

# NEW CONTRACEPTIVES

Long Awaited Innovations in  
Pills, Patches, Rings, & Injections!

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# Progestin Provides the Contraceptive Effect

- In all hormonal contraception, it is the progestin component which provides the contraceptive effect.
- Estrogen is added only:
  - to improve the ability to control or schedule bleeding
  - for non-contraceptive benefits such as acne control
  - may assist ovulation suppression

# Contraceptive Effects of Progestin

The potency and dose of progestin will determine the effect on the HPO axis and the function of the ovary and uterus. Depending on the dose, progestin can:

- suppress midcycle peaks of LH/FSH
- cause the production of a thick cervical mucus, which prevents the penetration of sperm into the uterus
- transform and thin the endometrium
- may reduce tubal motility & ciliary action

# Contraceptive Effects of Estrogen

- Effects are variably dose dependent
- Assists progestin in ovulation suppression
- Suppression of LH/FSH
- Proliferation of Endometrium
- Stabilization of the endometrium to allow bleeding to be scheduled and to reduce unscheduled bleeding

# Dose Dependent Effect of Progestin on Ovary

Dose/ Potency	Minimal	Low	Mid	High
Examples	Levonorgestrel IUD	Norethindrone POP	Implant, Drospirenone POP, CHCs	DMPA injection 150 mg and 104 mg Sub-Q
Ovulation	Rarely inhibited, often affected	Sometimes inhibited, often affected	Reliably inhibited	Reliably inhibited
Ovarian production of endogenous hormones	Unaffected	Unaffected	Unaffected	Suppressed; may cause hypo-estrogenic state
Follicular growth	Yes	Possible	Possible	No

(Erkkola, 2013 | Grimes, 2013 | Horvath, 2000 | Hatcher, 2018)

# Dose Dependent Effect of Progestin on Cervix/Uterus

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Dose/ Potency	Minimal	Low	Mid	High
Examples	Levonorgestrel IUD	Norethindrone POP	Etonogestrel implant, Drospirenone POP	DMPA injection 150 mg and 104 mg Sub-Q
Cervical mucous	Reliably thickened	Reliably thickened	Reliably thickened	Reliably thickened
Endometrium	Reliably thins endometrium	Reliably thins endometrium	Reliably thins endometrium	Reliably thins endometrium

# Potential Benefits of Suppressing Ovulation with Hormonal Contraception

- Treatment for PMDD/premenstrual syndrome
- Continuous use best
- Some benefit seen even without reliable ovulation suppression
- Reduced risk of:
  - Ovarian cancer
  - Functional ovarian cysts

(Klipping, 2008 | Michels, 2018 | Schildkraut, 2002 | Faber, 2013 | Maxwell, 2006 | Trabert, 2020)

# PROGESTIN-ONLY PILL

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# Progestin-only Pills (POPs)

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Hormonal Content	Only progestin. Do NOT contain estrogen. Sometimes called the “mini-pill”.
Types	Norethindrone 0.35mg
	Drospirenone 4.0 mg
How supplied	Norethindrone: 28 pills in pack – All pills are active.
	Drospirenone: 24 active pills and 4 placebo pills.
How to use	Norethindrone: Take one active tablet every day. No HFI
	Drospirenone: Take one active tablet/day for 24 days, then take one placebo tablet/day for 4 days

(Grimes, 2013)

# Drospirenone (DRSP) 4 mg (Slynd™) Progestin-only Pill (POP)

- DRSP is the progestin in some COCs: Yaz®, Yazmin®, Ocella®
  - Diuretic effect like spironolactone
  - Anti-androgenic
  - Lower serum level of DRSP than in COC (even though 4 vs. 3 mg in COC)
- 24/4 Dosing Regimen
- 24-hour missed pill window
- No thromboembolic risk (vs. increased risk with CHC)

# Slynd™ Savings Program

- No generic version... \$200 per cycle on GoodRx.com
- Savings Program at pharmacy
  - Patient pays the first \$10 or \$25
  - Cash-paying patients pay ~ \$65
  - Not valid for patients enrolled in Medicare, Medicaid, or other federal or state healthcare program

# Disadvantages of norethindrone vs. DRSP Progestin-only Pills (POPs)

POP	Bleeding	Ovulation Inhibition	Half-life
<b>Northindrone</b>	May be more likely to have unfavorable bleeding (spotting, irregular, more frequent, or amenorrhea) than if estrogen were in the formulation	Does not reliably inhibit ovulation and may develop ovarian follicles though these usually go away on their own.	Due to its short half-life, it is important to take pills at the same time each day
<b>Drospirenone</b>	4-day HFI allows scheduled bleeding	Reliably inhibits ovulation	Should be taken daily, but due to its long half-life (30-34 hr) it is not imperative to take pills at the same time each day

