

# Progestin-only contraceptives: effects on weight

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# Abstract

**Background**—Progestin-only contraceptives (POCs) are appropriate for many women who cannot or should not take estrogen. Many POCs are long-acting, cost-effective methods of preventing pregnancy. However, concern about weight gain can deter the initiation of contraceptives and cause early discontinuation among users.

**Objectives**—The primary objective was to evaluate the association between progestin-only contraceptive use and changes in body weight.

**Search methods**—Through May 2013, we searched MEDLINE, CENTRAL, POPLINE, LILACS, ClinicalTrials.gov, and ICTRP. The 2010 search also included EMBASE. For the initial review, we contacted investigators to identify other trials.

**Selection criteria**—All comparative studies were eligible that examined a POC versus another contraceptive method or no contraceptive. The primary outcome was mean change in body weight or mean change in body composition. We also considered the dichotomous outcome of loss or gain of a specified amount of weight.

**Data collection and analysis**—Two authors extracted the data. We computed the mean difference (MD) with 95% confidence interval (CI) for continuous variables. For dichotomous outcomes, the Mantel-Haenszel odds ratio (OR) with 95% CI was calculated.

**Main results**—We found 16 studies; one examined progestin-only pills, one studied the levonorgestrel-releasing intrauterine system (LNG-IUS), four examined an implant, and 10 focused on depot medroxyprogesterone acetate (DMPA). Outcomes examined were changes in body weight only (14 studies), changes in both body weight and body composition (1 study), and

#### **Contributions of authors**

#### Declarations of interest

The authors do not have any conflicts of interest to declare regarding this review.

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For the initial review, L Lopez reviewed the search results, extracted and entered the data, and drafted the review. For the 2013 update, C Otterness reviewed the search results, did the primary data extraction and entering, and incorporated the new study. L Lopez did the second data extraction and updated the text in 2013. A Edelman and F Helmerhorst helped with the second data extraction for the initial review. M Chen provided guidance on study design, data analysis, and interpretation of results for the initial review and the 2013 update. All authors reviewed and commented on the document.

changes in body composition only (1 study). We did not conduct meta-analysis due to the various contraceptive methods and weight change measures.

Comparison groups did not differ significantly for weight change in 12 studies. However, three studies showed weight change differences for POC users compared to women not using a hormonal method. In one study, weight gain (kg) was greater for the DMPA group than the group using a non-hormonal IUD in years one through three [(MD 2.28; 95% CI 1.79 to 2.77), (MD 2.71, 95% CI 2.12 to 3.30), and (MD 3.17; 95% CI 2.51 to 3.83), respectively]. The differences were notable within the normal weight and overweight subgroups. Two implant studies also showed differences in weight change. The implant group (six-capsule) had greater weight gain (kg) compared to the group using a non-hormonal IUD in both studies [(MD 0.47 (95% CI 0.29 to 0.65); (MD 1.10; 95% CI 0.36 to 1.84)]. In one of those studies, the implant group also had greater weight gain than a group using a barrier method or no contraceptive (MD 0.74; 95% CI 0.52 to 0.96).

The two studies that assessed body composition change showed differences between POC users and women not using a hormonal method. Adolescents using DMPA had a greater increase in body fat (%) compared to a group not using a hormonal method (MD 11.00; 95% CI 2.64 to 19.36). The DMPA group also had a greater decrease in lean body mass (%) (MD –4.00; 95% CI –6.93 to –1.07). The other study reported differences between an LNG-IUS group and a non-hormonal IUD group in percent change in body fat mass (2.5% versus –1.3%, respectively; reported P value = 0.029) and percent change in lean body mass (–1.4% versus 1.0%, respectively; reported P value = 0.027).

**Authors' conclusions**—The overall quality of evidence was moderate to low, given that the studies were evenly divided across the evidence quality groups (high, moderate, low, or very low quality). We found limited evidence of weight gain when using POCs. Mean gain was less than 2 kg for most studies up to 12 months. Weight change for the POC group generally did not differ significantly from that of the comparison group using another contraceptive. Two studies that assessed body composition showed that POC users had greater increases in body fat and decreases in lean body mass compared to users of non-hormonal methods. Appropriate counseling about typical weight gain may help reduce discontinuation of contraceptives due to perceptions of weight gain.

## Plain language summary

#### Effects of progestin-only birth control on weight

Progestin-only contraceptives (POCs) can be used by women who cannot or should not take the hormone estrogen. Many POCs are long acting, cost less than some other methods, and work well to prevent pregnancy. Some people worry that weight gain is a side effect of these birth control methods. Concern about weight gain can keep women from using these methods, or cause women to stop using them early, which can lead to unplanned pregnancy. We looked at studies of POCs and changes in body weight.

Through May 2013, we did computer searches for studies of progestin-only birth control compared to another birth control method or no contraceptive. We also wrote to researchers to find other trials. The focus was on change in body weight.

We found 16 studies. Three showed differences in weight gain change for POC users compared to women who did not use hormonal birth control. In one study, the group using the injectable 'depo' gained more weight by one, two, and three years compared to a group using a non-hormonal IUD. The difference was noted among the normal weight and overweight women. Two studies showed an implant group (six-capsule) had more weight

gain than the group using a non-hormonal IUD. In one study, the implant group also gained more weight than a group using a barrier method or no birth control.

Two studies showed differences in body mass change. In one, the depo group had a greater increase in body fat than a group with no hormonal birth control. The depo group also had a greater decrease in lean body mass than the no-hormonal group. The other study reported differences between users of the levonorgestrel intrauterine system (LNG-IUS) and those who used a non-hormonal IUD. The LNG-IUS group had an increase in body fat mass and a decrease in lean body mass

We found little evidence of weight gain when using POCs. Mean weight gain was less than 2 kg for most studies up to 12 months. The groups using other birth control methods had about the same weight gain. The two studies of body mass showed POC users had greater increases in body fat and decreases in lean mass than users of non-hormonal methods. Good counseling about typical weight gain may help women avoid stopping birth control early due to worries about weight gain.

# Background

## Description of the condition

Weight gain is often considered a side effect of using hormonal contraceptives (Bartz 2011; Raymond 2011). This perception may be based on self-report of side effects rather than actual weight changes (Paul 1997; Berenson 2008). A Cochrane review revealed no clear evidence of weight gain with the use of combined hormonal contraceptives (Gallo 2011). Many clinicians and women also believe that progestin-only contraceptives cause weight gain (FWHC 2010; WebMD 2010).

Concern about weight gain can deter the initiation of contraceptives and cause early discontinuation among users. In a United States (US) study of bone mineral density, weight gain was reported more often by women using depot medroxyprogesterone acetate (DMPA) than those using a low-dose oral contraceptive (Berenson 2008). A national study in New Zealand found that weight gain was the most common side effect reported with DMPA use after menstrual disturbances (Paul 1997). In the US, weight gain has been reported to be a major reason for discontinuing DMPA use (Bonny 2004). Some evidence suggests that DMPA is a concern for adolescents who are already obese (Curtis 2009). Levonorgestrel implants have also been implicated for weight gain (Sivin 2003). The gain may be greater among women in the US than among those in China, and may be partly attributable to differences in dietary habits. In US studies, half of all implant discontinuations were attributed to the side effects of headache, weight, and mood changes (Sivin 2003).

#### **Description of the intervention**

Progestin-only contraceptives (POCs) do not contain estrogen, unlike combined hormonal contraceptives that have both progestin and estrogen. Therefore, POCs are appropriate for women who cannot or should not take estrogen (ACOG 2006). The World Health Organization classes POCs as category 1 for women who are obese (body mass index  $\geq$  30 kg/m<sup>2</sup>). Category 1 is a condition with no restriction for use of the contraceptive method. For obese adolescents, DMPA is category 2 due to possible effects on bone mineral density (WHO 2010). For category 2, method advantages generally outweigh the theoretical or proven risks. POCs are also category 1 for breastfeeding women who are at least six weeks postpartum (WHO 2010), while combined hormonal contraceptives are category 3 for such women.

Oral contraceptives are the most commonly used reversible method in more developed areas of the world at 18% (UN 2011), and include combined oral contraceptives (COCs) as well as progestin-only pills (POPs) (Grimes 2010). The introduction of a new progestin-only oral contraceptive in Europe (Faculty of Family Planning 2003) led to renewed interest in this class of oral contraceptives. Use of intrauterine devices (IUDs) leads in less developed areas at 15%, but hormonal IUDs are not widely used. Next in usage are oral contraceptives (7%), injectables (4%) and implants (0.4%) (UN 2011). Some injectable contraceptives are combined, i.e., contain estrogen and progestin, while others like DMPA are progestin-only.

Injectables, implants, and the hormonal intrauterine system (IUS) are long-acting, thus freeing women from daily action to prevent unintended pregnancy. Long-acting methods are among the most cost-effective contraceptives in many areas. Studies of long-acting contraceptives are often of longer duration than those for combined oral contraceptives (COCs), making study of weight change over time more feasible.

#### How the intervention might work

In general, weight gain is due to an increase in one or more factors: fluid retention, muscle mass, and fat deposition. An early mechanistic study of DMPA and weight gain found no significant changes in fluid compartmental size, creatinine excretion rate, or nitrogen metabolism (Amatayakul 1980). The researchers reported an association between skinfold thickness and weight gain, indicating the gain was related to increased body fat. A study of risk factors for weight gain among adolescent DMPA users showed that appetite decreased while on DMPA (Bonny 2004). However, a brief randomized controlled trial (RCT) of DMPA versus placebo examined energy intake and expenditure as well as weight gain (Pelkman 2001). Meals were provided along with a range of snacks. Menstrual phase (pretreatment) was associated with differences in energy intake and expenditure, but DMPA did not affect intake, expenditure, or weight gain.

The possible causal association between contraceptives and weight gain is difficult to study. During adolescence, some weight gain is developmentally normal and appropriate. Also, people tend to gain weight over time (Flegal 2000). No consensus exists regarding what is excessive weight gain. Ideally, studies would define a clinically important weight gain a priori, but weight change is rarely a primary outcome in contraceptive studies.

Examining contraceptive use and weight gain can be complicated by the initial weight of the users. We know little about how overweight women metabolize hormonal contraceptives, since many studies exclude overweight women (Edelman 2009; Lopez 2012). Further, concern about contraceptive effectiveness among overweight women (Grimes 2005; Trussell 2009) may lead to different usage by women of greater body weight. Some contraceptive methods that require a medical procedure have been associated with body weight. Among obese women in a US survey of contraceptive use (Schraudenbach 2009), tubal ligation was similar to pill use at nearly 26%. Among groups with lower body mass index (BMI), the figures were 13.5% and 19.5%, respectively. Implant use was relatively low overall, but higher among overweight (0.9%) and obese women (1.2%) than among normal or underweight women (0.4%). IUD use ranged from 4.1% to 4.6% across the BMI groups. In contrast, within an RCT focused on postpartum weight reduction, women with a BMI of 35 or higher were less likely to use 'effective' contraceptive than those with a BMI less than 30 (Chin 2009). Effective contraception referred to hormonal methods, IUDs, or sterilization.

#### Why it is important to do this review

Currently no comprehensive systematic review exists on progestin-only contraceptives and weight change. Concern about weight gain might deter women from using these effective

contraceptives and health care providers from recommending them. We are not examining effectiveness nor focusing on overweight women. Many reviews have examined effectiveness of specific progestin-only contraceptives, such as progestin-only pills (Grimes 2010) and IUDs (Grimes 2007). Further, a Cochrane review examined effectiveness of hormonal contraceptives for overweight women versus women who were not overweight (Lopez 2013).

Progestin-only contraceptives are an attractive option for many women. The cost can be less than that of COCs in some areas, and many postpartum women can use them. Further, POCs are appropriate for many obese women, an important factor given the worldwide epidemic of obesity (Ogden 2007; Prentice 2006; Flegal 2012).

## Objectives

The primary objective was to evaluate the potential association between progestin-only contraceptive use and changes in body weight.

# Methods

#### Criteria for considering studies for this review

**Types of studies**—We included studies that examined progestin-only contraceptives used for contraception and their associations with weight change. Reports had to contain information on the specific contraceptive method(s) examined. We searched for studies with comparative data on a progestin-only contraceptive versus another contraceptive (differing in formulation, dose, or regimen) or no contraceptive. This includes comparisons of a progestin-only contraceptive with a combination contraceptive as well as comparisons of two different types of progestin-only contraceptives.

We eliminated studies focused on women with specific health problems, such as diabetes or HIV. We also excluded studies of contraceptives as treatment for specific disorders, e.g., acne, hirsutism, or polycystic ovary syndrome.

**Types of participants**—Participants were the women in the studies who used the progestin-only contraceptive for contraception or who had the comparison intervention or placebo.

**Types of interventions**—Any progestin-only contraceptive could have been examined, such as an oral contraceptive, an injectable, an implant, or the hormonal intrauterine system (IUS). Treatment duration must have been at least three cycles.

Progestin method of interest must have been specified and not combined in a group with another method, e.g., a group that used either DMPA or norethisterone enanthate (NET-EN). The comparison could have been another progestin-only contraceptive or a group of contraceptives, such as COCs. We did not include comparison groups identified only as OC users, since the oral contraceptives could have been progestin-only pills or combined oral contraceptives.

**Types of outcome measures**—The primary outcome was the continuous outcome of mean change in body weight, BMI, or body composition (e.g., percent body fat) over time with the use of progestin-only contraceptives. If mean change in body weight or BMI was not available per study arm, we examined the dichotomous outcome of loss or gain of a specified amount of weight in each study arm. Measured weight was used (not self-reported weight).

We excluded studies that did not report change data but only reported mean weight or BMI at pre- and post-treatment.

#### Search methods for identification of studies

**Electronic searches**—Through May 2013, we searched MEDLINE, Cochrane Central Register of Controlled Trials (CENTRAL), POPLINE, and LILACS. We also searched for trials via ClinicalTrials.gov and the search portal of the International Clinical Trials Registry Platform (ICTRP). The 2013 search strategies are shown in Appendix 1. The 2010 search also included EMBASE; strategies can be found in Appendix 2.

**Searching other resources**—We examined reference lists of relevant articles and contacted investigators in the field to seek additional unpublished trials or published trials.

#### Data collection and analysis

**Selection of studies**—We assessed for inclusion all titles and abstracts identified during the literature searches. One author reviewed the search results and identified reports for inclusion or exclusion. A second author also examined the reports identified for appropriate categorization according to the criteria above.

All comparative study designs were considered. For example, studies could have been randomized controlled trials (RCTs), other prospective studies (provided intervention; assignment not random), observational studies of existing contraceptive users, case-control studies, or retrospective chart reviews. Post hoc analysis from any of these types of studies was also considered. However, the studies had to meet the other Criteria for considering studies for this review.

**Data extraction and management**—One author abstracted the data and entered the information into RevMan. Another author conducted a second data abstraction and verified correct data entry. Any discrepancies were resolved by discussion or with a third author if necessary.

**Assessment of risk of bias in included studies**—The randomized controlled trials were examined for methodological quality, according to recommended principles (Higgins 2011). Methodology considered included randomization method, allocation concealment, blinding, and losses to follow up and early discontinuation. Adequate methods for allocation concealment include a centralized telephone system and the use of sequentially-numbered, opaque, sealed envelopes (Schulz 2002). In addition, high losses to follow up threaten validity (Strauss 2005).

To assess the non-randomized data, we used the principles outlined in section 13.5 of Higgins 2011 as well as the STROBE statement for reports of observational studies (Von Elm 2007). We assessed whether the analysis included adjustment for potential confounding related to weight change. The study groups could differ in ways related to the outcome, such as initial weight or BMI or previous use of hormonal contraceptives.

For all studies, limitations in design were presented in Risk of bias in included studies and were considered when interpreting the results.

**Measures of treatment effect**—Outcomes listed in Characteristics of included studies are focused on those relevant to this review. For weight gain measure with follow up of less than one year, we selected the last date. If multiple time points were reported up to one year,

we used the midpoint and the one-year data. If data were available for more than three years, we used one-year data as well as the midpoint and the last measure.

We examined results by the contraceptive method studied, e.g., injectable or implant, as well as by formulation, dose, or regimen as appropriate. The main comparisons for this review were between users of progestin-only contraceptives and users of another contraceptive (differing in formulation, dose, or regimen) or no hormonal contraceptive.

With nonrandomized studies, researchers need to control for confounding factors. We considered adjusted measures and the results of matched analysis from paired samples. Investigators may have used a variety of adjustment strategies. We specified whether confounding was considered in the design (e.g., matching, stratification). We provide the confounding factors considered in the design and analysis when presenting results. Where available, results of adjusted or matched analysis are presented as reported by the researchers. For unadjusted continuous outcomes, the mean difference was computed with 95% confidence interval (CI) using a fixed-effect model. RevMan uses the inverse variance approach (Higgins 2011). Continuous measures include mean change in weight, BMI, and percentage body fat. For dichotomous outcomes, the Mantel-Haenszel odds ratio (OR) with 95% CI was calculated using a fixed-effect model. An example is the proportion of women who gained a specified amount of weight. Fixed and random effects give the same result if no heterogeneity exists, as when a comparison includes only one study.

