

Safety and Efficacy of Progestin Only and Combination Oral Contraceptives

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Background

Between 2017-2019, 65.3% of women of reproductive age in the United States were taking some method of contraception, with 24.4% of those women using oral contraceptive pills (OCPs).¹ When deciding on what form of birth control pill it is important to understand the various complications and side effects that can occur when taking these medications. These side effects include breakthrough bleeding, nausea, headaches, abdominal cramping, breast tenderness, increased vaginal discharge or decreased libido. More serious side effects while taking oral contraceptives include impaired glucose metabolism, hypertension, venous thrombotic events (VTE), and increased risk of stroke and myocardial infarction.

Purpose:

All of these factors are important to take into account when choosing the right birth control for a patient. Medical providers knowledge of different birth control options and their side effect profiles is pertinent when prescribing these medications to patients. In addition, the counseling given to the patient in order to make an educated decision on what birth control method will work best for them is important for compliance and overall satisfaction of the patient. The purpose of this research is to compare the efficacy and safety of progestin only contraceptives and oral combination birth control pills.

PICOT

In women ages 15-49, how does progestin only birth control compare with combination birth control in efficacy of preventing pregnancy and the number of adverse events?

Design & Methods

Keywords: progestin-only contraceptive, combined oral contraceptives, acute venous thromboembolism, contraceptive efficacy, contraceptive education
 Inclusion: women, ages 15-49 with this cut-off being due to the average ages of menarche-menopause, taking progestin only birth control or oral combination birth control pills, studies within the past 5 years. studies were required to have full text available and published in English
 Exclusion: Studies greater than 5 years old were not included. Studies with populations outside the ages of 15-49 and not including POPs or COCs as the intervention were not included.

Summary of Evidence Search:

Database	Yielded	Reviewed	Included in Analysis
PubMed	32	10	2
Google Scholar	159	25	3
Total:	191	35	5

Abbreviation Key:

POP- progestin only pill
 COC- combination oral contraceptive
 DMPA- depot medroxyprogesterone acetate
 NETA- oral norethindrone acetate
 MPA- medroxyprogesterone acetate
 LNG-IUD- levonorgestrel intrauterine device
 VTE- venous thromboembolism

Synthesis of Evidence

After applying this criteria, 5 studies were chosen to be included in this review including one nested case-control studies, one systematic review and meta-analysis, and three literature reviews. The primary endpoints of interest is the efficacy in preventing pregnancy of POP and COCs; the secondary endpoint is the odds of incident acute VTE.

Results:

Table 1. Risk ratio of acute VTE of progestins when compared to levonorgestrel and Pearl index of progestin only contraceptives

Oral Progestin	VTE RR	Pearl Index
levonorgestrel	1 ²	
desogestrel	1.83 ²	2 ³
dienogest	1.46 ²	
norgestimate	1.14 ²	
drosperinone	1.58 ²	2 ³
All POPs		4-7 ⁴
DMPA		4-7 ⁴

Table 2. Odds Ratio of acute VTE of progestin only contraceptives when compared to non-use⁵

	VTE OR
NETA	3
DMPA	2.37
MPA	1.98
LNG-IUD	0.72*
Implant	1.09*
POP	1.07*

*not statistically significant

References:

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Best Practice

Discussion:

- ❖ It has been found that when comparing COCs to POPs, there is a similar range of pregnancies per year with typical use of the medication.
- ❖ Desogestrel and drospirenone were found to have less pregnancies per year with typical use than what previous research has shown.
- ❖ POPs tend to have more breakthrough bleeding and less cycle stability when compared with COCs.
- ❖ COCs, especially those containing drospirenone, improve acne due to its anti-androgenic effects.
- ❖ Desogestrel showed the highest risk of developing acute VTE, dienogest and drospirenone has similar risk, and levonorgestrel showed the least risk when compared to each other.
- ❖ When compared to women who do not use OCPs, NETA showed 3 times the risk of developing acute VTE, MPA and DMPA had 2 times the risk, and oral progesterone was statistically insignificant.
- ❖ Levonorgestrel has the least amount of risk of acute VTE, with norgestimate following, and then dienogest and drospirenone. Desogestrel has the greatest risk and should be avoided in women who have increased risk factors for VTE.

Limitations/Further study:

More research needs to be done on the risk of VTE while taking progestin-only contraceptives as more formulations are made available and approved in the US. Currently, there are more formulations of POPs that are approved in other countries. This study was limited to only formulations that are available currently in the US.

Dosage of progestin was not taken into account for all studies, and more research needs to be done on proper dosing and its associated risk of VTE. Additionally, minimal RCTs were available on the topic of risk of VTE in women taking POPs.

Additional limitations of this study includes lack of randomized-control trials, particularly that directly compared POPs to COCs. There were also various analytical and reference values between the studies reviewed making comparing data more difficult.

There was some risk for bias towards the primary findings in both studies due to studies being observational and relying on reports from participants. Because much of the pregnancy data is collected through surveys of women, it is likely that at least some pregnancies that occurred during the study period were terminated and not reported. This may lead directly to underreported contraceptive failure rates. Large surveys have adjusted their methodology to attempt to correct for this, but it is a limitation of relying on survey data.

Conclusion:

Providers should consider prescribing POPs to women considering starting oral birth control due to comparable effectiveness in preventing pregnancy and lower risk of acute VTE. Patients should be given the option when deciding on an OCP after being given the side effect profiles, efficacy and regimen if they do not have any contraindications. Additionally, education of both provider and patient on this topic is important due to high likelihood of encounter with OCPs. Education on POPs and compliance is increasingly important as there are current FDA approved POPs available OTC and as oral contraceptives become more available.