Instruction for the patient

Your situation

- You are a 34-year-old woman, who delivered her first healthy baby weighing 4500 g by a difficult vacuum, 6 weeks ago
- You stopped breastfeeding, as you want to restart work as a nurse in the near future, including working irregular hours
- You are known to have bulimia with frequent weight changes, and before pregnancy you sometimes experienced breakthrough bleeding during pill use
- Now you want reliable contraception which you can apply yourself, with a regimen that you can adapt to your wishes
- In the near future, you and your partner are planning a second pregnancy

Instruction for the patient

Your questions for the doctor

1. What contraceptive methods would be appropriate for me, and how are they applied?
2. How do the methods work, and how do they differ from how the pill works?
3. Can I use the methods in my preferred regimen?
4. Do the methods interfere with intercourse?
5. Do any of the methods increase the risk of breakthrough bleeding or affect body weight?

Instruction for the doctor to question 1:

What contraceptive methods would be appropriate for me, and how are they applied?

- The vaginal ring or transdermal patch would be appropriate options, as they are non-oral, do not require daily attention, and you can apply them yourself
- Explain how the vaginal ring is applied and removed, and that the location in the vagina does not influence its effectiveness
- Explain where the patch can be applied and where not
- Advise on different sites of application for subsequent patches, and against the use of lotions and occlusive dressings
- Explain the risk of application site reactions
- Inform her that neither living in a warm, humid climate nor having a vigorous, athletic lifestyle increases the risk of patch detachment
- Inform her what to do in case of complete or partial patch detachment

Instruction for the doctor to question 2:

How do the methods work, and how do they differ from how the pill works?

- Give a description of both formulations and their content
- Explain that both methods have the same working mechanism as the pill, the same general contraindications, and the same effectiveness
- Describe the advantages of the non-oral application of both methods compared with the pill
- Explain the difference in systemic estrogen exposure between the ring, the patch and the pill

Instruction for the doctor to question 3:

Can I use the methods in my preferred regimen?

- Tell her that both methods can be started on cycle days 1–5
- Explain the different rules for extended use of the ring and patch
  - Extended use of the ring for 28–35 days does not require additional contraceptive protection
  - Patch users may change the second or third patch only within a 2 day period; after the 2 day period, users will need to use back-up contraception (or avoid sex) for 7 days and, in some instances, use emergency contraception
- Explain the different rules for omitting the hormone-free week
  - The ring can safely be changed every 3 weeks, omitting the hormone-free week for up to 1 year; this is effective and does not worsen troublesome side effects, except for unscheduled bleeding
  - Omitting the hormone-free week is not advised for the patch, given the increased risk of side effects such as headache, nausea and breast discomfort

Instruction for the doctor to question 4:

Do the methods interfere with intercourse?

- Explain that the ring might be troublesome during intercourse for her or her partner, and that she can remove the ring during intercourse and it will not affect efficacy if it is reinserted within a 3 h time interval
- Counsel her to check for the presence of the ring after coitus, a strong strenuous effort (e.g. at defaecation) or tampon removal
- Explain other device-related problems such as:
  - Foreign body sensation (4%)
  - Expulsions (6%), ring slippage (9%)
  - Vaginitis, vaginal wetness and vaginal discharge (17%), although these are not associated with a higher likelihood of bacterial vaginosis
- Examine her to find out if she has a painful perineal scar or a second- or third-degree pelvic organ prolapse, in which case the ring would probably not fit

Instruction for the doctor to question 5:

Do any of the methods increase the risk of breakthrough bleeding or affect body weight?

- Tell her that the bleeding pattern with the ring is equivalent or superior to that of the pill
- Explain that neither of these methods is associated with significant weight gain
- Warn her that the effectiveness of the patch is decreased in women weighing more than 90 kg, making the patch less acceptable for her
- Warn her that neither the ring nor the patch protect against STDs
- In conclusion, if the woman has no painful perineal scar and no pelvic organ prolapse, the vaginal ring would be the best option for her