**Dealing with missing data**—We excluded studies with insufficient data on weight or BMI for analysis in this review. Reports sometimes provided results in figures without specific numbers; others presented means without any variance estimate. Many studies were more than 10 years old, making it difficult to obtain additional data from the researchers.

**Assessment of heterogeneity**—We expected study populations, designs, and interventions to be heterogeneous. We described the clinical and methodological diversity (or heterogeneity) of the studies. We did not pool data from studies that had different contraceptive methods (e.g., DMPA or implants), different doses of the same method, or different criteria for reporting weight change. Therefore, we were not able to conduct metaanalysis due to the range of contraceptive methods examined and different reporting for weight change. Heterogeneity is not an issue when a comparison has a single study.

**Data synthesis**—Data were not available to examine weight change in relation to age. A certain amount of weight gain is part of normal development for adolescents. Studies that targeted adolescents are identified. Studies that included both adolescents and adult women did not provide outcome data for age subgroups.

When data were available, we also examined weight change in relation to initial body weight or body mass index (BMI) [weight (kg) / height (m)<sup>2</sup>]. Weight change may differ for women who were initially overweight or obese versus those who were not overweight or obese. We preferred BMI over weight alone, as a higher BMI generally reflects more body fat (CDC 2012). However, the measures and cutoffs depended on those used in the included studies. Frequently used BMI categories are 25 to 29.9 (kg/m<sup>2</sup>) for overweight and 30 or higher for obesity (CDC 2012). We also considered studies that used older US cutoffs derived from the National Health and Nutrition Examination Survey II (NHANES II) conducted from 1976 to 1980 (Najjar 1987). From NHANES II, the BMI cutoffs for women are 27.3 for overweight and 32 for obesity.

After conducting the review, we assessed the quality of evidence using the GRADE approach (Higgins 2011). Grades could be high, moderate, low, or very low. The initial

grade was based on study design: RCTs were considered to provide high quality evidence; prospective non-randomized studies, moderate quality; and retrospective studies, low quality. The initial rating was downgraded a level for each of the following: a) losses to follow up of 25% or more and b) inappropriate exclusions after randomization.

**Sensitivity analysis**—We conducted sensitivity analysis by removing the retrospective studies, i.e., chart reviews. The remaining prospective studies included RCTs, other prospective designs, and post hoc analysis of data from prospective studies. Further, we examined results after removing studies that had losses or discontinuations totaling 25% or more of the sample.

# Main results

#### **Description of studies**

**Results of the search**—The 2013 search produced 189 citations: 123 references from the database searches, 63 trials from searches of the clinical trials sites, and 3 from other sources. One new study was included (Dal'Ava 2012). After reviewing the full text, we excluded five studies (Bahamondes 2010; Chen 2011; Costa 2012; Kaunitz 2009; Segall-Gutierrez 2012) and two secondary articles from previously excluded studies (Berenson 2009; Bonny 2006). The remaining references were discarded after reviewing the titles and abstracts. From the clinical trials sites, three new trials were added to Ongoing studies.

**Included studies**—Sixteen studies met our inclusion criteria. Ten prospective studies included five RCTs (WHO 1983; Salem 1988; Ball 1991; Sivin 1998; Westhoff 2007) and five with other prospective designs (Tankeyoon 1976; Castle 1978; Salem 1984; Bonny 2009; Dal'Ava 2012). Six studies used retrospective data (Moore 1995; Taneepanichskul 1998; Espey 2000; Sule 2005; Tuchman 2005; Pantoja 2010).

The progestin-only contraceptives examined were as follows:

- Oral contraceptives (OCs) containing norethisterone 350 μg or levonorgestrel 30 μg
- Injectable: depot medroxyprogesterone acetate (DMPA) 150 mg/mL or 450 mg/mL (intramuscular) or 104 mg/0.65mL (subcutaneous)
- Injectable: norethisterone enanthate (NET-EN) 200 mg
- Implants (levonorgestrel): 6 capsules; 2 rods
- Levonorgestrel-releasing intrauterine system (LNG-IUS)

Comparison groups included no hormonal method or a non-hormonal contraceptive, a different regimen of the same progestin-only contraceptive, another progestin-only contraceptive, and a contraceptive or supplement containing estrogen.

Studies were conducted in the USA, South America, Europe, Africa, and Asia; some were conducted on multiple continents. Duration of prospective follow up or retrospective data collection was six months to two years for 11 studies, while 5 studies lasted three years or more.

Three studies focused on adolescents and young women. Bonny 2009 analyzed data from a larger study of hormonal contraceptives and bone mineral density. Moore 1995 and Tuchman 2005 were retrospective chart reviews.

#### Risk of bias in included studies

Three of the five RCTs did not have any information on randomization method or allocation concealment (WHO 1983; Ball 1991; Westhoff 2007). The other two RCTs reported the method of randomization and allocation concealment (Salem 1988; Sivin 1998). Two RCTs had information on blinding. Ball 1991 was reportedly "single-blind." For the trials used in Westhoff 2007, the evaluators were blinded.

**Incomplete outcome data (attrition bias)**—Of 16 studies, 5 had losses of 25% or more in at least one group. Three were prospective studies (RCTs or non-randomized). For Tankeyoon 1976, the COC group was reduced by 25%. In Castle 1978, losses to follow up were 39% (DMPA 150) versus 23% (DMPA 450). Westhoff 2007 had study discontinuation rates of 75% (DMPA-SC 104) and 79% (DMPA-IM 150). The retrospective studies generally had complete outcome data due to the inclusion criteria for cases. However, two of the six were missing substantial data from the later years. For Espey 2000 at two years, weight measures were not available for 70% of interval group and 49% of the postpartum group. In Sule 2005, the sample was reduced to 54% at three years.

**Selective reporting (reporting bias)**—After randomization, Taneepanichskul 1998 excluded women who developed a chronic disease or disorder during method use. This may have biased the results. Weight gain is associated with development of some diseases and disorders.

**Other potential sources of bias**—Potential confounding was addressed in four nonrandomized studies. Two studies considered confounding in the design (Pantoja 2010; Dal'Ava 2012). Both matched on age and baseline BMI. Two other studies conducted analysis that adjusted for potential confounders (Moore 1995; Bonny 2009). However, at least one of the comparison groups did not meet our inclusion criteria in these analyses. Therefore, we did not include the results of those analyses in this review. Details are in Characteristics of included studies.

### Effects of interventions

Results are grouped according to four types of progestin-only contraceptives studied. One trial examined progestin-only pills, 10 studies addressed DMPA, one investigated the LNG-IUS and four examined Norplant (one of which also included DMPA). We have subdivided the sections into studies comparing POCs with combination contraceptives, with no hormonal contraceptive, and with other POCs.

**Progestin-only oral contraceptives**—In the RCT of Ball 1991, weight change at six months was similar for the norethisterone  $350 \ \mu g$  and the levonorgestrel  $30 \ \mu g$  groups. Mean changes were small.

#### Depot medroxyprogesterone acetate

**POC versus a combination contraceptive:** Depot medroxyprogesterone acetate 150 mg/ mL (DMPA) was compared to a contraceptive or supplement that also contained estrogen in three studies. Bonny 2009 compared mean percentage changes in total body fat and lean body mass at six months for DMPA 150 plus placebo injection versus DMPA plus estradiol cypionate 5 mg ( $E_2C$ ). The study targeted adolescents, ages 12 to 18 years. The DMPA group was not significantly different from the DMPA plus  $E_2C$  group for mean change in total body fat (%) and in lean body mass (%). However, when compared to a group using no hormonal method, the DMPA group had a greater change in total body fat (%) (MD 11.00; 95% CI 2.64 to 19.36) (Analysis 3.1) and a greater change in lean body mass (%) (MD

-4.00; 95% CI -6.93 to -1.07) (Analysis 3.2). The retrospective study of Tuchman 2005 focused on adolescents and young women, ages 12 to 21 years. At 6 and 12 months, the DMPA group was similar to the group using medroxyprogesterone acetate (MPA) plus E<sub>2</sub>C and to the COC users for mean weight change and mean percentage weight change (Tuchman 2005). In the small study of Tankeyoon 1976, the DMPA and COC groups were not significantly different in the proportions that gained at least 1 kg by months 6 and 12.

**POC versus another POC:** DMPA 150 mg/mL was compared with other DMPA formulations or regimens in three studies. In Castle 1978, the mean changes in weight at six months were small and similar for the DMPA 150 and DMPA 450 groups. The retrospective study of Espey 2000 did not show a significant difference in weight gain at one or two years for those who initiated DMPA at 20 weeks or more after pregnancy (interval group) versus initiation at 5 to 8 weeks after pregnancy (postpartum group). In the RCT analyzed in Westhoff 2007, weight change was comparable for the DMPA 150 group and the group with subcutaneous DMPA 104.

Two studies examined DMPA 150 mg/mL versus NET-EN 200 mg. In WHO 1983, mean weight changes at 12 and 24 months did not differ significantly for the DMPA group versus the group administered NET-EN at 60-day intervals. Weight change was also similar for two NET-EN regimens of 60 day-intervals versus 84-day intervals. For the RCT of Salem 1988, the units for weight were not reported (lbs or kg). However, mean changes in weight at one year were similar for the DMPA and the NET-EN groups.

**POC versus no hormonal contraceptive:** DMPA 150 mg/mL was compared to a nonhormonal IUD in two retrospective studies. Taneepanichskul 1998 did not show a difference between the DMPA and IUD groups at 120 months. For Pantoja 2010, mean weight gain (kg) was greater for the DMPA group versus the IUD group at one, two, and three years: mean difference 2.28 (Analysis 11.2), 2.71 (Analysis 11.3), and 3.17 (Analysis 11.4), respectively. For each year, the difference between contraceptive groups was notable within the normal to lower weight group (BMI < 25) and within the overweight group (BMI 25 to 29.9), but not within the obese group (BMI >= 30).

**Levonorgestrel-releasing intrauterine system (LNG-IUS)**—In Dal'Ava 2012, the LNG-IUS was compared to a non-hormonal IUD with the Wilcoxon paired test (Analysis 17.1). At 12 months, the LNG-IUS group reportedly differed in the percent change in body fat mass compared to the non-hormonal IUD group (2.5% versus -1.3%, respectively; reported P value = 0.029). The LNG-IUS group also reportedly differed from the non-hormonal IUD users in percent change in lean body mass (-1.4% versus 1.0\%, respectively; reported P value = 0.027). However, these groups reportedly differ significantly for changes in weight or the central-peripheral fat ratio.

**Implants**—An implant with six capsules (Norplant) was compared to other hormonal contraceptives and to no hormonal contraceptive use. For the retrospective study of Sule 2005, the Norplant group had a significantly greater weight increase (kg) than the non-hormonal IUD group at one year (mean difference 1.10; 95% CI 0.36 to 1.84) (Analysis 13.2), but not at three years. The Norplant group was not significantly in weight change from that of the COC group. The retrospective study of Moore 1995 targeted adolescents and young women, ages 15 to 30 years. The Norplant and DMPA groups were not significantly different in mean weight change at one year. Salem 1984 showed a greater weight change (kg) at six months for the Norplant group versus the non-hormonal IUD group (MD 0.47; 95% CI 0.29 to 0.65) (Analysis 13.1). The Norplant group also had a greater weight change (kg) than the group that used barrier, 'local', or no contraceptive method (mean difference 0.74; 95% CI 0.52 to 0.96) (Analysis 14.1). In the RCT of Sivin

1998, mean weight change was not significantly different for the Norplant group versus the two-rod implant group at one, three, and five years.

# Discussion

#### Sensitivity analysis

Study results were summarized in Table 1. For the planned sensitivity analysis, we removed retrospective studies as well as studies with high losses to follow up or to method discontinuation (i.e., 25% or greater) (Table 2). Three studies showed differences in weight gain or body composition between the progestin-only group and a comparison group; two studies lasted six months and one was 12 months. Bonny 2009 was a small study of adolescents from a larger trial. The DMPA group had a greater increase in body fat percentage, and a greater decrease in lean body mass, compared to the group using no hormonal contraceptive. Within Dal'Ava 2012, participants using the LNG-IUS reportedly had an increase in fat mass and decrease in lean mass compared to the non-hormonal IUD users. However, the groups did not differ significantly for weight change. In Salem 1984, implant users showed a greater weight gain than the IUD users and the group that used barrier, 'local', or no contraceptive method.

#### Summary of main results

We were not able to conduct meta-analysis due to the range of contraceptive methods examined and different reporting for weight change. Five of the 16 studies showed or reported significant differences between groups in weight change or body composition change (Salem 1984; Sule 2005; Bonny 2009; Pantoja 2010; Dal'Ava 2012). Two of the five studies examined DMPA, two focused on Norplant (six capsules) and one examined the LNG-IUS. The differences were noted in the comparisons with groups using no hormonal contraceptives. Of these five studies, three remained in the sensitivity analysis. Bonny 2009 examined DMPA, focused on adolescents, and appropriately measured change in body fat (%) and lean body mass (%) rather than weight change alone. The DMPA group differed from the group using no hormonal contraceptive at six months. Salem 1984 assessed Norplant and provided mean weight change (kg) at six months. The Norplant group differed from the IUD group and from a group using other non-hormonal or no contraceptive method. In Dal'Ava 2012, the LNG-IUS group differed from the non-hormonal IUD group in fat mass and lean mass changes at 12 months.

Actual mean weight gain was limited at 6 or 12 months (Table 1), i.e., less than 2 kg for most studies. The five studies with multi-year data showed that mean weight change was approximately twice as much at two or three years than at one year, but was generally similar for both study groups. Seven studies had data from two or more years of contraceptive use:

- Three RCTs compared two POCs (WHO 1983; Sivin 1998; Westhoff 2007). The DMPA or implant groups gained similar amounts of weight over one to three years.
- Three retrospective studies compared a POC to a non-hormonal IUD (Taneepanichskul 1998; Sule 2005; Pantoja 2010). Only Pantoja 2010 showed more weight gain for the DMPA group at one, two, and three years, but interestingly not within the obese group (BMI >=30).
- The retrospective study of Espey 2000 showed two DMPA groups to be similar in weight gain at one and two years.

#### Overall completeness and applicability of evidence

Of the 16 studies, 12 had data from a year or more of contraceptive use, of which 7 had data from two years or more. Weight gain (or the perception of weight gain) is frequently cited as a reason for discontinuing a contraceptive method. If a method is associated with weight gain, a year is long enough to detect some change, though the amount may not be significant. Of the seven studies with data from two years or more of contraceptive use, most showed the study groups to be similar for weight gain, regardless of whether the comparison group used POCs, combination contraceptives, or no hormonal methods.

Studies of progestin-only contraceptives and weight change were limited in type and number. Only one study of progestin-only pills was found that met our inclusion criteria. For implants, we found the most weight change data for Norplant (with six capsules). However, Norplant is no longer marketed, while single-rod and two-rod implants are currently available. However, most studies of currently marketed implants did not meet our inclusion criteria, mainly due to the lack of comparative weight change data. The one exception was a study in which Norplant was compared to a two-rod implant. Consequently, we do not have much evidence regarding weight change with currently marketed implants. Further, we did not find any studies of hormonal IUDs that met our inclusion criteria.

#### Quality of the evidence

After conducting the review, we assessed the quality of evidence as noted earlier (Assessment of risk of bias in included studies). The results are shown by contraceptive method of focus and evidence quality (Table 3). We consider the overall quality of evidence to be moderate to low, given that evidence from the 16 studies was evenly divided across the categories (high, moderate, low, or very low quality). The high- or moderate-quality evidence came from the following: a study of progestin-only pills that showed no significant difference in weight change; four of 10 DMPA studies, one of which showed adolescents using DMPA had increased body fat and decreased lean body mass; two of four implant studies with one showing a greater weight increase for Norplant users; and the intrauterine system study that reported the LNG-IUS users had an increase in total fat mass and decrease in lean body mass.

Sample sizes varied. Three studies had 32 to 51 participants, and were unlikely to have had sufficient power to detect differences in weight gain. One study had 76 participants. Seven studies had 100 to 400 participants, and five ranged from 534 to 3172. A few had comparison groups that were not used in this review, because the group did not meet our inclusion criteria.

Most studies did not adjust for potential confounding factors of weight change. Some had adjusted analyses that we did not use since a comparison group did not meet our inclusion criteria.

#### Potential biases in the review process

We selected studies that had data on mean weight change, mean change in body composition, or proportion that gained or lost a specified amount of weight. Several studies were excluded due to not reporting the data we needed. Many studies were older, which limited our ability to obtain additional information from the researchers.

