertion → perforation
- Irregular bleeding or pain every cycle → partial expulsion, perforation
- Fever, unusual vaginal discharge, low abdominal pain → infection
- Missing IUD strings, missed period → expulsion, pregnancy

Managing IUD Side Effects or Complications:
Heavy, Prolonged or Irregular Bleeding

Counseling and reassurance are key

<table>
<thead>
<tr>
<th>Problem</th>
<th>Action/Management</th>
</tr>
</thead>
</table>
| Heavy or prolonged bleeding    | • Reassure client that this is common and not harmful, usually diminishes after few months  
|                                | • For short-term relief offer 5-day course of tranexamic acid or NSAIDs (not aspirin) 
|                                | • Provide iron tablets                                                           |
| Irregular bleeding             | • Reassure client                                                               
|                                | • For short-term relief offer ibuprofen or indomethacin 2 times daily after meals for 5 days |

Managing IUD Side Effects or Complications:
Cramping and Mild Pain

*Counseling and reassurance are key*

<table>
<thead>
<tr>
<th>Problem</th>
<th>Action/Management</th>
</tr>
</thead>
</table>
| Cramping and mild pain    | *She can expect cramping and pain in first 1–2 days after insertion*
|                           | *Reassure client that this is common in first 3–6 months, not harmful, usually decreases over time*
|                           | *Suggest ibuprofen, other pain reliever (not aspirin if she also has heavy bleeding)*
|                           | *If cramping continues, occurs outside of menstruation, evaluate, treat or refer*
|                           | *If cramping is severe but no underlying condition, discuss removing the IUD*                                                               |

Managing IUD Side Effects or Complications:
Severe Pain in Lower Abdomen (Rare)

- Rule out PID, ectopic pregnancy or perforation.
- If PID is suspected, treat with appropriate antibiotics for gonorrhea, chlamydia and anaerobic bacterial infection. There is no need to remove the IUD.
- If ectopic pregnancy is suspected, refer immediately.

Managing IUD Side Effects or Complications: Suspected Perforation

- Stop procedure immediately, remove IUD
- Observe vital signs for an hour; check for signs of bleeding
  - If rapid pulse, falling blood pressure, or increased pain: refer
- Provide alternative contraception
  - Advise avoid sex for 2 weeks
- Follow-up in a week or as needed

Managing IUD Side Effects or Complications:

Missing Strings

- Determine risk of pregnancy
- Perform pelvic exam, probe for strings in cervical canal
- If cannot locate strings, consider X-ray or ultrasound, or refer
- Give choice of another contraceptive method
- Insert another IUD if expulsion is confirmed and
  - Woman is not pregnant
  - She still wants to use an IUD

Managing IUD Side Effects or Complications:

**Suspected Pregnancy**

- Assess for pregnancy, including ectopic pregnancy
- If the client is pregnant and wishes to continue the pregnancy:
  - Explain that using an IUD during pregnancy increases the risk of preterm delivery or miscarriage
  - If possible, remove the IUD
  - If not possible to remove, advise close follow-up for signs of septic miscarriage

Hormonal intrauterine device

LNG-IUS
Hormonal IUDs

- Steadily release a progestin
- Levonorgestrel IUD (LNG-IUD) most common hormonal IUD
- Also known as LNG-intrauterine system (LNG-IUS)
- Immediately reversible
- Effective for 5 years
Other features of the LNG IUS

- Works primarily by suppressing the growth of the lining of the uterus
- Needs to be inserted into a uterus by a trained health care provider
- Some report lighter, fewer or even absent bleeding days
- Also infrequent reports of headaches, breast tenderness or pain, acne
Male and Female Condoms
What Is a Male Condom?

- A sheath that fits over a man’s erect penis
- Most are made of thin latex rubber
- Other materials include natural skin and various synthetics
What Is a Female Condom?

• A transparent sheath that fits loosely inside a woman’s vagina

• Most common type is FC2—made of thin, soft, synthetic rubber film
  – Has flexible rings at both ends

• Natural latex female condoms available in some countries
Comparing Effectiveness of Male and Female Condoms

In real-life situations, correct and consistent use may be difficult to achieve

<table>
<thead>
<tr>
<th>Pregnancy rates:</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>perfect use</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>typical use</td>
<td>15%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Condoms: Mechanism of Action

- Create a barrier that keeps sperm from entering the vagina, thus preventing pregnancy
- Also form a barrier against STIs including HIV
Condoms are the *only* FP method that provides **dual protection:**

- Protection from pregnancy *and*
- Protection from transmission of HIV and other STIs between partners
Male and Female Condoms

Effectiveness for Preventing HIV and STIs

- The consistent, correct use of condoms significantly reduces the risk of HIV infection in men and women.
- When used correctly with every act of sex, condoms are 80%–95% effective in preventing HIV infection.
- Condoms prevent STIs transmitted through body fluids such as gonorrhea and chlamydia.
- Condoms are less effective for preventing STIs transmitted by skin-to-skin contact, such as herpes and warts.

