EMERGENCY CONTRACEPTION
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University of North Carolina at Chapel Hill
Campus Health Pharmacy

“I HAVE NO ACTUAL OR POTENTIAL CONFLICT OF INTEREST IN RELATION TO THIS EDUCATIONAL ACTIVITY OR PRESENTATION.”
Any discussion of “off-label” use of products will be clearly identified as “off-label”.

Objectives
• Describe EC options available in the U.S.
• Provide evidence-based information about the efficacy of EC
• Review safety and side effects of available EC methods
• Discuss provision of hormonal contraception after use of EC pills
• Patient cases

Definition of EC
“Emergency contraception (EC) is used as a back-up birth control method to prevent unintended pregnancy after sex in the event of unprotected sex, sexual assault, or a contraceptive failure, such as a condom breaking.”

Required for Conception
1) Sperm capable of fertilization are present in upper reproductive tract of woman
   • Remain viable for up to 5 days

2) Ovum capable of fertilization available within the fallopian tube lumen
   • Only capable of fertilization for 12 to 24 hours


50% of U.S. pregnancies are unintended
**When Does Pregnancy Begin?**

*According to ACOG, FDA, AMA, BMA: pregnancy begins at successful completion of implantation*

- **Cycle Day:** 1
- **Contraception**
- **Pregnancy**
- **12-13**
- LH surge
- Ovulation
- **14**
- **19**
- **22-23**
- Fertilization
- Implantation begins

**EC Options in the US**

- **Oral**
  - levonorgestrel
  - ulipristal acetate (ella®)
  - Yupze method
  - progestin-only (LNG EC)
  - antiprogestin (UPA)
  - estrogen and progestin*

- **Device**
  - copper-T IUD (Paragard®)

*levonorgestrel or norethindrone

**Levonorgestrel EC (LNG)**

- Take ASAP!
- Label: levonorgestrel 1.5 mg po x 1 dose ASAP within 72 hours of unprotected intercourse
- Possibly effective up to 120 hours
- Available OTC
- NO age restrictions, even if OTC labeling mentions that it is “for women 17 years of age and older”

**Ulipristal acetate EC (UPA)**

- Take ASAP!
- Label: Ulipristal acetate 30 mg po x 1 dose ASAP up to 120 hours after unprotected intercourse
- Prescription only

**Combined Pills (Yuzpe method)**

See EC dosing chart for combined pills at the Not-2-Late Website: [http://ec.princeton.edu/questions/dose.html#dose](http://ec.princeton.edu/questions/dose.html#dose)

**Copper-T 380 IUD – off label use!**

- Placed by a trained clinician
- WHO Guidelines: Place within 5 days after intercourse (or no more than 5 days after ovulation)
- At least 12 years of highly effective contraception (off-label)
EC MECHANISMS OF ACTION

How Does LNG EC Work?

- Impairs ovulation
- In pre-ovulatory phase, can either delay follicular maturation or totally arrest follicular development, depending on time of administration

*Once LH starts rising, LNG EC has NO EFFECT and CANNOT prevent ovulation*

How Does UPA Work?

- Selective progesterone receptor modulator (SPRM!)
- Inhibits follicular rupture
  - Given prior to LH rise, inhibits 100% of ruptures
  - Even on day of LH peak, UPA can delay ovulation for 24-48 h after administration

Effectiveness: UPA

When given at this point in the cycle:

- UPA prevents ovulation:
  - 100% LH surge
  - 79% LH peak
  - 8%

EC Prevents Pregnancy

UPA

LNG

Pregnancy

LH surge 12-13 14 19 22-23
Fertilization
Implantation

LH peak
Ovulation

Cycle Day: 1

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Cycle Day: 1
How Does Copper IUD Work For EC?