## Agreements and disagreements with other studies or reviews

Many of the concerns about weight gain with POC use are based on perceptions and discontinuation reasons rather than measures of actual weight change (Paul 1997; Bonny 2004; Berenson 2008). We found limited evidence of significant change for POC users

versus those who did not use hormonal contraceptives. Actual weight gain was relatively low up to one year. Similarly, a Cochrane review showed no clear evidence of weight gain with the use of combined hormonal contraceptives (Gallo 2011). People may gain weight over time, regardless of contraceptive use.

However, DMPA may be a concern for adolescents who are already obese (Curtis 2009). One study that focused on adolescents (Bonny 2009) showed an increase in total body fat and a decrease in lean body mass for the DMPA group versus those with no hormonal contraceptive use. Two retrospective studies included adolescents (Moore 1995 (15 to 30 years old); Tuchman 2005 (12 to 21 years old). However, they did not show a significant difference between groups or much weight gain within groups.

# Authors' conclusions

## Implications for practice

We found limited evidence of weight gain when using progestin-only contraceptives. Some differences were noted when a POC was compared to no hormonal contraceptive. Actual mean weight gain was low for 6 to 12 months, i.e., less than 2 kg for most studies. More weight gain was noted at two and three years, but was generally similar for the study groups. People may gain weight over time regardless of contraceptive use. Appropriate and accurate counseling about typical weight gain may help reduce discontinuation of contraceptives due to perceptions of weight gain.

#### Implications for research

The five RCTs each compared similar progestin-only contraceptives, which might account for the groups being similar for weight change. Five non-randomized studies showed some differences for POCs versus no hormonal contraceptives (three prospective and two retrospective). Weight change is rarely the focus of prospective contraception studies. Welldesigned RCTs assessing weight change over time would better address this issue. However, careful counseling and follow up are needed to avoid the high rates for losses to follow up and discontinuation found in many contraceptive studies.

# Summary of findings tables

#### Additional tables

# Acknowledgments

Sources of support

#### Internal sources

• No sources of support provided

#### External sources

- National Institute of Child Health and Human Development, USA
- For conducting the review; FHI 360 (LL, MC, CO)
- US Agency for International Development, USA

For conducting the review; FHI 360 (LL, MC, CO)

• National Institute of Child Health and Human Development, USA

Grant for Infrastructure for Population Research at Princeton University; Grant R24HD047879 (JT; for working on the review)

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# Appendices

## 1 Searches 2013

MEDLINE via PubMed (01 Jan 2010 to 05 Jun 2013)

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(contraceptive agents, female[Mesh] OR contraceptive devices, female[Mesh] OR contracept\*) AND (progest\* OR "progestin only" OR "progestin only" contracept\* OR "progestin only pill" OR progestin\* OR progesteron\* OR progestational, hormones, synthetic OR progestogen\* OR progesterone OR gestagen OR "progestogen only") AND (body weight changes OR weight gain OR weight loss OR body mass index OR BMI OR weight) NOT (cancer[ti] OR polycystic [ti] OR exercise [ti] OR physical activity[ti] OR postmenopaus\*[ti])

limited to human, female

#### CENTRAL (2010 to 01 Jun 2013)

weight OR body mass index OR BMI in Abstract

AND contraception OR contraceptive in Title, Abstract or Keywords

NOT premenstrual OR dysmenor\* OR endometr\* OR \*androgen\* OR HIV OR polycystic OR

PCOS OR cancer OR exercise OR anorexia OR bulimic in Record Title

NOT postmenopausal OR post-menopausal OR hormone therapy OR male hormonal OR male contracept\* OR testosterone in Record Title

#### POPLINE (2010 to 26 Dec 2012)

Global: weight OR BMI OR body mass index

Keyword: contraceptive agents, progestin OR Low-Dose Progestins

Filter: research report

LILACS (2010 to 26 Dec 2012)

contraceptive agents or Agentes Anticonceptivos Femeninos or Anticoncepcionais Femininos or contraceptive devices, female or Dispositivos Anticonceptivos Femeninos or Dispositivos Anticoncepcionais Femininos or contraceptives or Anticonceptivos or Anticoncepcionais [Words] AND weight or body weight or Peso Corporal or weight gain or Aumento de Peso or Ganho de Peso or weight reduction or weight loss or Pérdida de Peso or Perda de Peso or body weight changes or Cambios en el Peso Corporal or Alterações do Peso Corporal or body mass index or BMI [Words]

ClinicalTrials.gov (01 Jan 2010 to 26 Dec 2012)

Search terms: overweight OR obese OR obesity OR weight OR body mass index OR BMI

Condition: NOT (HIV OR polycystic OR PCOS OR cancer OR anorexia OR pulmonary OR metabolic OR amenorrhea)

Intervention: contraceptive OR contraception

Study type: interventional studies

Gender: studies with female participants

ICTRP (2010 to 26 Dec 2012)

- 1. Intervention: contraceptive OR contraception
- 2. Condition: contraceptive OR contraception Intervention: progestin OR progestinonly OR IUD OR implant OR medroxyprogesterone OR norethisterone

# 2 Searches 2010

MEDLINE via PubMed (through 11 Jun 2010)

(contraceptive agents, female[Mesh] OR contraceptive devices, female[Mesh] OR contracept\*) AND (progest\* OR "progestin only" OR "progestin only" contracept\* OR "progestin only pill" OR progestin\* OR progesteron\* OR progestational, hormones, synthetic OR progestogen\* OR progesterone OR gestagen OR "progestogen only") AND (body weight changes OR weight gain OR weight loss OR body mass index OR BMI OR weight) NOT (cancer[ti] OR polycystic [ti] OR exercise [ti] OR physical activity[ti] OR postmenopaus\*[ti])

limited to human, female

#### POPLINE (through 19 May 2010)

(progestin only contracept\*/ contraceptive agents, progestin/low-dose progestins) & (weight/ weight gain/weight loss/body weight/BMI/body mass index/ weight change)

CENTRAL (through 19 May 2010)

weight OR body mass index OR BMI in Abstract and contraception OR contraceptive in Title, Abstract or Keywords

NOT premenstrual OR dysmenor\* OR endometr\* OR \*androgen\* OR HIV OR polycystic OR

PCOS OR cancer OR exercise OR anorexia OR bulimic in Record Title

NOT postmenopausal OR post-menopausal OR hormone therapy OR male hormonal OR male contracept\* OR testosterone in Record Title

EMBASE (through 15 Jun 2010)

(contraceptive agent, progestin --side effects

#### or

((contraceptive device or contraceptives or contracept\*) and (gestagen! or progest? or progestin? or progesterone? or progestational, hormones, synthetic or progestogen? or progestin()only or progestin()only()contracept or progestin()only()pill or progestogen()only)))

#### and

(body weight! or weight gain or weight reduction or weight()loss or body()mass()index) not (cancer or polycystic or exercise or physical() activity or postmenopaus? or oral contraceptives, combined)

and body weight/de

limited to human

LILACS (through 01 Jul 2010)

contraceptive agents or Agentes Anticonceptivos Femeninos or Anticoncepcionais Femininos or contraceptive devices, female or Dispositivos Anticonceptivos Femeninos or

Dispositivos Anticoncepcionais Femininos or contraceptives or Anticonceptivos or Anticoncepcionais [Words]

and weight or body weight or Peso Corporal or weight gain or Aumento de Peso or Ganho de Peso or weight reduction or weight loss or Pérdida de Peso or Perda de Peso or body weight changes or Cambios en el Peso Corporal or Alterações do Peso Corporal or body mass index or BMI [Words]

ClinicalTrials.gov (through 27 Apr 2010)

Search terms: overweight OR obese OR obesity OR weight OR body mass index OR BMI

Condition: NOT (HIV OR polycystic OR PCOS OR cancer OR anorexia OR pulmonary OR metabolic OR amenorrhea)

Intervention: contraceptive OR contraception

Study type: interventional studies

Gender: studies with female participants

ICTRP (through 07 Sep 2010)

- 1. Intervention: contraceptive OR contraception
- 2. Condition: contraceptive OR contraception Intervention: progestin OR progestinonly OR IUD OR implant OR medroxyprogesterone OR norethisterone

## Data and analyses

# 1 Norethisterone 350 µg versus levonorgestrel 30 µg

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Mean weight change (kg) at 6 months	1	39	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-1.76, 0.56]

# 2 DMPA 150 mg/mL + placebo versus DMPA 150 mg/mL + E<sub>2</sub>C

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Mean change in total body fat (%) at 6 months	1	15	Mean Difference (IV, Fixed, 95% CI)	7.50 [-0.47, 15.47]
2.2 Mean change in lean body mass (%) at 6 months	1	15	Mean Difference (IV, Fixed, 95% CI)	-2.20 [-5.00, 0.60]

# 3 DMPA 150 mg/mL versus control (no hormonal method)

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
<ul><li>3.1 Mean change in total body fat</li><li>(%) at 6 months</li></ul>	1	26	Mean Difference (IV, Fixed, 95% CI)	11.00 [2.64, 19.36]
3.2 Mean change in lean body mass (%) at 6 months	1	26	Mean Difference (IV, Fixed, 95% CI)	-4.00 [-6.93, -1.07]

# 4 DMPA 150 mg/mL versus MPA + E<sub>2</sub>C

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
4.1 Mean weight change (kg) at 6 months	1	70	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-3.05, 1.85]
4.2 Mean weight change (kg) at 12 months	1	46	Mean Difference (IV, Fixed, 95% CI)	-1.30 [-6.37, 3.77]
4.3 Mean percentage weight change at 6 months	1	70	Mean Difference (IV, Fixed, 95% CI)	-0.60 [-4.04, 2.84]
4.4 Mean percentage weight change at 12 months	1	46	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-7.58, 6.18]

# 5 DMPA 150 mg/mL versus COC

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
5.1 Mean weight change (kg) at 6 months	1	142	Mean Difference (IV, Fixed, 95% CI)	-0.50 [-2.26, 1.26]
5.2 Mean weight change (kg) at 12 months	1	81	Mean Difference (IV, Fixed, 95% CI)	0.70 [-1.92, 3.32]
5.3 Mean percentage weight change at 6 months	1	142	Mean Difference (IV, Fixed, 95% CI)	-0.70 [-3.10, 1.70]
5.4 Mean percentage weight change at 12 months	1	81	Mean Difference (IV, Fixed, 95% CI)	0.00 [-3.79, 3.79]
5.5 Weight gain $>= 1$ kg at month 6	1	31	Odds Ratio (M-H, Fixed, 95% CI)	0.39 [0.09, 1.67]
5.6 Weight gain >= 1 kg at month 12	1	26	Odds Ratio (M-H, Fixed, 95% CI)	0.44 [0.08, 2.39]
5.7 Weight loss $>= 1$ kg at month 6	1	31	Odds Ratio (M-H, Fixed, 95% CI)	9.24 [0.44, 195.69]
5.8 Weight loss $>= 1$ kg at month 12	1	26	Odds Ratio (M-H, Fixed, 95% CI)	1.83 [0.15, 23.15]

# 6 DMPA 150 mg/mL versus DMPA 450 mg/mL

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
6.1 Mean weight change (kg) at 6 months	1	651	Mean Difference (IV, Fixed, 95% CI)	0.01 [-0.48, 0.50]

# 7 DMPA 150 mg/mL initiation after pregnancy: interval (>=20 weeks) versus postpartum (5 to 8 weeks)

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
7.1 Mean weight gain (lbs) at 1 year	1	172	Mean Difference (IV, Fixed, 95% CI)	2.30 [-0.94, 5.54]
7.2 Mean weight gain (lbs) at 2 years	1	64	Mean Difference (IV, Fixed, 95% CI)	1.60 [-4.79, 7.99]

# 8 DMPA-IM 150 mg versus DMPA-SC 104 mg

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
8.1 Mean weight change (kg) at 36 months	1	121	Mean Difference (IV, Fixed, 95% CI)	1.30 [-1.78, 4.38]

# 9 DMPA 150 mg/mL versus NET-EN 200 mg (60-day intervals)

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
9.1 Mean weight change (kg) at 12 months	1	1162	Mean Difference (IV, Fixed, 95% CI)	0.20 [-0.63, 1.03]
9.2 Mean weight change (kg) at 24 months	1	604	Mean Difference (IV, Fixed, 95% CI)	0.00 [-1.39, 1.39]
9.3 Mean weight change at 1 year	1	201	Mean Difference (IV, Fixed, 95% CI)	0.80 [-0.10, 1.70]

# 10 NET-EN 200 mg: 60-day intervals versus 3 intervals of 60 days then 84day intervals

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
10.1 Mean weight change (kg) at 12 months	1	822	Mean Difference (IV, Fixed, 95% CI)	0.00 [-0.71, 0.71]
10.2 Mean weight change (kg) at 24 months	1	453	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-1.35, 1.15]

# 11 DMPA 150 mg/mL versus non-hormonal IUD

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
11.1 Mean weight change (kg) at 120 months	1	100	Mean Difference (IV, Fixed, 95% CI)	-0.30 [-0.83, 0.23]
11.2 Mean weight change (kg) at 1 year by baseline BMI	1	758	Mean Difference (IV, Fixed, 95% CI)	2.28 [1.79, 2.77]
11.2.1 BMI < 25 kg/m <sup>2</sup>	1	452	Mean Difference (IV, Fixed, 95% CI)	2.50 [1.90, 3.10]
11.2.2 BMI 25 to 29.9 kg/m <sup>2</sup>	1	218	Mean Difference (IV, Fixed, 95% CI)	2.10 [1.16, 3.04]
11.2.3 BMI >= 30 kg/m <sup>2</sup>	1	88	Mean Difference (IV, Fixed, 95% CI)	0.70 [-1.26, 2.66]
11.3 Mean weight change (kg) at 2 years by baseline BMI	1	758	Mean Difference (IV, Fixed, 95% CI)	2.71 [2.12, 3.30]
11.3.1 BMI < 25 kg/m <sup>2</sup>	1	452	Mean Difference (IV, Fixed, 95% CI)	2.70 [2.02, 3.38]
11.3.2 BMI 25 to 29.9 kg/m <sup>2</sup>	1	218	Mean Difference (IV, Fixed, 95% CI)	3.00 [1.73, 4.27]
11.3.3 BMI >= $30 \text{ kg/m}^2$	1	88	Mean Difference (IV, Fixed, 95% CI)	1.50 [-1.33, 4.33]

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
11.4 Mean weight change (kg) at 3 years by baseline BMI	1	758	Mean Difference (IV, Fixed, 95% CI)	3.17 [2.51, 3.83]
11.4.1 BMI < 25 kg/m <sup>2</sup>	1	452	Mean Difference (IV, Fixed, 95% CI)	3.30 [2.52, 4.08]
11.4.2 BMI 25 to 29.9 kg/m <sup>2</sup>	1	218	Mean Difference (IV, Fixed, 95% CI)	3.20 [1.82, 4.58]
11.4.3 BMI >= 30 kg/m <sup>2</sup>	1	88	Mean Difference (IV, Fixed, 95% CI)	1.30 [-1.56, 4.16]

# 12 Norplant versus DMPA 150 mg/mL

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
12.1 Mean weight change (kg) at 1 year	1	100	Mean Difference (IV, Fixed, 95% CI)	-0.87 [-1.86, 0.12]

# 13 Norplant versus non-hormonal IUD

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate		
13.1 Mean weight change (kg) at 6 months	1	99	Mean Difference (IV, Fixed, 95% CI)	0.47 [0.29, 0.65]		
13.2 Mean weight change (kg) at 1 year	1	324	Mean Difference (IV, Fixed, 95% CI)	1.10 [0.36, 1.84]		
13.3 Mean weight change (kg) at 3 years	1	190	Mean Difference (IV, Fixed, 95% CI)	0.90 [-0.39, 2.19]		

# 14 Norplant versus barrier, 'local', or no contraceptive method

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
14.1 Mean weight change (kg) at 6 months	1	97	Mean Difference (IV, Fixed, 95% CI)	0.74 [0.52, 0.96]

# 15 Norplant versus 2-rod LNG

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
15.1 Mean weight change (kg) at 1 year	1	1196	Mean Difference (IV, Fixed, 95% CI)	0.09 [-0.33, 0.51]
15.2 Mean weight change (kg) at 3 years	1	922	Mean Difference (IV, Fixed, 95% CI)	0.00 [-0.60, 0.60]
15.3 Mean weight change (kg) at 5 years	1	614	Mean Difference (IV, Fixed, 95% CI)	0.60 [-0.13, 1.33]

# 16 Norplant versus COC

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate	
16.1 Mean weight change (kg) at 1 year	1	226	Mean Difference (IV, Fixed, 95% CI)	1.10 [-0.13, 2.33]	
16.2 Mean weight change (kg) at 3 years	1	132	Mean Difference (IV, Fixed, 95% CI)	Not estimable	

