Contraception for first-time users: a problem-orientated guide to product selection and safe prescription

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Introduction

The general practitioner (GP) is in a unique position in South Africa and elsewhere in the world when it comes to female and adolescent health. After establishing rapport, the GP can provide confidential advice, guidance and treatment with regard to a young patient's reproductive health. It is vital that the adolescent make an informed choice about her sexual activity and behaviour, her method of contraception and issues pertaining to her health in general. These discussions and counselling sessions should be informative but non-judgmental and non-threatening, as the main outcome is to prevent teenage pregnancy and its associated devastating repercussions on the adolescent, her family, the child born to such a young mother, and the public health sector.

Contraceptive choices today are numerous – especially in the category of hormonal contraception. New options with regard to delivery systems and new progestogens with novel side-effect profiles have expanded the choices for first-time users. It is possible to find a contraceptive to suit every patient's individual needs, with added benefits such as cycle control, relief of dysmenorrhoea, and treatment for acne. A thorough understanding of the patient's needs and circumstances (taking into account the first and third world setting in South Africa) is necessary. A holistic approach must be followed, and individualising each patient will aid in compliance and continuing medical input and care well into her reproductive years, until such time when she plans her first child and thereafter.[1]

Hormonal contraception

Combined (estrogen and progesterone) contraceptives

The combined oral contraceptive pill (COCP)

Product selection

Two synthetic estrogens are available in South Africa: mestranol and ethinyl estradiol (EE).[2] As 50ug of mestranol is metabolised to 35µg of EE, in theory there is only one active estrogen.[3] In practice today, low-dose EE containing COCPs (20µg-35 µg) have replaced COCPs with a content of 50µg EE or more.[3] The EE is used in combination with various progestogens (see Table I) in varying dosages.

The COCP is classified into three subgroups:[2]

- *Monophasic pill:* constant amounts of progesterone and estrogen throughout the cycle.
- *Biphasic pill:* estrogen dosage stable, but the last 10 active pills contain a higher dosage of progesterone.
- *Triphasic pill:* estrogen and progesterone levels are changed at two stages to imitate the normal menstrual cycle.

At first glance, it seems a daunting task to select a product. But it is possible to prescribe and find the exact pill to suit each individual patient at the lowest dose that will provide contraception, with the fewest side effects and added secondary benefits (see Table I).

The various progestogens can be profiled as follows:[3]

- ***Norethisterone (NET) –*** This is a low-potency progestogen, and fairly nonandrogenic. The effect

Table I: Non-contraceptive benefits of COCP use

- Reduction in menstrual disorders such as irregular cycles, menorrhagia (and resultant lower occurrence of iron deficiency anaemia), dysmenorrhoea and PMS[1,2]
- Reduction in occurrence of functional ovarian cysts and carcinoma[2,3]
- Reduction in occurrence of endometrial carcinoma [2,4]
- Reduction in occurrence of ectopic pregnancy [2,4]
- Some protection against pelvic inflammatory disease [3,4]
- Reduction in benign breast disease [4]
- Probable reduction in risk of rheumatoid arthritis [4]

Table II: Absolute contraindications to the use of the COCP[4]

	Absolute contraindications to the use of the COCP
	Pregnancy Undiagnosed genital tract bleeding
Risk factors for venous tromboembolism (VTE)	
Overweight	BMI >39
Family history of VTEs	No work-up done Known congenital or acquired trombophilia Systemic Lupus Erythematosus
Risk factors for arterial cardiovascular disease	
Cigarette smoking	> 40 per day
Migraine	Focal aura symptoms, severe or ergotamine treated
Hypertension	BP > 160/100 mmHg
Liver disease	Liver adenoma and carcinoma Cholelithiasis (COCPs can be resumed after cholecystectomy) Acute hepatic porphyrias
Estrogen-dependent tumour	Breast cancer

on the endometrium is suppressive and withdrawal bleeding is very light, sometimes even absent. In some woman it causes breast tenderness, bloating and nausea because of the relative oestrogenicity.

- ***Levonorgestrel (LNG) –*** A more potent progestogen and more androgenic (can cause acne and weight gain) than norethisterone. Cycle control is usually good.
- ***Desogestrel (DSG) –*** This progestogen is more oestrogenic and there is a slightly higher risk of trombo-embolism in users of pills containing this hormone.[4] There are, however, fewer androgenic side effects (irritability, weight gain and acne).
- ***Gestodene (GSD) –*** The same attributes as for DSG apply to this progestogen. It also has excellent cycle control.
- ***Cyproterone acetate –*** An antiandrogenic progestogen, this is an effective drug against acne and hirsutism, as well as an effective contraceptive.
- ***Norgestimate –*** A prodrug, which is rapidly absorbed and metabolised and converted to **norgesterol**.
- ***Drospirenone –*** Antiandrogenic and an analogue of spirinolactone, it has a mild diuretic effect, which is useful in patients who experienced fluid retention on other COCPs.[5] It provides safe prevention against pregnancy.