# NEW CONTRACEPTIVE VAGINAL RING AND PATCH

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# Hormonal Patches

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- In clinical trials failures seen in those over 198 pounds/ BMI > 25 and more failures > 30
- Same contraindications as any CHC *plus* contraindicated if BMI >30
- Same efficacy as COCs
- Two brands
- Both brands contain estrogen and progestin
- OK to shower, swim, exercise with patch on

(Kaunitz, 2015 | Kaunitz, 2015 | Kaunitz, 2014 | Simmons, 2016 | Gallo, 2016)

# Hormonal Patch (Zulane®)

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Content	Norelgestromin and EE 35mcg EE & 150mcg norelgestromin
Use	One patch each week for 3 weeks, then 1 week off for HFI Quick start
Risks	Highest estrogen: concern for increased risk of DVT relative to COCs with 30-35 mcg EE
Side Effects	Same side effects as any CHC
Efficacy	Same efficacy as any CHC
Issues	60% relatively higher estrogen dose than 30-35 mcg pills Less effective in those with higher weight Local skin irritation Detachment of the patch

(van den Heuvel, 2005 | Tepper, 2017 | Horton, 2016)

# Hormonal Patch (Twirla®)

FDA Approved 02/2020

Content	Levonorgestrel and EE 30mcg EE & 150mcg levonorgestrel
Use	One patch each week for 3 weeks, then 1 week off for HFI Quick start
Risks	Same risks as any CHC
Side Effects	Same side as any CHC
Efficacy	Same efficacy as any CHC
Future	Clinical trials are on-going to study continuous use -- without a HFI
Issues	Local skin irritation Detachment of the patch Less effective if BMI >25 Not commercially available until late 2020/ 2021

(Kaunitz, 2015 | Kaunitz, 2015 | Kaunitz, 2015 | Kaunitz, 2014 | Simmons, 2016)



# Contraceptive Patches

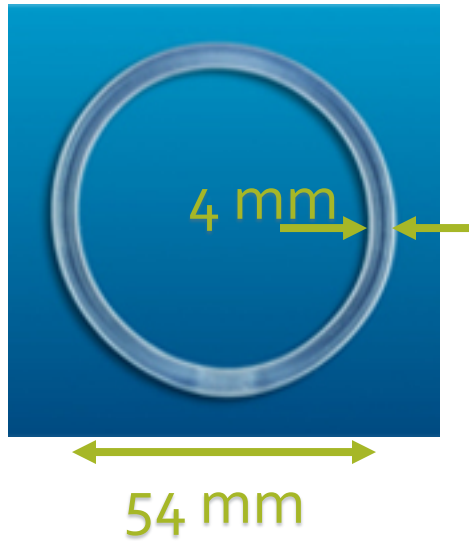
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	Zulane®	Twirla®
<b>Daily release of progestin</b>	norelgestromin 150 mcg/day	levonorgestrel 120 mcg/day
<b>Daily release of EE</b>	EE 35 mcg/day per manufacturer but 1.6 times the amount of EE as seen with 35 mcg OCP (60% higher)	EE 30 mcg/day
<b>Size/shape</b>	14 cm <sup>2</sup> /square	28 cm <sup>2</sup> / round

# Vaginal Ring

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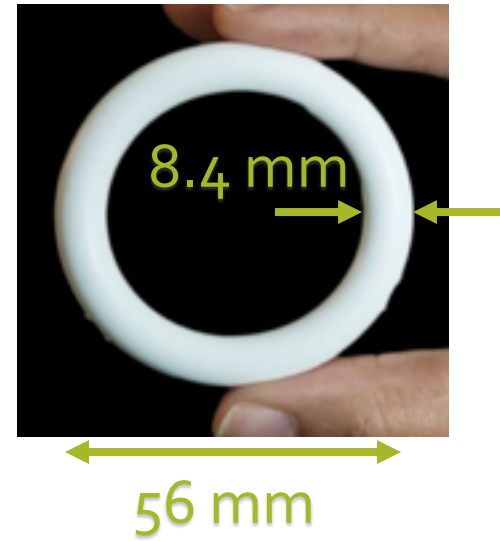
Nuvaring®



Nuvaring®



Annovera®



# New 1-Year Vaginal Contraceptive Ring (Annovera®)

- Segesterone acetate and ethinyl estradiol vaginal system
- Available at end of 2019
- Same contraindications, side effects, mechanism of action as other combined hormonal contraceptives
- Also does not protect against STIs