# 17 LNG-IUS versus non-hormonal IUD

Outcome	or Subgroup	)	Studies	Participants	Statistical Method	Effect Estimation
17.1 Body	composition	changes	1		Other data	No numeric d
1 Norethisterone 350 µ	ig versus levonorgestre	i 30 µg			_	
1.1 Mean weight chang	je (kg) at 6 months					
	Treatment	Control	Mean Difference	Mean Difference		
Study or Subgroup Ball 1991	Mean SD Total Me	an SD Total W	eight IV, Fixed, 95% C	IV, Fixed, 95% Cl		
Total (95% CI)	23	16 10	0.0% -0.60 [-1.76, 0.56	-		
Heterogeneity: Not app				4 2 0 2	i	
Test for overall effect:	Z = 1.01 (P = 0.31)			Favors treatment Favors co	ntrol	
2 DMPA 150 mg/mL + p	alacebo versus DMPA 15	50 mg/mL + E <sub>2</sub> C				
2.1 Mean change in tot	al body fat (%) at 6 mont	ths				
Study or Subgroup	Treatment Mean SD Total M	Control	Mean Different Weight IV, Fixed, 959			
Bonny 2009	10.3 10.49 8		100.0% 7.50 [-0.47, 15.			
Total (95% CI)	8	7	100.0% 7.50 [-0.47, 15.	171		
Heterogeneity: Not app		,	100.000 1.000 [-0.007, 102	-20 -10 0 10	20	
Test for overall effect:	n body mass (%) at 6 m		Mean Differenc	Favors treatment Favors		
2.2 Mean change in lea Study or Subgroup Bonny 2009	n bodymass (%) at 6 m Treatment <u>Mean SD Total M</u> -3.4 3.57 8	Control ean SD Total -1.2 1.77 7	Mean Differenc Weight IV, Rixed, 951 100.0% -2.20 (-5.00, 0.1	e Mean Difference Cl IV, Fixed, 95% Cl		
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2.2 Mean change in lea Study or Subgroup Bonny 2009 Total (95% CI) Heterogeneity: Not app Test for overall effect: 3 DMPA 150 mg/mL ver 3.1 Mean change in tot	In body mass (%) at 6 m Treatment Mean SD Total M -3.4 3.57 8 clicable Z = 1.54 (P = 0.12) rsus control (no hormor al body fat (%) at 6 mont Treatment	Control ean <u>SD Total</u> -1.2 1.77 7 7 nal method) ths Control	Weight IV, Fixed, 95% 100.0% -2.20 [-5.00, 0. 100.0% -2.20 [-5.00, 0. Mean Differe	Mean Difference (I), Fixed, 95% (C) (0) (1) (1) (2) (2) (2) (3) (4) (4) (5) (4) (4) (5) (5) (5) (5) (5) (5) (5) (5	control	
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2.2 Mean change in lea <u>Study or Subgroup</u> Bonny 2009 Total (95% C) Heterogenetic: Not age Test for overall effect: 3 DMPA 150 mg/mL.ver 3.1 Mean change in tot <u>Study or Subgroup</u> Bonny 2009 Total (95% C) Heterogenetic: Not age Test for overall effect:	n body mass (14) at 6 m Treatment Mean SD Total M -3.4 3.57 8 -8 -20,20 Z = 1.54 (P = 0,12) -3.4 (P = 0,12) -3.5 (P =	Control ean <u>SD Total</u> -1.2 1.77 7 7 nal method) ths <u>Control Mean SD Total</u> -0.7 8.94 18	Weight IV, Fixed, 955 100.0% -2.20 [-5.00, 0.1 100.0% -2.20 [-5.00, 0.1 100.0% -2.20 [-5.00, 0.1 Mean Differer Weight IV, Fixed, 9 100.0% 11.00 [2.64, 1	Mean Difference           Cl         IV, Fleed, \$5% Cl           IVI         IVI	control	
2.2 Mean change in lea Study or Subgroup Bonny 2009 Total (95% C0) Heterogeneity: Not ap Test for overail effect: 3 DMPA 150 mg/mL ver 3.1 Mean change in tot Study or Subgroup Bonny 2009 Total (95% C0) Heterogeneity: Not ap Total (95% C0)	n hody mass (10) at 6 m <u>Hean 50 Total M</u> -3.4 3.7 8 8 Sicable Z = 1.54 (P = 0.12) rass control (no hormor al body fat (%) at 6 mo Sicable 2 = 2.56 (P = 0.010) n body mass (10) at 6 m Treatment	Control Teal an SD Teal 1.2 1.7 7 7 1.2 1.7 7 7 nal method) ths Control Mean SD Teal 18 18 00000000000000000000000000000000	Weight VV, Fixed, 957 100.0% - 2.20 [-5.00, 0.1 100.0% - 2.20 [-5.00, 0.1 100.0% - 2.20 [-5.00, 0.1 Weight VV, Fixed, 9 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1	e Mean Difference CI IV, Fixed, 95%CI 90 90 90 Favors treatment Favors of Favors	control Cr Cr To control	
2.2 Mean change in lea <u>Study or Subgroup</u> Bonny 2009 Total (95% C) Heterogenetic: Not age Test for overall effect: 3 DMPA 150 mg/mL.ver 3.1 Mean change in tot <u>Study or Subgroup</u> Bonny 2009 Total (95% C) Heterogenetic: Not age Test for overall effect:	In body mass (1) at 6 m. Treatment Mean SD Total M 3.4 3.57 8 Sciable 8 Z = 1.54 (P = 0.12) rsus control (no hormor Treatment Mean SD Total M 10.3 10.48 8 Sciable 8 Sciable 8 Sciable 8 Sciable 1 D Total M Treatment Mean SD Total M Mean SD Total M	Control ean SD Tetal 1.2 1.77 7 7 1.2 1.77 7 7 7 7 1.2 1.77 7 7 7 7 7 7 7 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 8 1.2 1.77 7 7 8 1.2 1.77 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 7 8 1.2 1.77 7 8 1.2 1.77 7 8 1.77 7 7 8 1.77 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Weight VV, Fixed, 957 100.0% - 2.20 [-5.00, 0.1 100.0% - 2.20 [-5.00, 0.1 100.0% - 2.20 [-5.00, 0.1 Weight VV, Fixed, 9 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1	Mean Difference     V. Fixed, 95%CI     V. Fixed, 95%CI     Favors breakment     Favors     Favors breakment     Favors     Fav	control Cr Cr To control	
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2.2 Mean change in lea Study or Subgroup Bonny 2009 Total (95% O) Heterogenety: Not age Test for overall effect: 3 DMPA 150 mg/mL.ver 3.1 Mean change in tot Study or Subgroup Bonny 2009 Total (95% CO) Heterogenety: Not age Test for overall effect: 3.2 Mean change in lea Study or Subgroup	Treatment <u>Mean 80 Total M</u> -3.4 3.57 8 B Bicable Z = 1.54 (P = 0.12) rsus control (no hormor al body fat (%) at 6 mot Treatment <u>Mean 80 Total N</u> 8 Sicable n body mass (%) at 6 m <u>Treatment</u> <u>Mean 80 Total M</u> a 2.258 (P = 0.010) Treatment <u>Mean 80 Total M</u> -3.4 3.57 8 <u>8</u>	Control ean <u>50 Tetal</u> 1.2 1.7 7 7 nal method) the <u>Control</u> 48an <u>50 Total</u> 68 Total 18 00158 <u>Control</u> 89 18	Weight IV, Fixed, 957 100.0% -2.20 [-5.00, 0.1 100.0% -2.20 [-5.00, 0.1 Weight IV, Fixed, 97 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1 100.0% 11.00 [2.64, 1 Weight IV, Fixed, 95	Mean Difference (C) IV, Fixed, 55%CI (C) I	control Cr Cr D D 20 T S Cr Cr Cr Cr Cr Cr Cr Cr Cr Cr Cr Cr Cr	