After a thorough history has been obtained from the patient to rule out absolute contraindications to the use of COCP (see Table II), a pregnancy test (if indicated) and a blood pressure measurement are vital before commencing with oral contraception.[6] A pelvic examination can be deferred to another visit.[7]

Guillebaud advises that, in young first users, a low-dose LNG or NET product should remain the usual first choice, because an unknown subgroup that is exposed to venous tromboembolism will be included.[4] It is useful to prescribe a three to four-month trial of a low-dose contraceptive and, if side effects persist, the combination of the COCP can be changed accordingly.[3]

Cycle control is a huge benefit in the adolescent, since anovulation due to immaturity is a common cause of irregular cycles. Good cycle control also means more predictable periods and less iron deficiency anaemia due to menorrhagia.

Causes of cycle abnormalities

It is vital to bear in mind that irregular cycles are a symptom and not a diagnosis, and other causes such as polycystic ovary syndrome (PCOS), eating disorders, female athlete syndrome, thyroid disease and stress must be ruled out.[8] PCOS is better diagnosed in adolescence than later in life, since guidance can be given at an early stage to weight management and other modifiable lifestyle issues such as stress and the risks of smoking.[8]

Extended cycling is currently of great interest to adolescents and GPs, since recent findings suggest that many adolescents would prefer to menstruate less frequently.[9] Extended cycling with COCPs (monophasic) decreases the frequency of the seven-day hormone-free interval. This method was historically used to treat **endometriosis**, **dysmenorrhoea and menorrhagia**, but can also be used to treat disorders prevalent in the pill-free interval, such as migraine,

Table III: COCPs available in SA

Brand name	*Type of estrogen*	*Dose (μg)*	*Type of progestogen*	*Dose (μg)**
Minesse®	EE	15	GSD	60
Mirelle®	EE	15	GSD	60
Melodene®	EE	20	GSD	75
Mercilon®	EE	20	DSG	150
Nordette®	EE	30	LNG	150
Femodene®	EE	30	GSD	75
Minulette®	EE	30	GSD	75
Marvelon®	EE	30	DSG	150
Yasmin®	EE	30	drospirinone	3.0 mg
Triphasil®	EE	30/40/30	LNG	50/75/125
Logynon®	EE	30/40/30	LNG	50/75/125
Tri-Minulet®	EE	30/40/30	GSD	50/70/100
Triodene ED®	EE	30/40/30	GSD	50/70/100
Brevinor®	EE	35	NET	0.5 mg
Dianne35® Ginette® Minerva®	EE	35	Ciproterone acetate	2 mg
Tricilest® Cilest®	EE	35	NGS	180/215/250 250
Trinovum®	EE	35	NET	0.5/0.75/1 mg
Biphasil®	EE	50	LNG	50/125
Ovral®	EE	50	NGS	500

*Unless otherwise stated
EE – Ethinyl Estradiol; LNG – levonorgestrel; DSG – desogestrel; NET – norethisterone; GSD – gestodene

irritable bowel syndrome and epilepsy.[9] It has also been found that shortening or eliminating the hormone-free interval may increase contraceptive efficacy due to greater ovarian suppression.[8] Currently there is no evidence that this method of cycle control is associated with increased risk due to more hormone exposure than during traditional cycling.

Breakthrough bleeding in a cycle is a common complaint in the GP office setting once a patient is on the COCP. It is useful to ask in which part of the cycle it occurs. If it occurs in the early part of the cycle, use a COCP with a higher oestrogen content. If breakthrough bleeding exists in the mid to late part of the cycle, a COCP with greater endometrial activity could be used, such as a product with a more potent progestogen, or a change could be made to a product with a lower oestrogen content.[2] A patient can be reassured that if no pills were missed or taken late, and no vomiting or drug interactions took place, breakthrough bleeding is not a measure of efficacy.[1]

Transdermal combined contraceptive system (Evra®)

This square adhesive patch, measuring 4.5 cm x 4.5 cm, is an exciting new delivery system. It is placed on the skin once a week for three continuous weeks. A continuous daily serum level of 20μg ethinyl estradiol and 150μg norelgestromin (the primary active metabolite of norgestimate) is delivered. This is followed by a week of non-use to allow a withdrawal bleed.[5] Clinical trials show that there is a greater incidence of perfect use than observed with oral contraceptives in all age groups and the efficacy and side effects are comparable with COCPs.[5] Another benefit in users such as adolescents is that the contraceptive efficacy is maintained even if patch replacement only occurs two days after the patch-free week.[5]

Side effects specific to the contraceptive patch include:[10]

1. Adhesive issues related to the delivery system, although detachment rates and skin sensitivity is reported by < 3% of users.
2. Increase in mild breast discomfort, but after the first two to three cycles, this symptom improves.
3. A potential decrease in efficacy in women weighing more than 90 kg.