Characteristics of Male Condoms

- Safe and easy to use
- Widely available
- Effective when used consistently and correctly
- Provide dual protection
- No hormonal side effects
- Can help men with premature ejaculation
- Do not require provider’s help
- Can be used as temporary backup method
- Protect women from conditions caused by STIs
Characteristics of Male Condoms

- As typically used, less effective than many other methods
- Require partner communication and cooperation
- Can be damaged by oil-based lubricants, heat, humidity or light
- May reduce sensation
- Can interrupt sex
Who Can Use Male Condoms

All men and women can safely use male condoms, *except* those with severe allergic reaction to latex

- Extremely rare among both men and women
- Non-latex condoms are available in some countries
Male Condoms

Managing Problems

- If condom not used—Offer emergency contraception
- If slipping or breaking—Ask about practices, behaviors
- If difficulty putting on—Ask client to demonstrate, correct errors
- Difficulty persuading partner to use—Help her choose approaches that will work. Suggest adding another method
Mild irritation or mild allergic reaction to condom—Itching, redness, rash and/or swelling

- Try another brand of condoms
- Put lubricant or water on the condom
- If symptoms continue, assess or refer for possible vaginal infection or STI
- If no infection, may have allergy to latex
# Characteristics of Female Condoms

## What Men and Women Like

### What Women Like:
- Female-controlled
- Texture feels more natural than latex male condoms
- Offer STI/HIV protection
- Outer ring provides stimulation
- Do not require provider’s help

### What Men Like:
- Can be inserted in advance
- Are not tight or constricting
- Do not dull sensation
- Do not have to be removed immediately
Characteristics of Female Condoms
What Men and Women Don’t Like

Limitations:

- May be difficult to insert at first, require practice
- Not as effective as other methods
- More expensive than male condoms
- Less available than male condoms
Who Can Use Female Condoms

- All men and women can use FC2
- Latex female condoms: Severe allergic reaction to latex is the only condition that prevents use
  - Extremely rare
Female Condoms

Managing Problems

- If having trouble inserting: Ask her to demonstrate
- If uncomfortable: Reinsert or reposition
- If condom squeaks: Use more lubricant
- If condoms slips or is not used correctly: Offer emergency contraception
- Difficulty persuading partner: Help her choose approaches that will work
Female Condoms
Managing Problems

(Continued)

- Mild irritation in or around the vagina or penis (itching, redness, rash)
  - Usually goes away on its own
  - Suggest added lubricant inside condom or on penis
  - If symptoms persist, assess and treat for possible vaginal infection or STI
Responding to Myths and Fears

Male condoms:
- Do not make men impotent, weak, or decrease sex drive
- Do not cause illness in men because sperm “backs-up”

Female condoms:
- Are not difficult to use, but correct use needs to be learned
- Do not cause illness in women because they prevent semen from entering the body
Responding to Myths and Fears

(continued)

Both male and female condoms:

- Cannot get lost in woman’s body
- Do not have holes that HIV can pass through
- Are not intended only for use outside of marriage, but also used by married couples
Other barrier methods

- **Diaphragm** – is placed deep in the vagina before sex, covering the cervix as a barrier, usually used with a spermicide.
  - When used correctly with every act of sex, 6 pregnancies per 100 women using the diaphragm over the first year.

- **Cervical caps** – is also placed deep in the vagina before sex, covering the cervix as a barrier.
  - Not as effective, with 20 pregnancies per 100 women in the first year.
Other barrier methods

- **Spermicide** – applied deep in the vagina before every act of sex
  - Usually Nonoxynol 9, but other substances also available
  - Work by causing the membrane of sperm cells to break, killing them or slowing movement.
  - One of least effective methods, may be a primary or a back up method.

- **Microbicide** (either anti-infective alone or dual protection)
Fertility awareness methods

- Requires the cooperation of both partners, with a commitment to abstain or use another method on fertile days
  - Periodic abstinence
  - Natural family planning
- Must be aware of the body changes or keep track of days, according to rules of the specific methods.
- No side effects.
Fertility awareness methods

- Calendar based methods
  - Standard days methods
  - Calendar rhythm methods

- Symptoms based methods
  - Cervical secretions
  - Basal Body Temperature
    - Increase noted slightly after release of the egg or ovulation
  - Two day method
  - Sympto-thermal method
Standard Days Methods

- 95% effective with consistent and correct use
- A woman can use the SDM if most of her menstrual periods are 26 to 32 days long.
- Days 8 to 19 of each cycle are considered as fertile days.
- The couple can use cycle beads, a color-coded string of beads that indicates fertile and nonfertile days.
How to use cycle beads