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Study of Subgroup         Kessel SSP_CI         IV. Pleed SSSC         IV. Pleed SSSC           Tuchman 2005         0.6         6.8         40         1.2         4.3         21         100.0%         -6.06 (-3.0.6.1.65)           Total (5%)C()         49         2         100.0%         -6.06 (-3.0.6.1.65)         -6.0		ge (kg) at 6 months				
Hear opening in the applicable Test for overall effect $Z = 0.4$ ( $P = 0.5$ ) 4.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.3 Mean percentage weight change at 0 models 1.3 Mean percentage weight change at 0 models 1.4 Mean percentage weight change at 12 models 2.9 Mean SD Teal Mean SD Teal Weight M. Matter 2.9 S.2, 12 Mean weight change ( $k$ ) at 1.3 d.6 SD Teal Mean Difference functions 2.0 d.6 SD 4.0 d.9 L.2 d.9 J.2		Mean SD Total	Mean SD Tota		IV, Fixed, 95% Cl	Mean Differenc IV, Fixed, 95% C
Hear opening in the applicable Test for overall effect $Z = 0.4$ ( $P = 0.5$ ) 4.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.2 Mean weight change ( $k$ ) git 12 models 1.3 Mean percentage weight change at 0 models 1.3 Mean percentage weight change at 0 models 1.4 Mean percentage weight change at 12 models 2.9 Mean SD Teal Mean SD Teal Weight M. Matter 2.9 S.2, 12 Mean weight change ( $k$ ) at 1.3 d.6 SD Teal Mean Difference functions 2.0 d.6 SD 4.0 d.9 L.2 d.9 J.2					,	-
Test for overall effect: 2 = 0.46 (P = 0.57) 1.2 Mean weight change (kg) at 12 months Testment	Heterogeneity: Not ap	plicable		100.0 %	-0.00 [-0.00] (100]	-10 -5 0
Study of Subgroup         Mass Difference Multiple Subgroup <th< td=""><td>Test for overall effect</td><td>Z = 0.48 (P = 0.63)</td><td></td><td></td><td></td><td>Favors treatment Favors</td></th<>	Test for overall effect	Z = 0.48 (P = 0.63)				Favors treatment Favors
Budge of budge og         Man BD Total Man SD Total Waiget W. Field 95%G         M. Red 95%G           1.1 & 61. 29         29         17         190.9% - 1.30 (6.37, 3.77)           Total (95%G)         29         17         190.9% - 1.30 (6.37, 3.77)           Total (95%G)         29         17         190.9% - 1.30 (6.37, 3.77)           Total (95%G)         12         7.8         49         1.8         6.2         21         100.0% - 3.04 (6.43, 2.44)           Tuchma 2005         1.2         7.8         49         1.8         6.2         21         100.0% - 0.02 (1.44, 2.44)           Tuchma 2005         1.2         7.8         49         1.8         6.2         21         100.0% - 0.02 (1.44, 2.84)           Tuchma 2005         2.9         8.3         23         3.5         1.3         17         100.0% - 0.02 (1.74, 8.18)           Tuchma 2005         2.9         8.3         23         3.5         1.3         17         100.0% - 0.02 (1.74, 8.18)           Tuchma 2005         2.9         8.3         2.3         1.3         1.0         10.00% - 0.02 (1.74, 8.18)         Mean Difference           Study of Subgroup         Man 8.D Total Mean 5D Total Weight M. M. Red 85%C         Mean Difference         Mean Difference <td< td=""><td>4.2 Mean weight chan</td><td></td><td></td><td></td><td></td><td></td></td<>	4.2 Mean weight chan					
Total (95% C) 29 Treatment Control Main Difference Mean Diffe		Mean SD Total	Mean SD Total		IV, Fixed, 95% Cl	IV, Fixed, 95% C
bisenceponiety. Not septicable Test for ownall effect $Z = 0.50 (P = 0.82)$ 4.3 Mean percentage weight change at 6 months Treatment 2006 12 7.8 49 1.8 62 21 100.0% $-0.00 [-0.4, 2.84]$ Luchran 2006 12 7.8 49 1.8 62 21 100.0% $-0.00 [-0.4, 2.84]$ Luchran 2006 20 8.3 49 1.8 62 21 100.0% $-0.00 [-0.4, 2.84]$ Luchran 2006 20 8.3 20 3.5 1.3 1 7 100.0% $-0.00 [-0.4, 2.84]$ Luchran 2006 20 8.3 20 3.5 1.3 1 7 100.0% $-0.00 [-7.56, 6.18]$ Luchran 2007 20 8.3 50 Total Mean 50 Teal Weight N, Reed, SSC Treatment Facor 4.4 Mean percentage weight change at 12 months Treatment 2 20 0.0 (P = 0.34) 4.4 Mean percentage weight change at 12 months Treatment 2 20 0.0 (P = 0.34) 5 DMPA 150 mg/mL versus COC 5.1 Mean Versus COC 5.1 Mean veight change (kg) at 6 months Treatment 2 0.50 (P = 0.56) 5 ZMPA 150 mg/mL versus COC 5.1 Mean veight change (kg) at 6 months Treatment 2 0.50 (P = 0.56) 5 ZMPA 150 mg/mL versus COC 5.1 Mean veight change (kg) at 6 months Treatment 2 0.50 (P = 0.56) 5 ZMPA 150 mg/mL versus COC 5.1 Mean veight change (kg) at 2 months Treatment 2 0.50 (P = 0.56) 5 ZMean veight change (kg) at 12 months 5 ZMean veight change at 6 months 5 ZMean veight change (kg) at 12 months 5 ZMean veight change (kg) at 12 months 5 ZMean veight change at 6 months 5 ZMean veight change at 12 months 5 ZMean veight change at 12 months 5 ZMean veight change						
Test for ownall effect Z = 0.50 (P = 0.62)       Parameter Faunt         4.3 Maan percentage weight change at 6 months       Mean Difference       Mean Difference       Mean Difference         1. Luchwan 2005       1.2       7.8       4.9       1.8       6.2       21       100.0%       4.00 (4.04, 2.84)         1. Luchwan 2005       1.2       7.8       4.9       1.8       6.2       21       100.0%       4.00 (4.04, 2.84)         1.4.600       4.9       1.2       1.00.0%       4.00 (4.04, 2.84)       1.00.0%       4.00 (4.04, 2.84)         1.1.000       Subgroup       Mean Difference       Mean Difference       Mean Difference       Mean Difference         1.1.000       Subgroup       Mean 30       Total (Mean 50       Total (Mean 50       -0.7 (7.58, 6.18)       Mean Difference         1.1.000       Mean Difference       Mean Difference       Mean Difference       Mean Difference       Mean Difference         1.1.000       Mean Difference       Mean Difference       Mean Difference       Mean Difference       Mean Difference         1.1.000       Mean Difference       Mean D			17	100.0%	-1.30 [-6.37, 3.77]	
Study of Subgroup         Hear BD Total         Control         Mean Difference         Mean Difference <td>Test for overall effect:</td> <td>Z = 0.50 (P = 0.62)</td> <td></td> <td></td> <td></td> <td>Favors treatment Favors</td>	Test for overall effect:	Z = 0.50 (P = 0.62)				Favors treatment Favors
Study or Subgroup         No. 12         7.8         49         1.8         6.2         21         100.05         6.06         1.4.8         2.1           Tuckmin 2005         1.2         7.8         49         1.8         2.2         100.05         40.05         4.4.2.84           Test or overall diffect 2 - 0.3(1)         49         2.1         100.05         4.0.80         1.4.7.8         6.0         Facon Strail diffect 2 - 0.3(1)           4.4 Mean percentage weight change at 12 months         Treatment         Control         Mean Difference         N. Facon Strail         Mean Difference         N. Facon Strail         Mean Difference         N. Facon Strail         N. Facon Strail         N. Facon Strail         Mean Difference         N. Facon Strail	4.3 Mean percentage	weight change at 6 r				
Tuchmin 2005         1.2         7.8         49         1.8         6.2         21         100.0%         0.40 [4.04, 2.44]           Total (95/C)         49         21         100.0%         0.40 [4.04, 2.44]           Heterogeneity: Not applicable         Teatment         Control         Mean Difference         Mean Difference           Study or Subgroup         Mean Difference         Mean Difference         Mean Difference         Mean Difference           Study or Subgroup         Mean Difference         Mean Difference         Mean Difference         Mean Difference           Study or Subgroup         Mean Difference         Mean Difference         Mean Difference         Mean Difference           Study or Subgroup         Mean BD         Study or Subgroup         Mean Difference         Mean Difference           Study or Subgroup         Mean BD         Study or Subgroup         Mean BD         Mean Difference         Mean Difference           Study or Subgroup         Mean BD         Study or Subgroup         Mean BD         Mean Difference         Mean Difference           Study or Subgroup         Mean BD         Control         Mean Difference	Study or Subgroup		Control Mean SD Tota	Weight	Mean Difference IV, Fixed, 95% Cl	Mean Differenc IV, Fixed, 95% C
intercognetic Not applicable Treat or overall effect. Z = 0.34 (P = 0.73) 4.4 Maan percentage weight change at 12 months Treatment Control Mean DDHerence Study or Subgroup Mean SD Total Weight M, Reed, 95% C Tuchman 2005 2.9 8.3 29 8.3 29 13 17 100.0% $4.70$ (7.58, 6.19) Total (95.0) 29 8.3 29 13 17 100.0% $4.70$ (7.58, 6.19) Total (95.0) 29 8.3 29 11 1 3.4 93 100.0% $4.70$ (7.58, 6.19) Total (95.0) 29 10 100 Maan DD Total Weight M, Reed, 95% C Tuchman 2005 2.9 0.8 (P = 0.84) Treatment Control Mean DDHerence Study or Subgroup Mean SD Total Mean DD Total Weight M, Reed, 95% C Tuchman 2005 1.2 6 5.8 49 1.1 3.4 93 100.0% $4.0.50$ (2.26, 1.26) Total (95.0) 49 1.3 49 3 100.0% $4.0.50$ (2.26, 1.26) Total (95.0) 129 1.5 10 100 Mean DDHerence Study or Subgroup Mean SD Total Mean DD Total Weight M, Reed, 95% C Tuchman 2005 1.2 6 1.5 (P = 0.58) S2 Mean weight change (kg) at 12 months Treatment Control Mean DDHerence Study or Subgroup Mean SD Total Mean SD Total Weight M, Reed, 95% C Tuchman 2005 1.2 7.8 49 1.9 45 100.0% $4.70$ (1.40, 1.32) Total (95% C) 29 5.2 100.0% $6.70$ (1.40, 1.32) Total (95% C) 29 5.2 100.0% $6.70$ (1.40, 1.32) Total (95% C) 49 13 2 0 100.0% $4.70$ (2.10, 1.70) Heterogeneity: Not applicable Treatment 2005 1.2 7.8 49 1.9 4.9 20 100.0% $4.70$ (2.10, 1.70) Heterogeneity: Not applicable Treatment 2005 1.2 7.8 49 1.9 4.9 20 100.0% $4.70$ (2.10, 1.70) Heterogeneity: Not applicable Treatment 2005 1.2 7.8 49 1.9 4.9 20 100.0% $4.70$ (3.10, 1.70) Total (95% C) 49 8.3 29 0.20 8.4 20 100.0% $4.70$ (3.10, 1.70) Heterogeneity: Not applicable Treatment 4 Control Mean DHerence Study or Subgroup Mean 30 Total Mean DH Treatment 6 Control Mean DH Subgroup Subgroup Mean 50 Total Mean DH Total (95% C) 12 9 8.3 29 2.9 8.4 52 100.0% $4.70$ (3.10, 1.70) Facors beatment Facor 5.8 Weight gain >=1 kg at month 6 Subgroup Subgroup Mean 50 Total Mean DH Total (95% C) 15 9 10 100.0% $0.39$ (0.39, 1.67) Total (95% C) 15 9 10 100.0% $0.39$ (0.39, 1.67) Total (95% C) 15 9 10 100.0% $0.39$	Tuchman 2005					
Test for overall effect: $Z = 0.54 (P = 0.73)$ Favors beatment Favor 4.4 Mean parcentage weight change at 12 months Tuchman 2005 2.9 8.2 9 3.6 13 17 100.0% -0.70 (7.56, 6.16) Tuchman 2005 2.9 0.2 9 17 100.0% -0.70 (7.56, 6.16) Tuchman 2005 2.9 0.2 9 17 100.0% -0.70 (7.56, 6.16) Tuchman 2005 2.9 0.2 9 17 100.0% -0.70 (7.56, 6.16) Tuchman 2005 0.0 5.8 0 5 DMPA 150 mg/mL versus COC 5.1 Mean weight change (kg) at 6 months Tuchman 2005 0.0 5.8 (P = 0.84) 5 DMPA 150 mg/mL versus COC 5.1 Mean weight change (kg) at 6 months Tuchman 2005 0.0 5.8 (P = 0.58) 5 Z Mean weight change (kg) at 12 months Tuchman 2005 1.7 6.1 29 1 0.1 92 100.0% -0.50 (2.26, 1.26) Tuchman 2005 1.7 6.1 29 1 0.1 92 100.0% -0.50 (2.26, 1.26) Favors beatment Favor 5.2 Mean weight change (kg) at 12 months 5 Z Mean weight change (kg) at 12 months 5 L Mean parcentage weight change at 6 months Tuchman 2005 1.7 6.1 29 1 0.1 52 100.0% 0.70 (-1.92, 3.22) 4 Herogonely: Not applicable Test for overall effect: Z = 0.52 (P = 0.60) 5.3 Mean parcentage weight change at 6 months Tuchman 2005 1.2 7.8 49 1.9 4.9 33 100.0% -0.70 (-1.92, 3.22) 4 Herogonely: Not applicable Test for overall effect: Z = 0.57 (P = 0.57) 5.4 Mean 2016 7 1.2 7.8 49 1.9 4.9 33 100.0% -0.70 (-1.92, 3.22) 4 Herogonely: Not applicable Test for overall effect: Z = 0.57 (P = 0.57) 5.4 Mean 2016 7 2.8 8.3 29 2.9 8.4 52 100.0% 0.00 (-3.79, 3.79) 4 Herogonely: Not applicable Test for overall effect: Z = 0.57 (P = 0.57) 5.4 Weight gain >=1 kg at month 6 5 Weight gain >=1 kg at month 12 5 Weight gain >=1 kg at month 2 5 Weight gain >=1 kg at mon			21	100.0%	+0.60 [+4.04, 2.84]	-
Study or Subgroup         Treatment         Control         Mean Difference         W. Fixed, 95% CI         V. Fixed, 95% CI           Tuchman 2005         2.9         8.3         2.9         3.6         13         17         100.0%         -0.0         -5.0           Total (95% CI         2.9         8.3         2.9         17         100.0%         -0.7         -5.6         -10         -5         -0         -5         -0         -5         -0         -7         -0         -5         -0         -5         0         Fixed set	Heterogeneity: Not ap Test for overall effect:	z = 0.34 (P = 0.73)				-10 -5 0 Favors treatment Favors
Study or Subgroup         Main BD         Test Mean         SD         Test Meight         N. Reck 95% CI         N. Field 95% CI           Tuchman 2005         2.9         8.3         29         3.6         13         17         100.0% $0.70$ (7.56, 6.18)           Total (95% CI)         29         3.6         13         17         100.0% $0.70$ (7.56, 6.18)           Total (95% CI)         29         3.7         100.0% $0.70$ (7.56, 6.18) $100.0\%$ $0.70$ (7.56, 6.18)           5 DMPA 150 mg/mL versus COC         51         Mean weight change (kg) at 6 months         Testment         Control         Mean Difference         Mean Difference         Mean Difference         N. Fixed, 95% CI         N. Fixed	4.4 Mean percentage	weight change at 12	months			
Tuchma 2005         2.9         8.3         29         3.6         13         17         10.0%         4.70         [7.58, 6.18]           Total (BSS-CI)         29         17         100.0%         4.70         [7.58, 6.18]           Hetrogeneity, Not applicable Test for overall effect. Z = 0.20 (P = 0.84)         100.0%         4.70         [7.58, 6.18]           S DMPA 150 mg/mL, versus COC         51         Mean DIfference Mean 20 Total Mean 30         Treatment         Control         Mean DIfference Mean 20 Total Mean 30         N. Reed, 95%C         N. Reed, 95%C           Tuchma 2005         0.6         5.8         49         1.1         3.4         93         100.0%         4.50         [2.20, 1.26]           Hetrogeneity, Not applicable Test for overall effect. Z = 0.56 (P = 0.58)         Total Mean 20         Total Mean 20         N. Reed, 95%C         Mean 20Herence Mean 20Herence         Mean 20Herence Mean 20Herence         Mean 20Herenc	Shudu or Publication			Weinte		Mean Differenc
Hearographic Not applicable Test for overall effect. $Z = 0.20$ ( $P = 0.84$ ) 5 DMPA 150 mg/mL versus COC 5.1 Mean weight change ( $Ig$ ) at 6 months Tractman 2005 0.0 6 5.8 40 1.1 3.4 03 100.0% $-0.50$ ( $2.26, 1.26$ ) Tuchman 2005 0.0 6 5.8 40 1.1 3.4 03 100.0% $-0.50$ ( $2.26, 1.26$ ) Tuchman 2005 0.0 6 5.8 40 1.1 3.4 03 100.0% $-0.50$ ( $2.26, 1.26$ ) Tuchman 2005 0.0 6 5.8 40 1.1 3.4 03 100.0% $-0.50$ ( $2.26, 1.26$ ) Tuchman 2005 0.0 6 5.8 40 1.1 3.4 03 100.0% $-0.50$ ( $2.26, 1.26$ ) Tuchman 2005 0.1 2 0 5.8 ( $P = 0.58$ ) 5.2 Mean weight change ( $Ig$ ) at 12 months Tractman 2005 1.2 0 1.2 2 1 5.2 100.0% $-0.70$ ( $-1.32, 3.27$ ) Tuchman 2005 1.2 0 2 5.2 100.0% $-0.70$ ( $-1.32, 3.27$ ) Tuchman 2005 1.2 0 2.5 2 100.0% $-0.70$ ( $-1.32, 3.27$ ) Tuchman 2005 1.2 0 5.2 ( $P = 0.50$ ) 5.3 Mean parcentage weight change at 6 months Tractman 2005 1.2 7.6 40 1.3 4.9 10 0.0% $-0.70$ ( $-3.10, 1.70$ ) Helerogeneity: Not applicable Test for overall effect. $Z = 0.52$ ( $P = 0.57$ ) 5.4 Mean parcentage weight change at 12 months Tuchman 2005 1.2 7.7 8 40 1.3 4.9 10 0.0% $-0.70$ ( $-3.10, 1.70$ ) Helerogeneity: Not applicable Test for overall effect. $Z = 0.57$ ( $P = 0.57$ ) 5.4 Mean parcentage weight change at 12 months Tuchman 2005 1.2 7.7 8 40 1.3 4.9 10 0.0% $-0.70$ ( $-3.10, 1.70$ ) Helerogeneity: Not applicable Test for overall effect. $Z = 0.57$ ( $P = 0.57$ ) 5.4 Mean parcentage weight change at 12 months Trachman 2005 2.9 8.3 29 2.9 8.4 52 100.0% $0.00$ ( $-3.79, 3.79$ ) Total (955.C1) 29 5.3 10 0.0% $0.39$ ( $-3.79, 3.79$ ) Helerogeneity: Not applicable Test for overall effect. $Z = 1.0.7$ ( $P = 0.57$ ) 5.4 Weight gain $>=1$ kg at month 6 Trachman 2005 2.9 5.1 5 9 16 100.0% $0.39$ ( $-3.79, 3.79$ ) Helerogeneity: Not applicable Test for overall effect. $Z = 1.27$ ( $P = 0.20$ ) Total events 5 9 Helerogeneity: Not applicable Test for overall effect. $Z = 1.27$ ( $P = 0.20$ ) Total events 5 9 Helerogeneity: Not applicable Test for overall effect. $Z = 1.27$ ( $P = 0.20$ ) Test moreal effect. $Z = 1.27$ ( $P = 0.20$		2.9 8.3 29				10, Pixed, 95%C
Text for overall effect: Z = 0.20 (P = 0.84)       Favors treatment Favor         5 DMPA 150 mg/mL versus COC         51 Mean weight change (kg) at 6 months         Tuchman 2005       0.6       5.8       40       1.1       3.4       93       100.0%       -0.50 (-2.26, 1.26)       Mean Difference	Total (95% Cl)	29	17	100.0%	-0.70 [-7.58, 6.18]	
S DMPA 160 mg/mL versus COC 5.1 Mean weight change (kg) at months Treatment Control Mean Difference Study or Studgroup Mean SD Tetal Mean SD Tetal Versight M, Reed, 95%,Cl Tuchman 2005 0.06 5.8 49 11.3.4 93 100.0% 0.50 [-2.26, 1.26] J Cola (95%,Cl) 49 93 100.0% 0.50 [-2.26, 1.26] J Cola (95%,Cl) 120 15.1 52 100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 29 5.2 [100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 49 19 4.9 93 100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 49 19 4.9 93 100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 49 19 4.9 93 100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 49 19 4.9 93 100.0% 0.70 [-1.92, 3.32] Total (95%,Cl) 49 19 4.9 93 100.0% 0.70 [-1.92, 3.76] Total mean 200 1.2 7.8 49 1.9 4.9 93 100.0% 0.70 [-3.10, 1.70] Hear particular theorem the Control Mean Difference Study or Studgroup Mean 30 Total Mean 30 Total Weight M, Fried 95%,Cl	Heterogeneity: Not ap Test for overall effect	plicable Z = 0.20 (P = 0.84)				-10 -5 0
S.1 Mean weight change (kg) at 6 months         Yudy or Subgroup       Mean SD       Testment       Control       Mean Difference       M. Prod. 95%.C       Mean Difference         Tuchman 2005       0.6 8.6 M       40       1.3 3.4       93       100.9% - 0.50 [-2.6, 1.26]						ravors reatment ravon
Treatment         Control         Mean Difference						
Study or Subgroup         Mean         SD         Text Mean	5.1 Mean weight chan		Control		Mean Difference	Mean Difference
Total (95% CI)       49       93       100.0%       0.50 [-2.26, 1.26]         Heterogeneity: Not applicable       Transment       Control       Mean Difference       Maan Difference         Stady or Subgroup       Maan Difference       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Maan Difference       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Maan Difference       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Treatment       Control       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Treatment       Control       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Treatment       Control       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Treatment       Control       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Treatment       Control       Mean Difference       Mean Difference       Mean Difference         Stady or Subgroup       Mean Difference       Mean Difference       Mean Difference       Mean Difference       Mean Difference       Mean Difference <td></td> <td>Mean SD Total</td> <td>Mean SD Tota</td> <td>Weight</td> <td>IV, Fixed, 95% Cl</td> <td>IV, Fixed, 95%</td>		Mean SD Total	Mean SD Tota	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95%
historogeneity: Not applicable Tast for overall effect. Z = 0.58 (P = 0.58) 52 Mean weight change (kg) at 12 months Treatment Control Mean Difference N Factor Beatment Factor 53 Mean parcentage weight change at 6 months Treatment Control Mean Difference Hash Difference Treatment Control Mean Difference N Factor Beatment Factor 53 Mean parcentage weight change at 6 months Treatment 2005 1.2 7.6 49 1.3 4.3 1000% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 49 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 49 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 49 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 49 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 49 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 40 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 40 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 40 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 40 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 1.2 7.6 40 1.3 4.9 31 100.0% 0.70 [-3.10, 1.70] Tuchman 2005 2.9 8.3 29 2.9 8.4 21 100.0% 0.00 [-3.70, 3.70] Tuchman 2005 2.9 8.3 29 2.9 8.4 21 100.0% 0.00 [-3.70, 3.70] Tuchman 2005 2.9 8.3 29 2.9 8.4 21 100.0% 0.00 [-3.70, 3.70] Tuchman 2005 2.9 8.3 100.0% 0.30 [-3.73, 3.70] Facors beatment Facor 5.5 Weight gain >=1 kg at month 6 Study or Subgroup Teatment Control Odds Ratio Odds Ratio Study or Subgroup Teatment Control Odds Ratio Study or Subgroup Teatment Control Study						80.00
5.2 Mean weight change (kg) at 12 months 5.2 Mean weight change (kg) at 12 months 5.1 Mean SD Tetal Mean SD Total Mean SD Total Weight (N, Fixed, 95%, CD) Total (95%, CD) 5.3 Mean percentage weight change at 6 months 5.4 Mean percentage weight change at 8 months 5.4 Mean percentage weight change at 8 months 5.4 Mean percentage weight change at 2 months 5.4 Mean percentage weight change at 12 months 5.5 Weight gain >=1 kg at month 6 5.5 Weight gain >=1 kg at month 6 5.6 Weight gain >=1 kg at month 12 5.8 Weight gain >=1 kg at month 12 5.9 Weight gain >=1 k	Heterogeneity: Not ap	plicable	93	100.0%	-0.50 [-2.26, 1.26]	
Tuchman 2005         1.7         6.1         29         1         5.1         62         100.0%         0.70 [-1.82, 3.32]           Total (055.Cf)         29         52         100.0%         0.70 [-1.82, 3.32]           Hetrogeneity: Not applicable Test for overall effect. 2 = 0.50 (P = 0.60)         29         52         100.0%         0.70 [-1.82, 3.32]           Statusy or Subgroup         Treatment Testment         Control Control         Mean Difference N. Freed, 95% CI Favors treatment         Mean Difference N. Freed, 95% CI Favors treatment         Mean Difference N. Freed, 95% CI Favors treatment         Not applicable           Staty or Subgroup         Treatment Treatment         Control Control S. Weight gain >=1 kg at month 6         Mean Difference N. Freed, 95% CI Tuchman 2005         Mean Difference N. Freed, 95% CI N. Freed, 95% CI Tuchman 2005         Mean Difference N. Freed, 95% CI N. Freed, 95% CI Tuchman 2005         Mean Difference N. Freed, 95% CI Tuchman 2005         N. Freed, 95% CI M. H. Freed, 95% CI Tuchman 2005         N. Freed, 95% CI Tuchman 2005         Mean Difference N. Freed, 95% C			i.			-4 -2 0 2 Favors treatment Favor
Heterogenetity: Not applicable Trest for overall effect: Z = 0.50 (P = 0.60) <b>1 4 -2 0 2</b> Favors brastment <b>Favors</b> <b>brance</b> <b>S.3. Mean percentage weight change at 6 months</b> S.3. Mean percentage weight change at 6 months <b>S.3. Mean percentage weight change at 6 months</b> S.4. Mean 2005 <b>1.2</b> <b>7.8</b> <b>4.9</b> <b>3.9</b> <b>10.0</b> <b>5.9</b> <b>10.1</b> <b>7.6</b> <b>10.2</b> <b>7.6</b> <b>4.9</b> <b>9.3</b> <b>10.0</b> <b>5.4</b> <b>Mean DDF</b> <b>7.6</b> <b>10.9</b> <b>10.0</b> <b>5.4</b> <b>Mean DDF</b> <b>10.0</b> <b>7.6</b> <b>10.0</b> <b>5.4</b> <b>Mean DF</b> <b>10.0</b> <b>7.6</b> <b>10.0</b> <b>7.6</b> <b>10.0</b> <b>7.6</b> <b>10.0</b> <b>7.6</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b> <b>10.0</b>	5.2 Mean weight chan	ge (kg) at 12 months Treatment	Control	Weinter		Favors treatment Favon
Test for overall effect: Z = 0.52 (P = 0.60)       Factors businent       Fac	5.2 Mean weight chan	ge (kg) at 12 months Treatment Mean SD Total	Control Mean SD Tota		IV, Fixed, 95% Cl	Favors treatment Favor Mean Differenc
Study or Subgroup         Treatment 10 uchron 2005         Control 12 (37.8)         Mean Difference 49 (37.6)         Mean Difference 40	5.2 Mean weight chan Study or Subgroup Tuchman 2005 Total (95% CI)	ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 29	Control Mean SD Tota 1 5.1 52	100.0%	IV, Fixed, 95% Cl 0.70 [-1.92, 3.32]	Favors treatment Favor Mean Differenc
Study or Subgroup         Mean         SD         Total         Mass         SD         Total         Model         SD         Total         Model <td>5.2 Mean weight chan Study or Subgroup Tuchman 2005 Total (95% CI) Heterogeneity: Not ap</td> <td>ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 29 plicable</td> <td>Control Mean SD Tota 1 5.1 52</td> <td>100.0%</td> <td>IV, Fixed, 95% Cl 0.70 [-1.92, 3.32]</td> <td>Mean Difference IV, Fixed, 95% C</td>	5.2 Mean weight chan Study or Subgroup Tuchman 2005 Total (95% CI) Heterogeneity: Not ap	ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 29 plicable	Control Mean SD Tota 1 5.1 52	100.0%	IV, Fixed, 95% Cl 0.70 [-1.92, 3.32]	Mean Difference IV, Fixed, 95% C
Tuchman 2005         1.2         7.8         49         1.9         4.9         83         100.0%         4.76 (4.3.10, 1.70)           Total (65% Cf)         49         53         100.0%         4.76 (4.3.10, 1.70)         -4         2.0         2           Hetrogeneity, Not applicable Test for overall effect. 2 = 0.57 (P = 0.57)         Total (65% Cf)         48         53         100.0%         -0.76 (3.10, 1.70)           Staty or Subgroup         Treatment Mean D Total (65% Cf)         Total Mean DF Total Weight Hetrogeneity, Not applicable Test for overall effect. 2 = 0.00 (P = 1.00)         29         52         100.0%         0.00 (-3.78, 3.70)           5.5 Weight gain >=1 kg at month 6         Total Weight Met, Fixed, 65% Cf         Met, Rived, 65% Cf         Met, Rived, 65% Cf         Met, Rived, 65% Cf           Total (65% Cf)         15         15         9         16         0.00 (0.39) (0.39) (0.39) (0.9, 1.67)         0.01 (0.1, 1         10           Total events         5         9         16         100.0%         0.39 (0.9, 1.67)         0.01 (0.1, 1         10           Total events         5         9         16         100.0%         0.39 (0.9, 1.67)         0.01 (0.1, 1         10           Total events         5         9         16         0.039 (0.09, 1.67) <t< td=""><td>5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95%CI) Heterogeneity: Not ag Test for overall effect:</td><td>ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 29 plicable Z = 0.52 (P = 0.60)</td><td>Control Mean SD Tota 1 5.1 52 52</td><td>100.0%</td><td>IV, Fixed, 95% Cl 0.70 [-1.92, 3.32]</td><td>Mean Difference IV, Fixed, 95% C</td></t<>	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95%CI) Heterogeneity: Not ag Test for overall effect:	ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 29 plicable Z = 0.52 (P = 0.60)	Control Mean SD Tota 1 5.1 52 52	100.0%	IV, Fixed, 95% Cl 0.70 [-1.92, 3.32]	Mean Difference IV, Fixed, 95% C
Total (95% CI)         49         93         100.0%         0.76 [-3.10, 1.70]           Heterogeneity: Not applicable         Test for overall effect: Z = 0.57 (P = 0.57)         93         100.0%         0.76 [-3.10, 1.70]           S4 Mean percentage weight change at 12 months         Treatment         Control         Mean Difference         Mean Difference           Study or Studgroup         Mean 3D         Total Mean         SD         100.0%         0.00 [-3.79, 3.79]           Tuchman 2005         2.9         0.3         29         2.8         6.4         52         100.0%         0.00 [-3.79, 3.79]           Tuchman 2005         2.9         0.3         29         2.8         0.00%         0.00 [-3.79, 3.79]         100.0%         0.00 [-3.79, 3.79]           Heterogeneity: Not applicable         Treatment         Control         Odds Ratio         0.01 [-3.79, 3.79]         14         -2         0.27           Study or Subgroup         Treatment         Control         Odds Ratio         0.01 [-1         10           Total (95%CI)         15         16         100.0%         0.39 [0.09, 1.67]         10.1         10.01         10.01         10.01         10.01         10.01         10.01         10.01         0.01         0.01         10.01	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95%CI) Heterogeneity: Not ap Test for overall effect 5.3 Mean percentage to	ge (kg) at 12 months Treatment Mean SD Total 1.7 6.1 29 plicable Z = 0.52 (P = 0.60) weight change at 6 r Treatment	Control Mean SD Tota 1 5.1 52 52 nonths Control	2 100.0% 2 100.0%	V, Fixed, 95% Cl 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference	Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favors Mean Difference
Heterogramity: Not applicable Treat roward effect: Z = 0.57 (P = 0.57)         → → → ⊕ ⊕ Z Facon leadment         → ⊕ E Facon leadment	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u>	ge (kg) at 12 months Treatment Man SD Total 1.7 6.1 29 picable Z = 0.52 (P = 0.60) weight change at 6 r Treatment Mean SD Total	Control Mean SD Tota 1 5.1 52 52 nonths Control Mean SD Tota	2 100.0% 2 100.0% I Weight	V, Fixed, 95% Cl 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV, Fixed, 95% Cl	Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favors Mean Difference
S.4 Mean percentage weight change at 12 months           Treatment         Control         Mean Difference	5.2 Mean weight cham, <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Heterogeneity: Not ag- Test for overall effect 5.3 Mean percentage or <u>Study or Subgroup</u> Tuchman 2005	ge (kg) at 12 months Treatment <u>Man SD Total</u> 1.7 6.1 29 plicable Z = 0.52 (P = 0.60) weight change at 6 r <u>Treatment</u> <u>Mean SD Total</u> 1.2 7.8 49	Control Mean SD Tota 1 5.1 52 53 nonths Control Mean SD Tota 1.9 4.9 92	2 100.0% 2 100.0% 1 Weight 1 100.0%	IV, Fixed, 95% Cl           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Moan Difference           IV, Fixed, 95% Cl           -0.70 [-3.10, 1.70]	Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favors Mean Difference
Study or Subgroup         Treatment (N, Fixed, 95%,CI         Mean Difference (N, Fixed, 95%,CI         Mean Difference (N, Fixed, 95%,CI           Total (95%,Cf)         29         2.9         8.4         52         100.0%         0.00 [-3.78, 3.78]           Total (95%,Cf)         29         2.9         8.4         52         100.0%         0.00 [-3.78, 3.78]           Total (95%,Cf)         29         52         100.0%         6.00 [-3.78, 3.78]           Study or Subgroup         200 (P = 1.00)         52         100.0%         6.00 [-3.78, 3.78]           Study or Subgroup         Events         Total (95%,Cf)         29         52         100.0%         6.00 [-3.78, 3.78]           Study or Subgroup         Events         Total (95%,Cf)         4.2         2         2           Study or Subgroup         Events         Total (95%,Cf)         MH, Fixed, 95%,Cf         MH, Fixed, 95%,Cf           Tamberoon 1976         5         16         100.0%         0.39 [0.09, 1.67]         MH, Fixed, 95%,Cf           Total (95%,Cf)         15         16         100.0%         0.39 [0.09, 1.67]         Faxors operimental Favors operimenta	5.2 Mean weight cham, <u>Study or Subgroup</u> Tuchman 2005 Total (195% C) Histerogeneity: Not ap Test for overall effect 5.3 Mean percentage to <u>Study or Subgroup</u> Tuchman 2005 Total (195% C)	ge (kg) at 12 months Treatment Maan SD Total 1.7 6.1 29 plicable Z = 0.52 (P = 0.60) weight change at 6 r Treatment Mean SD Total 1.2 7.8 49 plicable	Control Mean SD Tota 1 5.1 52 53 nonths Control Mean SD Tota 1.9 4.9 92	2 100.0% 2 100.0% 1 Weight 1 100.0%	IV, Fixed, 95% Cl           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Moan Difference           IV, Fixed, 95% Cl           -0.70 [-3.10, 1.70]	Favors treatment. Favor Mean Difference IV, Fixed, 95%C Favors treatment. Favors Mean Difference IV, Fixed, 95%L Mean Difference IV, Fixed, 95%L