# Comparison of CVRs

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	NuvaRing	Annovera
<b>Progestin</b>	Etonogestrel 120 mcg/d	Segesterone 150 mcg/d
<b>Estrogen</b>	EE 15 mcg/day	EE 13 mcg/day
<b>Diameter</b>	54 mm	56 mm
<b>Thickness</b>	4 mm	8.4 mm
<b>Lifespan</b>	1 cycle (up 35 days)	13 cycles (up to 365 days)
<b>Continuous use?</b>	YES	Highly likely but insufficient data yet
<b>Appearance</b>	Flexible transparent	Flexible opaque white
<b>Refrigeration</b>	Yes, if stored > 4 mos	No

(van den Heuvelm 2005)

# Vaginal Contraceptive Ring: Nuvaring<sup>®</sup>

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Content	PROGESTIN: Etonogestrel 120 µg/day ESTROGEN: 15 µg/day ethinyl estradiol
Dosage	low estrogen dosage compared to patch and COC Ring has enough hormones for at least 35 days
Use	Intravaginal, use continuously 21 -35 days (may remove for maximum 3 hrs.) May wait 4-7 days, then insert new ring Quick start same as COCs
Efficacy	Similar to COCs
Side Effects	Similar to COCs (including estrogenic effects)

(Dieben, 2002)

# Vaginal Contraceptive Ring: Annovera<sup>®</sup>

Content/dosage	PROGESTIN: Segesterone 150 µg/day ESTROGEN: 13 µg/day ethinyl estradiol
Length of use	Ring has enough hormones for at least 365 days
Use	Quick start Intravaginal, use continuously ≥21+ days (may remove for maximum 2 hrs.) May wait 4-7 days, then reinsert same ring No refrigeration needed
Efficacy	Similar to COCs
Side Effects	Similar to COCs (including estrogenic effects)
Coverage	Not in same FDA contraceptive category as NuvaRing, so must be covered under no cost-sharing rules of ACA

# Continuous Use Vaginal Ring

- Goal is no bleeding (or minimal)
- A ring in vagina at all times except if client wants to remove ring for sex
- Continuous use gives a margin for error –in case ring is left out of vagina for longer than the recommended 2-3 hours
- No opportunity for ovary to “wake up” with an HFI
- If spotting or bleeding is annoying and goes on for more than a couple of days client can remove ring for 3-4 days to allow the endometrium to shed and then replace the ring

# Continuous Use Vaginal Ring Nuvaring®

- Goal is no bleeding
- Ring left in place in vagina for 1 calendar month
- First day of each calendar month switch ring!
- Easy to remember (like paying your rent)
- Only one thing to do each month
- If client is late switching ring there is no increased risk of pregnancy
- Wide margin for error



# Continuous Use Vaginal Ring Annovera<sup>®</sup>

- No data yet on this particular product
- Likely to be as safe for continuous use as with the monthly ring
- Goal is no bleeding
- Ring left in place continuously until client wants a scheduled bleed
- Good option for clients who routinely remove the ring for coitus-- allows more margin for error (in case they erroneously keep the ring out for > 2 hours)

**INJECTABLE**

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# Progestin Injection (DMPA)

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Content	Depot Medroxyprogesterone acetate (DMPA)
Types and Dose	150 mg IM 104mg SQ
Mechanism of Action	Thickens cervical mucous, Suppresses ovulation
Use	One injection every 12-15 weeks SQ version may be self-administered off-label
Benefit	Indicated for contraception and endometriosis High progestin dose allows contraceptive efficacy to be maintained even if client is on medication that reduces level of hormone Less seizure activity

# Should You Limit DMPA Use to 2 Years?

- No data yet on this particular product
- Likely to be as safe for continuous use as with the monthly ring
- Goal is no bleeding
- Ring left in place continuously until client wants a scheduled bleed
- Good option for clients who routinely remove the ring for coitus-- allows more margin for error (in case they erroneously keep the ring out for > 2 hours)

# SQ-DMPA & IM-DMPA

- Same contraindications
- MEC and SPR guidance applies to both formulations except reinjection window for SQ is up to 14 weeks and IM is up to 15 weeks
- Same side effects but 30% less hormone may reduce common side effects
- Likely to have the same beneficial effects

# How SQ-DMPA Differs from IM-DMPA

- Uses shorter, smaller needle
- Smaller volume of liquid
- Inject into skin instead of muscle--potentially less pain
- Comes pre-filled, ready to use at home, client is in control
- Takes time to learn how to use
- May have local site reaction after 1st and 2nd injection
  - Soreness improves over time
  - According to the label, 1/100 experience dimpling at injection site