Progestogen-only contraception

Injectable progesterone

Two types of injectable progesterone are available in South Africa:

Depot medroxyprogesterone acetate (DMPA Depo Provera®)

- A dosage of 150 mg DMPA is injected deep intramuscularly every 12 weeks. This method requires minimal effort on behalf of the user, and is a very effective contraceptive. It has a failure rate of 0 - 1 per 100 woman years.[4] It shares most of the non-contraceptive benefits of the COCP, including protection against pelvic infection and treatment of endometriosis, and can reduce the frequency of seizures in epilepsy.[4]

- Unwanted effects are irregular bleeding, amenorrhea (with continued use) and a delay of 10 months in the return of fertility after discontinuation of the method.[4] There is also a concern among young women that they may gain weight, but they can be advised that it may simply reflect the nor-mal increase in weight expected during the early reproductive years.[10]

- Much attention has been focused on the link between prolonged use of DMPA, a state of relative hypo-oestrogenicity and a resultant adverse effect on bone density. Current evidence does indicate a link, as bone density decreases with a longer duration of DMPA

use.[4] According to the limited data available, there is at least partial recovery of bone mineral density (BMD) after cessation of DMPA.[4] It is evident that more data and studies are needed. Several guidelines can be followed, such as the statement by the Faculty of Family Planning and Reproductive Health Care and the key points of the MHRA Updated Prescribing Advice:

1. In adolescents, DMPA may be used as first-line contraception, but only after other methods have been discussed with the patient and considered to be unsuitable and unacceptable.
2. In woman of all ages, careful evaluation of the risks and benefits of treatment should be carried out in those who wish to continue use for more than two years.
3. In woman with significant lifestyle and/or medical risk factors for osteoporosis, other methods should be considered.

Other lifestyle factors that impact on achieving optimal bone mass in the adolescent include an adequate intake of dietary calcium (>1300mg), physical activity, and the restriction of tobacco use. The clinician could target these factors to improve BMD, rather than stopping the method.[4]

Norethisterone enanthate (Nur-Isterate®)

- This injectable is given eight weekly at a dosage of 200 mg intramuscularly. It is a slightly more androgenic compound than the DMPA. When the method is discontinued, fertility returns within seven months.[2]

Progestogen-only pill (POP) (mini-pill)

Two types of POPs are available in SA (see Table IV). This method of contraception needs a meticulous pill taker (a trait teenagers are notoriously lacking), since every dosage must be taken daily within a three-hour period. The pill is taken continuously. If taking the pill is delayed for three hours, additional precautions or abstinence is needed for seven days.[4] The failure rate is higher than with the COCP.[3] A patient may experience irregular bleeding or amenorrhea. If the first-time user is post-partum and exclusively breastfeeding, this is an excellent choice for the first six months if the patient is amenorrhoeic.[4] It does not influence lactation and is safe in the thrombogenic weeks post partum in comparison to the COCP.

Table IV: Progestogen-only pills available in South Africa

Micro-Novum®	Norethisterone 35 µg
Microval®	Levonorgestrel 30 µg

Post-coital contraception

Post-coital contraception is also called emergency contraception. It is used to prevent unwanted pregnancy after unprotected sexual intercourse or failure of a barrier method. Three methods are available:[6]

- *Combined oral emergency contraceptive*
  Two tablets containing 50 µg of EE and 0.25 mg of LNG each are taken 12 hours apart (maximum of two doses). Benefit can be obtained up to 72 hours after intercourse. The large dose of oestrogen can cause nausea and vomiting, and it may be necessary to prescribe an anti-emetic such as domperidone 10 mg with each dose. According to a WHO study, overall efficacy is 97%.[4]
- *Progesterone-only emergency contraceptive*
  A maximum of two doses of one tablet of 0.75 mg levonorgestrel is taken, 12 hours apart. Benefit can be obtained up to 72 hours after intercourse. The main advantage of this method, according to a WHO trial, is that it is more effective than the COEC (99%), especially if treatment is begun within 24 hours of exposure.[3] There are also fewer side effects of nausea and vomiting.
- *Copper IUD*
  This option is not advised for nulliparous women, but according to a WHO study it has an efficacy of 99,9%.[4] It can be inserted up to five days after ovulation. The contra-indications would be as for any other IUD insertion.