Study or Subgroup         Main         SD. Total         Weight         W. Fixed, 95%.Cl         V. Fixed, 95%.Cl           Tuchman 2005         2.9         8.3         29         2.8         8.4         52         100.0%         0.00 [-3.78, 3.78]           Total (95%.Cl)         29         2.9         8.4         52         100.0%         0.00 [-3.78, 3.78]           Total (95%.Cl)         29         52         100.0%         0.00 [-3.78, 3.78]           Staturopeneity: Not applicable         29         52         100.0%         0.00 [-3.78, 3.79]           Staturopeneity: Not applicable         Treatment         Control         Didds Ratio         Didds Ratio           Study or Subgroup         Events         Total (95%.Cl)         Didds Ratio         Didds Ratio           Tarikeyon: 1976         5         15         9         16         00.0%         0.39 [0.09, 1.67]           Total (95%.Cl         16         100.0%         0.39 [0.09, 1.67]         Didds Ratio           Failor pointly: Not applicable         5         9         16         100.0%         0.39 [0.09, 1.67]           Total (95%.Cl         Tarikeyon: Subgroup         Events         Total (95%.Cl         Mith Fixed, 95%.Cl         Mith Fixed, 95%.Cl	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneily: Not ap Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneily: Not ag Test for overall effect	ge (kg) at 12 months           Treatment           Maan         SD         Total           1.7         6.1         29           plicable         29         29           plicable         2         0.52 (P = 0.60)           Treatment         Mean         SD         Total           1.2         7.8         49         9           plicable         Z         0.57 (P = 0.57)         49	Control Mean SD Tota 1 5.1 55 S5 nonths Control Mean SD Tota 1.9 4.9 95	2 100.0% 2 100.0% 1 Weight 1 100.0%	IV, Fixed, 95% Cl           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Moan Difference           IV, Fixed, 95% Cl           -0.70 [-3.10, 1.70]	Favors treatment. Favor Mean Difference IV, Fixed, 95%C Favors treatment. Favors Mean Difference IV, Fixed, 95%L Mean Difference IV, Fixed, 95%L
Total (95%,Cl)         29         52         100.0%         0.00 [-3,78, 3.79]           Heterogeneity: Not applicable         Test for overall effect: Z = 0.00 (P = 1.00)         Favors treatment         Favors treatment           5.5 Weight gain >= 1 kg at month 6         Treatment         Control         Odds Ratio         Odds Ratio           5.6 Weight gain >= 1 kg at month 6         Treatment         Control         Odds Ratio         Odds Ratio           7 antergoen 1970         5         15         9         16         0.00%         0.39 [0.09, 1.67]           7 cluit (95%,Cl)         15         16         100.0%         0.39 [0.09, 1.67]         0.01         0.1         1         10           Februrgsmeily: Not applicable         9         16         100.0%         0.39 [0.09, 1.67]         0.01         0.1         0.1         1         10           Februrgsmeily: Not applicable         9         16         100.0%         0.39 [0.09, 1.67]         10	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneily: Not ap Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneily: Not ag Test for overall effect	ge (kg) at 12 months           Treetment           Man         SD           1.7         6.1           29           plicable         29           z         0.52           Z         0.52           Treatment         1.2           Mean         SD           Total         90           plicable         2           Z         0.52           Y.7         49           plicable         2           Z         0.57           Medit change at 12	Control Mean SD Tota 1 5.1 55 55 nonths Control Mean SD Tota 1.9 4.9 95 95	2 100.0% 2 100.0% 1 Weight 1 100.0%	IV, Fixed, 95% CI 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV, Fixed, 95% CI 0.70 [-1.0, 1.70] -0.70 [-3.10, 1.70]	Favors treatment Favor IV, Fixed, 95%C Favors treatment Favor Mean Differenc IV, Fixed, 95%C Favors treatment Favor Favors treatment Favor
Interrogeneity: Not applicable         Treatment         Control         Didds Ratio           5.5 Weight gain >= 1 kg at month 6         Treatment         Control         Odds Ratio         MH, Fixed, 95%,CI           Study or Subgroup         Events         Total Person         0.39 [0.09, 1.67]         MH, Fixed, 95%,CI           Tankeyoon 1976         5         15         9         16 100.0%         0.39 [0.09, 1.67]           Total (P55:CD)         15         16         100.0%         0.39 [0.09, 1.67]           Total (P55:CD)         5         9         16 100.0%         0.39 [0.09, 1.67]           Sk Weight gain >= 1 kg at month 12         Faxtment         Control         Didds Ratio           Sk Weight gain >= 1 kg at month 12         Treatment         Control         Odds Ratio           Study or Subgroup         Events         Total Events         Odds Ratio           Study or Subgroup         Events         Total Events         MH, Fixed, 95%,CI           Tanksycon 1976         8         14         9         12 100.0%         0.44 [0.08, 2.39]           Total (P55/CD)         14         12 100.0%         0.44 [0.08, 2.39]         MH, Fixed, 95%,CI	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ap Test for overall effect <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Test for overall effect 5.4 Mean percentage to <u>Study or Subgroup</u>	ge (kg) at 12 months           Treetment           Man         SD           1.7         6.1         29           plicable         29           plicable         29           additional state         1.7           Man         SD         7041           Mean         SD         Total           1.2         7.6         49           plicable         2         6.07           Z         0.57         (P = 0.57)           weight change at 12         Treatment           Mean         SD         Total	Control Mean SD Tota 1 5.1 67 57 nonthe Control 1.9 4.9 57 92 months Control Mean SD Tota	100.0% 100.0% Weight 100.0%	IV., Fixed, 95% CI 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV. Fixed, 95% CI 0.70 [-3.10, 1.70] -0.70 [-3.10, 1.70] Mean Difference IV., Fixed, 95% CI	Favors treatment Favor Mean Differenc IV, Fixed, 95% Favors treatment Favor Mean Differenc IV, Fixed, 95% Favors treatment Favor Favors treatment Favor Mean Differenc Favors favors favor
Test 50 Overlatit mittel: 2 = 0.00 (r ≠ 1.00)         Favors treatment         Favors treatment         Favors treatment           5.5 Weight gain >=1 kg at month 6         Treatment         Control         Odds Ratio         Odds Ratio           Study or Subgroup         Events         Total (95%CI)         15         16         100.0%         0.39 (0.09, 1.67)           Total (95%CI)         15         16         100.0%         0.39 (0.09, 1.67)         0.01         0.1         1         10           Total (95%CI)         15         16         100.0%         0.39 (0.09, 1.67)         0.01         0.1         1         10           Total events	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (95% 0) Haterogeneily: Not ap Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Total (95% C) Haterogeneily: Not ag Test for overall effect 5.4 Mean percentage to <u>Study or Subgroup</u> Tuchman 2005	ge (kg) at 12 months Treatment Man SD Total 1.7 6.1 29 plicable Z = 0.52 (P = 0.60) weight change at 6 r Treatment Mean SD Total 1.2 7.8 49 plicable Z = 0.57 (P = 0.57) weight change at 12 Treatment Mean SD Total 2.9 8.3 29	Control         Maan         SD         Total           1         5.1         5.7         5.7         5.7           nonths         Control         5.0         5.2         5.2           Maan         SD         5.0         9.2         9.2           months         Control         Maan         5.0         9.2           months         Control         Maan         5.0         1.2         8.4         5.2	100.0% 100.0% 100.0% 100.0% 100.0%	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]	Favors treatment Favor Mean Differenc IV, Fixed, 95% Favors treatment Favor Mean Differenc IV, Fixed, 95% Favors treatment Favor Favors treatment Favor Mean Differenc Favors favors favor
Treatment         Centrol         Odds Ratio           Btudy or Subgroup         Events         Tetal         Weight         MH, Fixed, 95%,CI           Tankoyoon 1976         5         15         9         16         100.0%         0.39         0.09, 1.67           Total (95%,CD)         15         16         100.0%         0.39         0.09, 1.67         1           Total (95%,CD)         15         16         100.0%         0.39         0.09, 1.67         0.01         0.1         1         10           Total (95%,CD)         15         16         100.0%         0.39         0.09, 1.67         0.01         0.1         1         10           Feators experimental         5         9         16         100.0%         0.39         0.09, 1.67         0.01         0.1         1         10           Feators experimental         MH, Fixed, 9%, CI	5.2 Mean weight cham <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag Tuchman 2005 Total (95% C) Haterogeneity: Not ag	ge (kg) at 12 months <u>Mean SD Total</u> 1.7 0.1 29 picable Z = 0.52 (P = 0.60) weight change at 6 r <u>Treatment</u> <u>Mean SD Total</u> 2.9 6.3 29 picable <u>Z = 0.57 (P = 0.57)</u> <u>Mean SD Total</u> <u>2.9 6.3 29</u> picable <u>2.9 6.3 29</u> <u>2.9 picable</u> <u>2.9 50 1000</u>	Control         Maan         SD         Total           1         5.1         5.7         5.7         5.7           nonths         Control         5.0         5.2         5.2           Maan         SD         5.0         9.2         9.2           months         Control         Maan         5.0         9.2           months         Control         Maan         5.0         1.2         8.4         5.2	100.0% 100.0% 100.0% 100.0% 100.0%	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]	Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favor
Study or Subgroup         Events         Total 1         Weight         M+F, Rsed, 95%,CI         M+H, Fixed, 95%,CI           Tankeyoon 1976         5         15         9         16         100.0%         0.39 [0.09, 1.67]           Total (95%,CI)         15         16         100.0%         0.39 [0.09, 1.67]           Total (95%,CI)         15         16         100.0%         0.39 [0.09, 1.67]           Total versits         5         9         0.01         0.1         1           Heider openicable         9         0.01         0.1         1         10           Fest for overall effect: Z = 1.27 (P = 0.20)         Packets specimental         Favors experimental         M+L Fixed, 9%,CI         M+L Fixed, 9%,CI </td <td>5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (96% CI) Heterogeneity: Not ag <u>Study or Subgroup</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag <u>Text for overall effect</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Text for overall effect</td> <td>ge (kg) at 12 months Treatment <u>Man SD Total</u> 90 91 91 92 92 92 92 92 92 92 92 92 92</td> <td>Control         Maan         SD         Total           1         5.1         5.7         5.7         5.7           nonths         Control         5.0         5.2         5.2           Maan         SD         5.0         9.2         9.2           months         Control         Maan         5.0         9.2           months         Control         Maan         5.0         1.2         8.4         5.2</td> <td>100.0% 100.0% 100.0% 100.0% 100.0%</td> <td>IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]</td> <td>Favors treatment. Favor Nean Difference IV, Fixed, 95%.C Favors treatment Favor Mean Difference IV, Fixed, 95%.C Favors treatment Favor Mean Difference IV, Fixed, 95%.C Mean Difference IV, Fixed, 95%.C IV, Fixed, 95%.C IV,</td>	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (96% CI) Heterogeneity: Not ag <u>Study or Subgroup</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag <u>Text for overall effect</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Text for overall effect	ge (kg) at 12 months Treatment <u>Man SD Total</u> 90 91 91 92 92 92 92 92 92 92 92 92 92	Control         Maan         SD         Total           1         5.1         5.7         5.7         5.7           nonths         Control         5.0         5.2         5.2           Maan         SD         5.0         9.2         9.2           months         Control         Maan         5.0         9.2           months         Control         Maan         5.0         1.2         8.4         5.2	100.0% 100.0% 100.0% 100.0% 100.0%	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]	Favors treatment. Favor Nean Difference IV, Fixed, 95%.C Favors treatment Favor Mean Difference IV, Fixed, 95%.C Favors treatment Favor Mean Difference IV, Fixed, 95%.C Mean Difference IV, Fixed, 95%.C IV,
Total (95%Cl)         15         16         100.0%         0.39 [0.09, 1.87]           Total versits         5         9           Holoropenelity. Not applicable         5         9           Test for overall effect: Z = 1.27 (P = 0.20)         Packs depictmental         10           5.6 Weight gain >~1 kg at month 12         Treatment         Control         Odds Ratio           Study or Subgroup         Terestment         Control         Odds Ratio         MH, Fixed, 95% Cl           Tankeycon 1976         8         14         9         12         100.0%         0.44 [0.08, 2.39]           Total (95%Cl)         14         12         100.0%         0.44 [0.08, 2.39]         Image: Control 100 (0.0%         Image: Control 100 (0.0%         0.44 [0.08, 2.39]	5.2 Mean weight chan <u>Study or Subgroup</u> Tuchman 2005 Total (96% CI) Heterogeneity: Not ag <u>Study or Subgroup</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag <u>Text for overall effect</u> <u>Study or Subgroup</u> Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Tuchman 2005 Total (95% CI) Heterogeneity: Not ag Text for overall effect	ge (kg) at 12 months Treetment Man SD Total 1.7 6.1 29 plicable 29 plicable 29 2 0.52 (P = 0.60) Weight change at 6 <i>i</i> Treatment Man SD Total 1.2 7.8 49 plicable 2 = 0.57 (P = 0.57) weight change at 12 Treatment Mean SD Total 2.9 8.3 29 plicable 2.9 8.3 29 plicable 3.9 7 2.9 0.00 (P = 1.00) g at month 6	Control         Maa n         SD         Tota           1         5.1         6         5           nonths         Control         5         5           Mean         SD         Tota         9           1.9         4.9         9         9           months         Control         92         92           Mean         SD         Tota         5           2.9         8.4         5         53	<ol> <li>Weight 100.0%</li> <li>Weight 100.0%</li> <li>Weight 2 100.0%</li> </ol>	IV, Fixed, 95% CI 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV, Fixed, 95% CI -0.70 [-3.10, 1.70] -0.70 [-3.10, 1.70] Mean Difference IV, Fixed, 95% CI 0.00 [-3.79, 3.79]	Favors treatment Favor Nean Difference IV, Fixed, 95%C Favors treatment Favor Maan Difference IV, Fixed, 95%C Maan Difference IV, Fixed, 95%C Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favor
Total reverts         5         9           Holoropanelly Law to policable         0.01         0.1         10           Test for overall effect: Z = 1.27 (P = 0.20)         Favors experimental         Favors experimental           5.6 Weight gain >= 1 kg at month 12         Treatment         Control         Odds Ratio           Study or Subgroup         Testment         Control         Odds Ratio         MH, Fixed, 95% CI           Tankeycon 1976         8         14         9         12         100.0%         0.44 [0.08, 2.39]           Total (95% CI         14         12         100.0%         0.44 [0.08, 2.39]         Total (95% CI	5.2 Mean weight cham Study or Subgroup Tuchman 205 Total (95% CI) Heterogeneity: Not ap Tuchman 2005 Total (95% CI) Heterogeneity: Not ap Tuchman 2005 5.4 Mean percentage Study or Subgroup Tuchman 2005 Tuchman 2005 Tuchman 2005 Tuchman 2005 Tuchman 2005 Tuchman 2005 S.4 Mean percentage Study or Subgroup Tuchman 2005 Tuchman 2005 S.4 Mean percentage Study or Subgroup Tuchman 2005 S.5 Weight gain >= 1 k Study or Subgroup	ge (kg) at 12 months Treatment <u>Man SD Total</u> 1.7 6.1 29 plicable 29 plicable 2 0.52 (P = 0.60) Weight change at 6 <i>i</i> Treatment <u>Man SD Total</u> 1.2 7.8 49 plicable 2 = 0.57 (P = 0.57) weight change at 12 2.9 8.3 29 plicable 2 2.9 8.3 29 plicable 2 2.9 0.0 (P = 1.00) g at month 6 <u>Treatment</u> <u>Events Total E</u>	Control         Maa         SD         Tota           1         5.1         5           nonths         Control         5           Mean         SD         Tota           1.9         4.9         9           Months         Control         92           Months         S         55           Control         S         55           Control         S         55           Control         S         55	<ol> <li>100.0%</li> <li>100.0%</li> <li>100.0%</li> <li>100.0%</li> <li>100.0%</li> <li>100.0%</li> <li>100.0%</li> <li>00.0%</li> <li>00.0%</li> <li>00.0%</li> </ol>	IV, Fixed, 95% CI 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV, Fixed, 95% CI Mean Difference IV, Fixed, 95% CI 0.00 [-3.79, 3.79] 0.00 [-3.79, 3.79] dds Ratio Fixed, 95% CI	Favors treatment Favor Mean Differenc IV, Fixed, 95%C 4 - 2 - 0 - 2 Favors treatment Favor Mean Differenc IV, Fixed, 95%C Favors treatment Favor Mean Differenc IV, Fixed, 95%C 
Test for overail effect: Z = 1.27 (P = 0.20)         0.31         0.1         10           5.6 Weight gain >~1 kg at month 12         Favors superimental         Favors superimental         Favors outperimental           Study or Subgroup         Events         Control         Odds Ratio         Odds Ratio           Tranksycon 1976         8         14         9         12         100.0%         0.44 [0.08, 2.39]           Total (95% CI)         14         12         100.0%         0.44 [0.08, 2.39]         0.41	5.2 Mean weight cham <u>Study or Subgroup</u> Tuchmin 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.4 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag Total (95% C) Total (95% C) Tot	ge (kg) at 12 months           Treetment           Man         SD           1.7         6.1           29           plicable         29           Z         0.52 (P = 0.60)           Weight change at 6 ir         12           Treatment         49           plicable         49           Z         0.57 (P = 0.57)           weight change at 12         50           Z         0.50 (P = 0.57)           weight change at 2         29           plicable         29           Z         0.50 (P = 1.57)           gat month 6         29           Freatment         1.00           g at month 6         1           Treatment         5           S         15	Control         Maa of 50         Tota of 50           1         5.1         6         53           nonths         Control         1         53           Mean SD Tota of 50         92         92         92           months         Control         92         53         53           Control         Mean SD Tota of 50         53         53           Control         S3         53         53           Control         S3         53         53           Control         S3         53         53	1 100.0% 1 100.	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]	Favors treatment Favor Mean Differenc IV, Fixed, 95%C 4 - 2 - 0 - 2 Favors treatment Favor Mean Differenc IV, Fixed, 95%C Favors treatment Favor Mean Differenc IV, Fixed, 95%C 
Treatment         Control         Odds Ratio         Odds Ratio           Study or Subgroup         Events         Total         Events         Total         Weight         M-K, Fixed, 95%,CI         M-K, Fixed, 95%,CI           Tankeycon 1976         8         14         9         12         100.0%         0.44 [10.08, 2.39]         Total (95%,CI)         14         12         100.0%         0.44 [10.08, 2.39]         Total (95%,CI)         Total (95%,CI)         Total (95%,CI)         14         12         100.0%         0.44 [10.08, 2.39]         Total (95%,CI)         To	5.2 Mean weight cham Study or Subgroup Tuchman 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.3 Mean percentage 1 Study or Subgroup Tuchman 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.4 Mean percentage Study or Subgroup Tuchman 2005 Total (95% C) Total (95% C) Tatal (95% C) Tatal (95% C) Tatal (95% C) Total (95% C) Total (95% C)	ge (kg) at 12 months <u>Mean SD Total</u> 1.7 0.1 29 picable 2 = 0.52 (P = 0.60) weight change at 6 r <u>Treatmont</u> <u>Mean SD Total</u> 1.2 7.8 49 picable Z = 0.57 (P = 0.57) weight change at 12 <u>Treatmont</u> <u>Mean SD Total</u> 2.9 0.3 29 picable Z = 0.00 (P = 1.00) g at month 6 <u>Treatment</u> <u>S Treatment</u> <u>S Total</u> <u>S Total</u>	Mean         SD         Teta           1         5.1         5.5           nonths         50         50           Mean         SD         Teta           1.3         4.9         60           months         92         50           Control         52         53           Control         53         53           Control         51         53           Control         51         53           Control         51         53           Control         53         53	1 100.0% 1 100.	IV, Fixed, 95% CI 0.70 [-1.92, 3.32] 0.70 [-1.92, 3.32] Mean Difference IV, Fixed, 95% CI 0.70 [-3.10, 1.70] Mean Difference IV, Fixed, 95% CI 0.00 [-3.79, 3.79] 0.00 [-3.79, 3.79] dds Ratio Fixed, 95% CI 39 [0.09, 1.67]	Favors treatment. Favor Mean Difference IV, Fixed, 95%C Favors treatment. Favors Maan Difference IV, Fixed, 95%C Mean Difference IV, Fixed, 95%C Mean Difference IV, Fixed, 95%C Mean Difference IV, Fixed, 95%C
Study or Subgroup         Events         Total         Events         Total         Weight         M-H, Fixed, 95%,CI         M-H, Fixed, 95%,CI           Tankeycon 1976         8         14         9         12         100.0%         0.44         [0.08, 2.39]           Total (95%,CI)         14         12         100.0%         0.44         [0.08, 2.39]         Image: Comparison of the comparison of t	5.2 Mean weight chans Study or Subgroup Tuchman 2005 Tokal (98% CI) Heterogeneils: Not ag Study or Subgroup Study or Subgroup Tuchman 2005 Tokal (95% CI) Heterogeneils: Not ag Tuchman 2005 Tokal (95% CI) Heterogeneils: Not ag Test for overall effect 5.5 Weight gain >= 1 k Study or Subgroup Tankeycon 1976 Tankeycon 1976 Tokal (95% CI) Tokal (95% CI)	ge (kg) at 12 months Treatment <u>Mean SD Total</u> 1.7 6.1 29 plicable 29.52 (P = 0.60) weight change at 6 r Treatment <u>Mean SD Total</u> 1.2 7.8 49 plicable 49 plicable 20.57 (P = 0.57) weight change at 12 Treatment <u>Mean SD Total</u> 2.9 8.3 29 plicable 2 2.9 8.3 29 plicable 2 2.9 8.3 29 plicable 2 3 15 5 15 5 15 5 15 5 15 5 15	Mean         SD         Teta           1         5.1         5.5           nonths         50         50           Mean         SD         Teta           1.3         4.9         60           months         92         50           Control         52         53           Control         53         53           Control         51         53           Control         51         53           Control         51         53           Control         53         53	1 100.0% 1 100.	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           dds Ratio           Fixed, 95% CI           .79, 3.79]           30 [0.09, 1.67]           39 [0.09, 1.67]           .00	Favors treatment. Favor Mean Differenc IV, Fixed, 95%C Favors treatment Favor Mean Differenc IV, Fixed, 95%C Mean Differenc IV, Fixed, 95%C Mean Differenc IV, Fixed, 95%C Mean Difference IV, Fixed, 95%C IV, Fixed, 9
Tankayoon 1976         8         1.4         9         1.2         100.0%         0.44 [0.08, 2.39]           Total (95% Cl)         14         1.2         100.0%         0.44 [0.08, 2.39]         Image: Close 1.2	5.2 Mean weight cham Study or Subgroup Tuchmen 205 Total (95% C) Hateropeneity: Not ag Test for overall effect 5.3 Mean percentage to Study or Subgroup Tuchman 205 Total (95% C) Heteropeneity: Not ag Test for overall effect 5.4 Mean percentage to Study or Subgroup Tuchman 205 Total (95% C) Heteropeneity: Not ag Test / Subgroup Study or Subgroup Study or Subgroup Study or Subgroup Study or Subgroup Study or Subgroup Total (95% C) Total (95% C)	$\begin{array}{c} {\rm ge} \left( kg \right) \text{ at } 12 \text{ months} \\ \hline {\rm Mean} & {\rm SD} & {\rm Total} \\ 1.7 & 6.1 & 29 \\ 1.7 & 6.1 & 29 \\ 2 & 20.52 \left( {\rm P} = 0.60 \right) \\ {\rm weight change at 6 r} \\ {\rm Z} = 0.52 \left( {\rm P} = 0.60 \right) \\ {\rm weight change at 6 r} \\ 1.2 & 7.8 & 49 \\ 1.2 & 7.8 & 49 \\ 1.2 & 0.57 \left( {\rm P} = 0.57 \right) \\ {\rm weight change at 2} \\ {\rm Z} = 0.57 \left( {\rm P} = 0.57 \right) \\ {\rm weight change at 12} \\ {\rm Z} = 0.57 \left( {\rm P} = 0.57 \right) \\ {\rm weight change at 12} \\ {\rm Z} = 0.57 \left( {\rm P} = 0.57 \right) \\ {\rm gat month 6} \\ \hline {\rm Treatment} \\ {\rm Events \ Total \ E} \\ {\rm S} \\ {\rm$	Mean         SD         Teta           1         5.1         5.5           nonths         50         50           Mean         SD         Teta           1.3         4.9         60           months         92         50           Control         52         53           Control         53         53           Control         51         53           Control         51         53           Control         51         53           Control         53         53	1 100.0% 1 100.	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           dds Ratio           Fixed, 95% CI           .79, 3.79]           30 [0.09, 1.67]           39 [0.09, 1.67]           .00	Favors treatment. Favor Mean Differenc IV, Fixed, 95%C Favors treatment Favor Mean Differenc IV, Fixed, 95%C Mean Differenc IV, Fixed, 95%C Mean Differenc IV, Fixed, 95%C Mean Difference IV, Fixed, 95%C IV, Fixed, 9
	5.2 Mean weight cham <u>Study or Subgroup</u> Tuchmin 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.3 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Haterogeneity: Not ag Test for overall effect 5.4 Mean percentage <u>Study or Subgroup</u> Tuchman 2005 Total (95% C) Total (95%	ge (kg) at 12 months Treatment <u>Man SD Total</u> SD Total 29 picable 2 = 0.52 (P = 0.60) weight change at 6 r Treatment <u>Man SD Total</u> 1.2 7.8 49 picable Z = 0.57 (P = 0.57) weight change at 12 Treatment <u>Man SD Total</u> 2.9 6.3 20 picable Z = 0.00 (P = 1.00) g at month 6 Treatment <u>SD Total</u> 5 15 5 15 15 15 15 15 15 15 15 15 15	Control         Magan         SD         Total           1         5.1         5.5         5.5           nonths         Control         9         9           months         Control         9         9           Control         2.9         8.4         5.5           Control         5         5           Control         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0           0         1.0         1.0	1         Weight           1         100.0%           1         100.0%           1         100.0%           1         100.0%           2         100.0%           2         100.0%           2         100.0%           2         100.0%           0         0           0         0%	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           0.70 [-3.10, 1.70]           Mean Difference           IV., Fixed, 95% CI           0.00 [-3.70, 3.70]           0.00 [-3.79, 3.79]           dds Ratio           Fixed, 95% CI           39 [0.09, 1.67]           39 [0.09, 1.67]           39 [0.09, 1.67]           dds Ratio           Favori	Favors treatment Favor Mean Difference IV, Fixed, 95%C Favors treatment Favors Maan Difference IV, Fixed, 95%C Maan Difference IV, Fixed, 95%C Mean Difference IV, Fixe
	5.2 Mean weight cham Study or Subgroup Tuchmen 205 Total (95% C) Heterogeneity: Not ag Test for overall effect 5.3 Mean percentage to Study or Subgroup Tuchman 205 Total (95% C) Heterogeneity: Not ag Total (95% C) Total	$\begin{array}{c} {\rm ge} (kg) \mbox{ at 12 months} \\ \hline {\rm Treatment} \\ \hline {\rm Mean} & {\rm SD} & {\rm Total} \\ 1.7 & 6.1 & 29 \\ \mbox{ at 2} & 20 \\ \mbox{ placeble} \\ Z = 0.52 \ (P = 0.60) \\ \mbox{ weight change at 6 } r \\ \hline {\rm Treatment} \\ \hline {\rm Mean} & {\rm SD} & {\rm Total} \\ \mbox{ at 0} & {\rm SD} \\ \mbox{ z = 0.57 \ (P = 0.57)} \\ \mbox{ weight change at 22 } \\ \hline {\rm Treatment} \\ \hline {\rm Mean} & {\rm SD} & {\rm Total} \\ \mbox{ at month 6 } \\ \hline {\rm Treatment} \\ \mbox{ b 15 } \\ \mbox{ s 15 } \\ \mbox{ s 15 } \\ \mbox{ s 2 } \\ \mbox{ s 15 } \\  s 1$	Control         Maan         SD         Teta           1         5.1         5.5           nonths         50           Mean         SD         Teta           1.9         4.9         6.1         50           months         92         92         92           months         52         53         53           Control         9         50         763           Q         8.4         52         53           Control         9         16         100.0           9         16         100.0         9           Control         Control         Weits         Control	I         Weight           I         Weight           I         100.0%           I         100.0%           I         100.0%           I         100.0%           I         100.0%           I         00.0%           O         0%           O         0%           O         0%           O         0%	IV., Fixed, 95% CI           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           0.70 [-1.92, 3.32]           Mean Difference           IV., Fixed, 95% CI           0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           -0.70 [-3.10, 1.70]           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           dds Ratio           Favora           0.00 [-3.79, 3.79]           0.00 [-3.79, 3.79]           dds Ratio           Favora           dds Ratio           Favora           0.00 [-3.9% CI	Favors treatment Favora Nean Difference. IV, Fixed, 95%C Favors treatment Favora Maan Difference. V, Fixed, 95%C Weath Difference. V, Fixed, 95%C V, Fixed,