Widespread effect throughout genital tract
Copper ions $\rightarrow$ inflammatory response

• Reach concentrations that are toxic for sperm and ovum
• ↓ chance of survival of embryo before reaching uterus
• Decreases endometrial receptivity and embryo implantation

no effect on ovulation

EC Prevents Pregnancy

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LH surge $\rightarrow$ Fertilization $\rightarrow$ LH peak $\rightarrow$ Ovulation $\rightarrow$ Implantation

SAFETY AND SIDE EFFECTS

ECP Safety

• Exceeds OTC Safety Requirements
• Benefits > Risks
• Hormonal exposure very short
• No increased risks of ectopic pregnancy
• No increased risks of birth defects

Safety: Repeat Use of ECPs

• IUD most effective
• Do not mix regimens within 5 days
• Likely acceptable to repeat same ECP in same cycle
Possible ECP Side Effects

- HA
- Fatigue
- Dizziness
- Change in menses
- N/V
- Breast tenderness
- Abdominal or back pain

EC EFFICACY
A Review of the Data

Effectiveness

- Copper IUD
- Ulipristal Acetate
- Levonorgestrel

Pregnancies per 1,000 women after unprotected sex

LNG EC Efficacy

- LNG EC – prevents at least 50% of pregnancies that would have occurred in the absence of EC
  - **OLD** data from WHO (trials from 1998 and 2002):
    - 95% if within 24 hours of intercourse
    - 85% if within 25-48 hours of intercourse
    - 58% if within 49-72 hours of intercourse
  - **CURRENT** data (2010):
    - Pregnancy rate in 958 women taking LNG EC
      - 2.6% versus 5.4% expected

UPA Efficacy

- UPA – prevents ~2/3 of expected pregnancies
  - 941 women taking UPA, pregnancy rate was 1.8% versus the 5.5% expected
Effectiveness: UPA vs LNG

- RCT comparing UPA and LNG
- Between 73-120 hours:
  - All 3 pregnancies were in the LNG group
  - UPA prevented significantly more pregnancies (p=0.037; n=203)

Efficacy of Copper IUD for EC >99%

- 1963 women received copper IUD within 120 hours of intercourse
- Zero pregnancies at 1 month follow-up
- Continuation rate at 12 months = 94%

- 0.23% pregnancy rate at 12 month follow-up

Efficacy of Copper IUD for EC >99%

- Cochrane review – data on non-randomized studies conducted in China
- 3 pregnancies in 3470 women

- 0.09% failure rate

- 99.9% effective

Statistically Significant Risk of EC Failure

1. BMI >25
2. UPI at time of highest conception probability (day before ovulation)
3. Another act of unprotected intercourse in same cycle after EC use

Women with elevated BMI at increased risk of EC failure

- LNG ECP:
  - Efficacy no greater than no EC at BMI $\leq 26$ kg/m$^2$ ($\geq 70$ kg)
- UPA:
  - Efficacy no greater than no EC at BMI $\geq 35$ kg/m$^2$ ($\geq 88$ kg)
- Copper T IUD:
  - No effect of weight on efficacy
Cycles with ovulation within 5 days

3% in UPA + placebo

45% in UPA + desogestrel

p=0.0054

Ruling Out Pregnancy

You can be reasonably certain a woman isn’t pregnant if she has no signs of pregnancy and meets one of the following:

- ≤7 days after the start of normal menses
- No sexual intercourse since the start of last normal menses
- Correctly and consistently using a reliable method of contraception
- ≤7 days after spontaneous or induced abortion
- ≤4 weeks postpartum
- Fully/nearly fully breastfeeding, amenorrheic, and <6 months postpartum

Providing Combined Hormonal Contraception after ECPs

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Providing LNG IUS, Implant or Injectable after ECPs

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*Particularly important for LNG IUS due to potential risk to existing pregnancy

Hormonal Contraception after UPA

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**CASES**

Additional Resources

- General:
  - www.bedsider.org
  - www.fda.gov/womens
  - www.arhp.org/methodmatch/
  - www.managingcontraception.com
  - www.plannedparenthood.org
  - www.reproductiveaccess.org/key-areas/contraception/

- Emergency contraception:
  - www.bedsider.org
  - http://ec.princeton.edu
    - www.not-2-late.com