The following are special prescriber's points regarding hormonal emergency contraception:[4]

- Every delay of 12 hours in treatment increases the failure by 50%. The patient should be counselled in this regard.
- If the patient is on an enzyme-inducer drug, the dose must be increased by 50%.
- If the dose is vomited within two hours of ingestion, the patient can take a further dose.
- Contraception in the current cycle and long term should be discussed.

Intrauterine Contraceptive Devices (IUCDs)

This method of contraception will be discussed briefly, as it is of benefit to a select group of the patient population. The two most widely used IUCDs are the copper-containing devices (i.e. Copper-T®) and the levonorgestrel intrauterine system (Mirena®). Nulliparity/young age and a lifestyle conducive to STD risk are relative contraindications to the use of IUCDs.[4] However, this is a very safe method of contraception with a failure rate of 0.6 - 0.8 pregnancies per 100 women in the first year of use of the copper-containing device and 0.1 for the levonorgestrel (LNG) intrauterine system.[6] For many teenagers, the initial pelvic examination and insertion are traumatic but, once in place, is an effective long-term method. Should side effects occur, the process is immediately reversible.[10] Before insertion, the patient must be carefully screened for STDs, since insertion in the presence of an STD poses an unacceptable health risk.[10] Ongoing advice and counselling regarding

Table V: Side effects and benefits of IUCDs

	Side effects	Benefits
LNG intra-uterine system	Breakthrough bleeding for the fist 3-6 months, then amenorrhoea	Dosing every 5 years, less menstrual blood loss, less dysmenorrhoea
Copper-containing device	Menorrhagia, dysmenorrhoea	Dosing every 10 years, non-hormonal form of contraception

Adapted from As-Sanie *et al.*, Pregnancy prevention in adolescents.[6]

STDs should be given, and teenagers with IUCDs should be urged to use condoms and abstain from high-risk sexual behaviour.[10] The side effects and benefits of IUCDs are listed in Table V.

Barrier methods

Male condom

The male condom remains the most widely used contraceptive method among teenagers and the most widely used mechanical contraceptive in the world today.[4] The condom has a failure rate of 2-15 per 100 woman years and it should be recommended that it be used in addition to another contraceptive.[4,6] Most condoms are made of latex. Imperfections of manufacture occur in about three out of every 1 000 condoms and failure of a condom can be attributed to this fact and primarily to errors of technique. Correct condom use should be promoted in adolescents to additionally reduce the risk of transmission of HIV and other STDs.[10] A huge benefit is that it is an inexpensive method and widely available.

Future options in contraceptives

Combination injectable (Lunelle®/Lunella®)

This product is being reviewed by the US Food and Drug Administration. It is a popular form of contraceptive in Central and South America.[5]

The injection contains 5 mg of estradiol cypionate and 25 mg of medroxyprogesterone acetate, and is given intramuscularly every 28 days.[5] The efficacy for pregnancy prevention and the side effect profile is comparable to the triphasic COCP.[5] The non-daily method of use improves compliance in the adolescent patient. There is also good cycle control. A predictable bleed occurs two to three weeks after the first injection. Return to fertility is quicker than with the progestogen-only injection.[7]

Vaginal ring (NuvaRing®)

This product may provide a suitable choice of contraception for adolescents in the future. The device is a flexible polymer ring placed into the vagina by the patient herself. It is kept in place for three weeks and removed for one week each month to allow a withdrawal bleed. The ring releases 15 ug of ethinyl estradiol and 120 ug of etonorgestrel (the active metabolite of desogestrel) daily.[5] The ring has a Pearl index of 0.65 per 100 woman years with perfect use.[6] It can be left *in situ* during intercourse and usually does not cause discomfort to either partner. It can be removed for brief intervals (< 3 h). Cycle control is excellent in ring users.[5]

Contraceptive implant: single rod implant (Implanon®)

The implant provides three years of continuous contraception by releasing steady hormone levels of etonorgestrel (the active metabolite of desogestrel) into the body.[5] The failure rate is 0-0.2% and it is thus an excellent contraceptive.[6] Follicular activity is not suppressed and oestrogen levels remain adequate for the maintenance of bone density.[3] The implant requires surgical insertion and removal. An unfortunate side effect is an increase in weight (up to 3.5% in BMI[7]) and irregular bleeding patterns.[5]

In conclusion

The contraceptive choices in this modern day are numerous. A teenager who has been well informed of all the contraceptive options available to her can be guided to choose the best method to suit her needs. Often one appointment is too short for all of the above to happen. An informative leaflet on contraceptive choices can be given to the patient to take home: thus two or more appointments may be needed for adequate councilling and the initiation of contraception. Long-term follow up of the patient is vital: each visit an opportunity to promote woman wellness and health for years to come.

Ⓟ This article has been peer reviewed

See CPD Questionnaire, page 50

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