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#### 5.7 Weight loss >= 1 kg at month 6 Treatment Control Odds Ratio Study or Subgroup Events Total Events Total Weight M-H, Fixed, 95% CI Tankeyoon 1976 3 15 0 16 100.0% 9.24 [0.44, 195.69] ed, 95% C Total (95% CI) 16 100.0% 9.24 [0.44, 195.69] 15 3 Heterogeneity: Not applicable Test for overall effect: Z = 1.43 (P = 0.15) 0.005 0.1 5.8 Weight loss >= 1 kg at month 12 Treatment Control Odds Ratio Events Total Events Total Weight M-H, Fixed, 95% CI 2 14 1 12 100.05% 1.83 [0.15, 23.15] Study or Subgroup 1970 Total (95% Cl) 14 12 100.0% 1.83 [0.15, 23.15] 2 Heterogeneity: Not applicable Test for overall effect: Z = 0.47 (P = 0.64) 6 DMPA 150 mg/mL versus DMPA 450 mg/mL 6.1 Mean weight change (kg) at 6 months Treatment Control Mean Difference Study or Subgroup Mean SD Total Weight V, Fixed, 95% CI 0 33 38 285 0.32 2.67 366 100.0% 0.01 [-0.48, 0.50] IV, Fixed, 95% CI Total (95% Cl) 285 366 100.0% 0.01 [-0.48, 0.50] Heterogeneity: Not applicable Test for overall effect: Z = 0.04 (P = 0.97) -0.5 0.5 7 DMPA 150 mg/mL initiation after pregnancy: interval (>=20 weeks) versus postpartum (5 to 8 weeks) 7.1 Mean weight gain (lbs) at 1 year Treatmen Mean Diffe an Diff Study or Subgroup Mean SD Total Mean SD Total Weight IV, Fixed, 95% CI Espey 2000 9.3 11 115 7 9.8 57 100.0% 2.30 [-0.94, 5.54] IV, Fixed, 95% CI Total (95% Cl) 115 57 100.0% 2.30 [-0.94, 5.54] Heterogeneity: Not applicable Test for overall effect: Z = 1.39 (P = 0.16) -10 10 7.2 Mean weight gain (lbs) at 2 years Treatment Control Mean Difference Study or Subgroup Mean SD Total Mean SD Total Weight IV, Fixed, 95% CI Espey 2000 15.8 13.2 35 14.2 12.8 29 100.0% 1.60 [-4.79, 7.99] IV, Fixed, 95%Cl Total (95% Cl) 35 29 100.0% 1.60 [-4.79, 7.99] Heterogeneity: Not applicable Test for overall effect: Z = 0.49 (P = 0.62) 8 DMPA-IM 150 mg versus DMPA-SC 104 mg 8.1 Mean weight change (kg) at 36 months Treatm Study or Subgroup Mean SD Total Mean SD Total Weight IV, Fixed, 95% CI Westhoff 2007 5.8 8.7 56 4.5 8.5 65 100.0% 1.30 [-1.78, 4.38] V, Fixed, 95% CI Total (95% CI) 56 65 100.0% 1.30 [-1.78, 4.38] Heterogeneity: Not applicable Test for overall effect: Z = 0.83 (P = 0.41) 9 DMPA 150 mg/mL versus NET-EN 200 mg (60-day int 9.1 Mean weight change (kg) at 12 months Treatmen Mean Difference SD Total Weight IV, Fixed, 95% CI 5.96 398 100.0% 0.20 [-0.63, 1.03] Study or Subgroup Mean SD Total Mean WHO 1983 1.9 8.29 764 1.7 Total (95% CI) 764 398 100.0% 0.20 [-0.63, 1.03] Heterogeneity: Not applicable Test for overall effect: Z = 0.47 (P = 0.64) East 9.2 Mean weight change (kg) at 24 months Treatm Mean Diff in Diff Study or Subgroup Mean SD Total Me WHO 1983 3.3 9.87 390 300 SD Total Weight IV, Fixed, 95% Cl 7.31 214 100.0% 0.00 [-1.39, 1.39] IV, Fixed, 95% Cl Total (95% CI) 390 214 100.0% 0.00 [-1.39, 1.39] Heterogeneity: Not applicable Test for overall effect: Z = 0.00 (P = 1.00) Fa 1 9.3 Mean weight change at 1 year Treatment Study or Subgroup Mean SD Total 1 Salem 1988 3.5 3.4 107 Control Mean Difference ean SD Total Weight IV, Fixed, 95% CI 2.7 3.1 94 100.0% 0.80 [-0.10, 1.70] Total (95% Cl) 107 94 100.0% 0.80 [-0.10, 1.70] Heterogeneity: Not applicable Test for overall effect: Z = 1.74 (P = 0.08) Fav 10 NET-EN 200 mg: 60-day intervals versus 3 intervals of 60 days then 84-day intervals 10.1 Mean weight change (kg) at 12 months Treatment Control Mean Difference Study or Subgroup Mean SD Total Mean SD Total Weight IV, Fixed, 95% C WHO 1983 1.7 5.98 398 1.7 4.12 424 100.0% 0.00 [-0.71, 0.71 Treatment Total (95% CI) 398 Heterogeneity: Not applicable Test for overall effect: Z = 0.00 (P = 1.00) 398 424 100.0% 0.00 [-0.71, 0.71]