# Title?

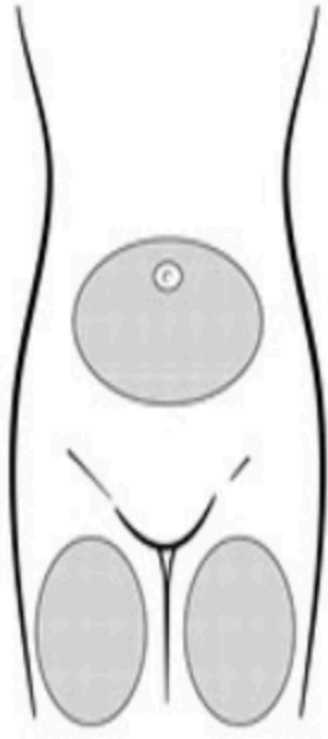
Method of Injection	Needle Type	Dosage	Packaging	Manufacturer
Subcutaneous (SQ)	26-gauge x 3/8-inch	104 mg / 0.65 mL	Single-dose prefilled syringe	Pfizer (sole brand name)
Intramuscular (IM)	22-gauge x 1 1/2-inch	150 mg / 1 mL	Vial or single-dose prefilled syringe	Pfizer Teva Greenstone

<https://www.nationalfamilyplanning.org/covid-19-resource-hub>

# Candidates for SQ-DMPA

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## Preferred injection areas:



**Left or right upper thigh or  
abdomen**

- Great for clients who are experienced in self-injection such as insulin, medications to induce ovulation for IVF, or drugs for multiple sclerosis but it can be used by anyone
- Use clinical judgement to determine whether delivery method is appropriate for a specific client and document decision

(Beasley, 2014 | Burke, 2014 | Dragoman, 2016 | Kaunitz, 2009 | Kennedy, 2019)



# Resource for DMPA-SubQ

<https://www.nationalfamilyplanning.org/file/documents---service-delivery-tools/NFPRHA---Depo-SQ-Resource-guide---FINAL-FOR-DISTRIBUTION.pdf>

# Client Resources on SQ Self-Injection

## FACT SHEET : HOME SHOT/DEPO-PROVERA SUB-Q

### HOW DO I INJECT DEPO?

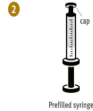
#### Diagram 1

- Gather your supplies: alcohol pad, Depo, and sharps container or empty plastic laundry soap jug.
- Wash your hands.
- Pick the injection site: either upper thigh or belly. Avoid your belly button and bony areas.
- Wipe your skin with an alcohol pad and wait for the area to dry.



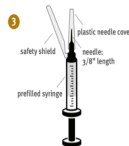
#### Diagram 2

- Take the syringe out of the package and shake it for about one minute to mix it.
- Remove the cap from the tip of the syringe.



#### Diagram 3

- Attach the needle to the syringe.
- Move the safety shield away from the needle.
- Remove the plastic needle cover from the needle. Pull it straight off. (Do not twist it.)
- Hold the needle pointing up. Gently push the plunger until the medicine reaches the top.



#### Diagram 4

- Grab the skin around the injection site with your other hand.



#### Diagram 5

- Push the small needle all the way into this skin at about a 45-degree angle. This hurts a bit.
- Inject the Depo slowly, over 5-7 seconds. Push the plunger all the way in.
- Pull the syringe out. Push the safety shield back until it clicks. Dispose of the syringe in the sharps container.
- Apply pressure to the spot.



- Package Insert
- RHAP: <https://www.reproductiveaccess.org/resource/depo-subq-user-guide/>
- RheumInfo Video Demo, in English: <https://www.youtube.com/watch?v=arcr1wjun6c>
- Bedsider.org: <https://www.bedsider.org/features/789-depo-subq-the-do-it-yourself-birth-control-shot>
- Planned Parenthood SQ Video Demo, in Spanish: <https://www.youtube.com/watch?v=zd6oUUroSg8&feature=youtu.beand>
- Planned Parenthood Information Sheet, in Spanish: [https://www.plannedparenthood.org/uploads/filer\\_public/44/d8/44d8ff08-cec7-489d-b538-a559465b0658/ppgt3718\\_how\\_to\\_give\\_yourself\\_a\\_hormone\\_injection\\_-\\_subcutaneous\\_subq.pdf](https://www.plannedparenthood.org/uploads/filer_public/44/d8/44d8ff08-cec7-489d-b538-a559465b0658/ppgt3718_how_to_give_yourself_a_hormone_injection_-_subcutaneous_subq.pdf)

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