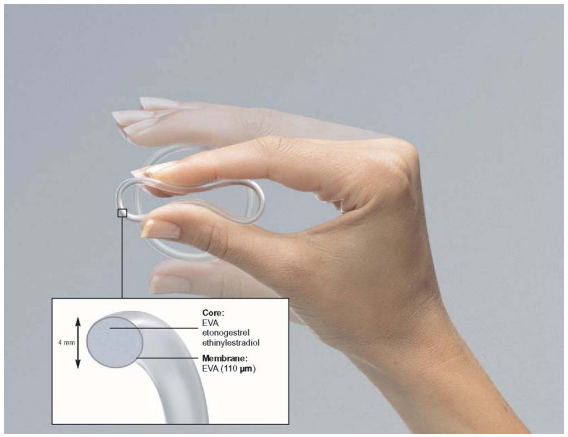
Regimen

Vaginal ring	Transdermal patch
• Start cycle days 1–5 • 3 weeks in, 1 week out • Omitting the hormone-free week is possible • Extended use: unscheduled bleeding	• Start cycle days 1–5 • Once a week for 3 weeks, 1 week out • Switch patch change day during patch-free week • Omitting hormone-free week is not advised • Extended use: headache, nausea, mastodynia, thrombosis

Description and formulation

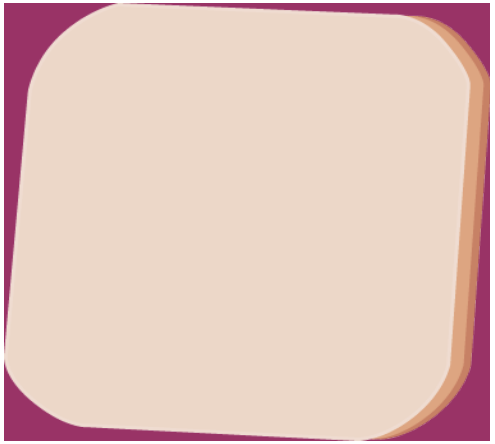
Vaginal ring

- Flexible, soft, latex-free ring, 54 mm in diameter, 4 mm in cross-section
- Contains 2.7 mg EE and 11.7 mg ENG



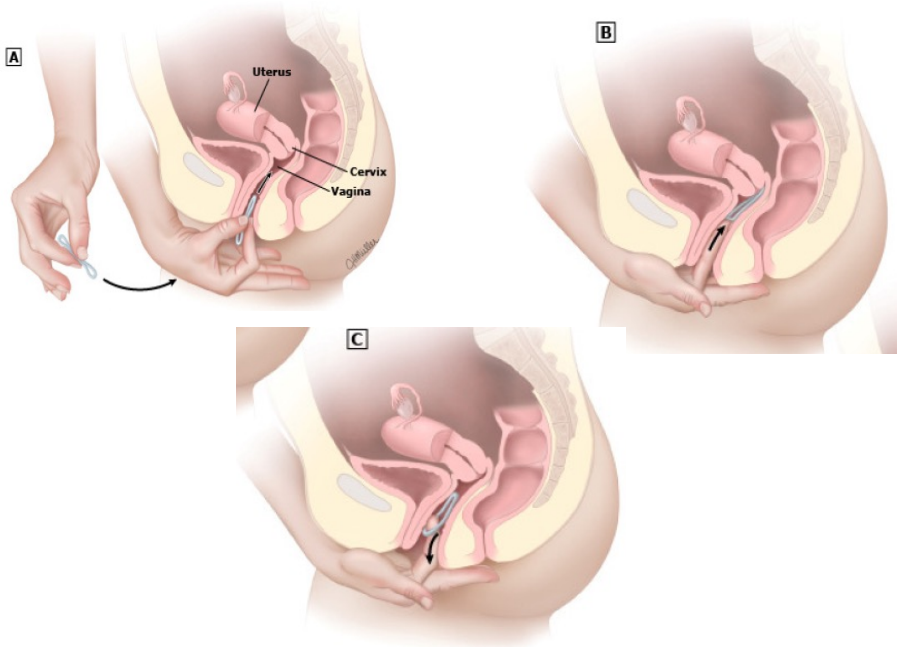
Transdermal patch

- Matrix system, 20 cm^2, three layers: outer, middle, inner
- Contains 0.60 mg EE and 6 mg NGMN (EU)



Application

Vaginal ring



After pressing the sides together, the ring is inserted into the vagina as high as possible. There it is located superior to the urogenital diaphragm, and surrounds the cervix, although the position of the ring does not affect contraceptive efficacy. The ring can easily be removed by hooking a finger in it

Transdermal patch

- Clean, dry, intact healthy skin
- Not on the breast
- Each time a different site
- No lotions or occlusive dressings

buttocks

upper outer arm

abdomen

upper torso
(front and back
except on your breasts)