1. Move ring to RED bead when period starts

2. Move ring to next bead every day. Move ring even on bleeding days

3. Use condoms or abstain when ring is on WHITE beads

4. BROWN beads are safe days of no pregnancy

5. When period starts again move ring to red bead to begin again.

6. Always check your period comes between dark brown bead and last brown bead.
Lactational amenorrhea

- A family planning method based on breastfeeding
- Can be effective for up to 6 months after delivery, as long as monthly bleeding has not returned and the woman is fully breastfeeding.
- Provides an opportunity to offer a woman an ongoing method for continuously 6 months
Lactational amenorrhea

- A woman with the following may want to consider other methods:
  - Has HIV infection
    - Especially if the woman is not taking ARVs, not fully breastfeeding, newly infected or has advanced disease.
  - Using certain medications (mood-altering drugs, reserpine, ergotamine, anti-metabolites, cyclosporine, high dose corticosteroids, bromocriptine, radioactive drugs, lithium and certain anticoagulants)
  - A newborn with a condition that makes it difficult to breastfeed
Emergency contraception

- Emergency contraceptive pills help to prevent pregnancy, if taken up to 5 days after unprotected sex and other situations such as
  - forced sex (rape) and contraceptive mistakes (condom slippage or breakage, misplaced IUD, late for injections, etc)
- Do not disrupt an existing pregnancy
- Safe for all women
- Provide an opportunity for women to start using an ongoing FP method
- Effectiveness (no method = 8 pregnancies/100 woman years)
  - Progestin only ECPs – 1 pregnancy per 100 women years
  - Combined estrogen progestin ECPs – 2 pregnancies per 100 women years.
- Copper IUD effective as emergency contraception, when inserted up to 7 days after unprotected sex
Emergency contraception

- Contains a progestin alone (levonorgestrel or ulipristal) or a progestin and an estrogen together
- Works primarily by preventing or delaying ovulation
- Does not work if the woman is already pregnant.
<table>
<thead>
<tr>
<th>Pill type</th>
<th>Total dosage to provide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levonorgestrel-only dedicated product</td>
<td>• 1.5 mg of levonorgestrel in a single dose.</td>
</tr>
<tr>
<td>Estrogen-progestin dedicated product</td>
<td>• 0.1 mg ethinyl estradiol + 0.5 mg levonorgestrel. Follow with same dose 12 hours later.</td>
</tr>
<tr>
<td>Progestin-only pills with levonorgestrel or norgestrel</td>
<td>• Levonorgestrel pills: 1.5 mg levonorgestrel in a single dose.</td>
</tr>
<tr>
<td></td>
<td>• Norgestrel pills: 3 mg norgestrel in a single dose.</td>
</tr>
<tr>
<td>Combined (estrogen-progestin) oral contraceptives containing levonorgestrel, norgestrel, or norethindrone</td>
<td>• Estrogen and levonorgestrel pills: 0.1 mg ethinyl estradiol + 0.5 mg levonorgestrel. Follow with same dose 12 hours later.</td>
</tr>
<tr>
<td></td>
<td>• Estrogen and norgestrel pills: 0.1 mg ethinyl estradiol + 1 mg norgestrel. Follow with same dose 12 hours later.</td>
</tr>
<tr>
<td></td>
<td>• Estrogen and norethindrone pills: 0.1 mg ethinyl estradiol + 2 mg norethindrone. Follow with same dose 12 hours later.</td>
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</table>
Correcting misconceptions about Emergency contraception

ECPs:

- Do not cause abortion
- Do not cause birth defects if pregnancy occurs
- Are not dangerous to a woman's health
- Do not promote sexual risk taking
- Do not make women infertile
Female Sterilization
Tubal Ligation

- Permanent method, done through mini-laparotomy (small incision) or laparoscopy
- One of the most effective methods with less than 5 failures per 1000 women
- May be used by any woman
- Counselling needed to ensure no post-procedural regrets
Male Sterilization
Vasectomy

- Simple permanent surgical method in men
- With a 3 month delay in taking effect due to storage of sperm
- Tubes that carry sperm to the penis (vas deferens) are cut and ligated (by sutures or cautery)
- May be done using non-scalpel technique
- Less than 2 per 1000 pregnancies over first year
- Does not affect male performance nor provides increase risk for cancer
Other methods

- **Ring**
  - Requires keeping a flexible ring which releases progestins and estrogen which are absorbed by the body
  - Kept for 3 weeks, and woman menstruates in 4th week
  - Prevents ovulation

- **Patch**
  - Requires wearing a small adhesive patch with estrogen and progestins weekly, for 3 weeks
  - Works by preventing ovulation
Acknowledgments and References

Main Reference:

- Family Planning – A Global Handbook for Providers (https://www.fphandbook.org/)

Acknowledgements

- Family Health International
- Knowledge for Health
- Institute of Reproductive Health