Device-related problems

Vaginal ring

- Local vaginal symptoms
  - Vaginitis
  - Vaginal wetness
  - Vaginal discharge (17%)
  - No increased bacterial vaginosis
- Foreign body sensation (4%)
- Expulsions (6%), slippage (9%)
- Coital problems (13–16%, remove ring)

Transdermal patch

- Application site reactions
  - Skin reactions 14–20%
  - Treatment limiting 2.6%
- Replacement for
  - Complete detachment 1.8%
  - Partial detachment 2.9%

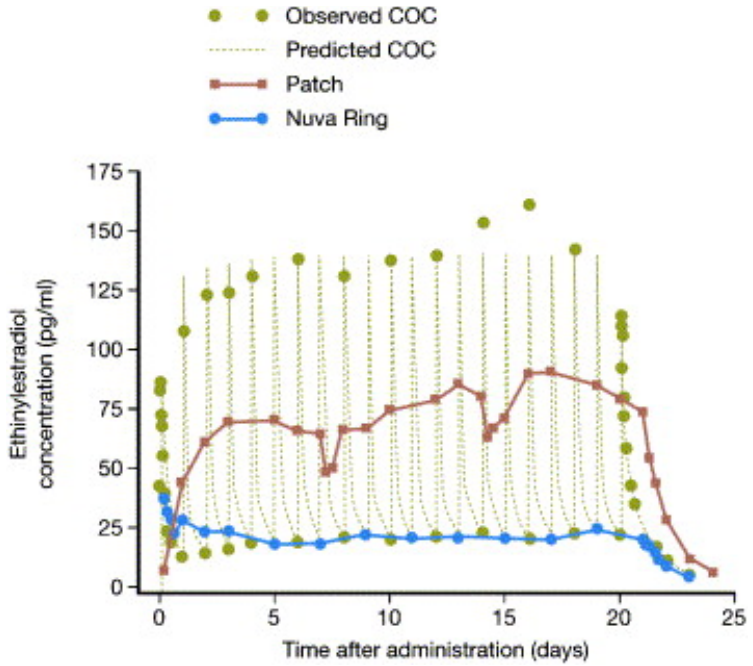
Advantages: ring and patch vs pill

- No enzymatic degradation in the gastrointestinal tract
- No hepatic first-pass metabolism
- No daily peak and troughs of plasma hormone levels
- No need for daily self-administration
- No daily user compliance
- No difficulty swallowing pills
- Immediate cessation of drug administration after removal

Pharmacokinetics

Vaginal ring

- Daily release of 15 µg EE and 120 µg ENG
- EE exposure is lower (patch ×3.4; 30 µg pill ×2.1)



Transdermal patch

- Daily release 20 µg EE and 150 µg NGMN
- Overall EE concentration ≈ 50 µg EE pill
- No influence of application sites

van den Heuvel MW et al. Comparison of ethinylestradiol pharmacokinetics in three hormonal contraceptive formulations: the vaginal ring, the transdermal patch and an oral contraceptive. Contraception 2005; 72: 168–74.

Similarities: ring, patch and pill

- Combined hormonal method
- Systemic working mechanism
- Medical eligibility criteria (WHO MEC)
- Postpartum use (breastfeeding and non-breastfeeding)
- Effectiveness
- Non-contraceptive benefits and risks
- General contraindications
- Metabolic effects
- Initiation, switching and back-up
- Return of ovulation
- Follow-up (blood pressure measurement is desirable)

Side effects compared with COCs

Vaginal ring	Transdermal patch
• Systemic side effects are generally similar • No differences in headache or weight gain • Breast tenderness, nausea and acne are *less* frequent	• Systemic side effects are generally similar • No differences in headache or weight gain • Breast tenderness (first two cycles), nausea, vomiting and dysmenorrhoea are *more* frequent • Less moodiness

Cycle control compared with 30 µg EE pill

Vaginal ring

- Equivalent or superior
  - Less frequent spotting and breakthrough bleeding
  - Prolonged or frequent bleeding less likely
  - Early or late withdrawal bleeding less likely
  - Improved cycle control after switching from pill or patch
  - Superior cycle control in women with dysfunctional uterine bleeding

Transdermal patch

- Equivalent or inferior
  - Unscheduled bleeding common in first two cycles
  - After two cycles, similar pattern of spotting and breakthrough bleeding
  - At 6 months, unscheduled bleeding declines and remains stable