10.2 Mean weight change (kg) at 24 months

	Tre	atmer	nt –	c	ontrol			Mean Difference	Mean Difference	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI	
WHO 1983	3.3	7.31	214	3.4	6.18	239	100.0%	-0.10 [-1.35, 1.15]		
Total (95% CI)			214			239	100.0%	-0.10 [-1.35, 1.15]		
feterogeneity: Not app	licable									
Test for overall effect:	Z = 0.16	(P = (	0.88)						Favors treatment Favors control	
		0.00							Favors treatment Favors co	

11.1 Mean weight change (kg) at 120 months

	Trea	atme	nt	Co	ontro			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% CI
Taneepanichskul 1998	10.9	1.2	50	11.2	1.5	50	100.0%	-0.30 [-0.83, 0.23]	
Total (95% Cl)			50			50	100.0%	-0.30 [-0.83, 0.23]	•
Heterogeneity: Not appli			975						-2 -1 0 1 2
Test for overall effect: Z		<sup>2</sup> = 0.1	27)						-2 -1 0 Favors treatment Favo

#### 11.2 Mean weight change (kg) at 1 year by baseline BMI

	Trea	atme	nt	Co	ntro			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	\$D	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% CI
11.2.1 BMI < 25 kg/m <sup>2</sup> Pantoja 2010 Subtotal (95% CI)	2.2	3.4	226 226	-0.3	3.1	226 226	66.7% 66.7%	2.50 [1.90, 3.10] 2.50 [1.90, 3.10]	-#-
Heterogeneity: Not appl	icable								
Test for overall effect: Z	= 8.17	(P <	0.0000	1)					
11.2.2 BMI 25 to 29.9 k Pantoja 2010 Subtotal (95% CI)	g/m <sup>2</sup> 1.4	3.6	109 109	-0.7	3.5	109 109	27.0% 27.0%	2.10 [1.16, 3.04] 2.10 [1.16, 3.04]	-
Heterogeneity: Not appl									
Test for overall effect: Z	= 4.37	(P <	0.0001	)					
11.2.3 BMI >= 30 kg/m <sup>2</sup> Pantoja 2010 Subtotal (95% CI)	0.4	4.8	44 44	-0.3	4.6	44 44	6.2% 6.2%	0.70 [-1.26, 2.66] 0.70 [-1.26, 2.66]	
Heterogeneity: Not appli	icable								
Test for overall effect: Z	= 0.70	(P =	0.48)						
Total (95% Cl)			379			379	100.0%	2.28 [1.79, 2.77]	•
Heterogeneity: Chi <sup>2</sup> = 3.	14. df -	2 (P	= 0.21	); I <sup>2</sup> = 3(	6%				
Test for overall effect: Z	= 9.12	(P <	0.0000	1)					-2 -1 0 1 2 Favors treatment Favors control
Test for subgroup different	ences:	Ċhi² •	3.14,	df = 2 (F	P = 0	21), I <sup>2</sup>	= 38.3%		revue requirent revors compor

#### 11.3 Mean weight change (kg) at 2 years by baseline BMI

	Trea	atme	nt	C	ontrol	1		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
11.3.1 BMI < 25 kg/m <sup>2</sup> Pantoja 2010 Subtotal (95% CI)		3.7	226 226	8.0	3.7	226 226	74.4% 74.4%	2.70 [2.02, 3.38] 2.70 [2.02, 3.38]	
Heterogeneity: Not app	licable								
Test for overall effect: 2	Z = 7.76	i (P <	0.0000	1)					
11.3.2 BMI 25 to 29.9   Pantoja 2010 Subtotal (95% Cl)	kg/m² 2.8	4.7	109 109	-0.2	4.9	109 109	21.3% 21.3%	3.00 [1.73, 4.27] 3.00 [1.73, 4.27]	<b>—</b>
Heterogeneity: Not app Test for overall effect.		/D ~	0.0000	0					
real of orerar energy a	- 4.01	(i	0.0000						
11.3.3 BMI >= 30 kg/m Pantoja 2010 Subtotal (95% Cl)		5.7	44 44	-0.1	7.7	44 44	4.3% 4.3%	1.50 [-1.33, 4.33] 1.50 [-1.33, 4.33]	-
Heterogeneity: Not app Test for overall effect: 2		(P =	0.30)						
Total (95% CI)			379			379	100.0%	2.71 [2.12, 3.30]	•
Heterogeneity: Chi <sup>2</sup> = 0	.90. df -	= 2 (P	= 0.64	$ z ^2 = 0$	94				tttt
									-10 -5 0 5 1 Favors treatment Favors control
Test for overall effect: 2									

#### 11.4 Mean weight change (kg) at 3 years by baseline BMI

									11
		atme			ntro			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95%CI
11.4.1 BMI < 25 kg/m <sup>2</sup> Pentoja 2010 Subtotal (95% CI)	4.5	4.5	226 226	1.2	4	226 226	71.6% 71.6%	3.30 [2.52, 4.08] 3.30 [2.52, 4.08]	
Heterogeneity: Not appl	icable								
Test for overall effect: Z		(P <	0.0000	1)					
11.4.2 BMI 25 to 29.9 k Pantoja 2010 Subtotal (95% CI)	91m <sup>2</sup> 3.4	5.5	109 109	0.2	4.9	109 109	23.1% 23.1%	3.20 [1.82, 4.58] 3.20 [1.82, 4.58]	•
Heterogeneity: Not appl Test for overall effect: Z		(P <	0.0000	1)					
11.4.3 BMI >= 30 kg/m <sup>2</sup> Pantoja 2010 Subtotal (95% CI)		6.7	44 44	0.6	7	44 44	5.4% 5.4%	1.30 [-1.56, 4.16] 1.30 [-1.56, 4.16]	-
Heterogeneity: Not appl Test for overall effect: Z		(P =	0.37)						
Total (95% CI)			379			379	100.0%	3.17 [2.51, 3.83]	•
Heterogeneity: Chi <sup>2</sup> = 1. Test for overall effect: 2 Test for subgroup differ	= 9.35	(P <	0.0000	1)					-10 -5 0 5 10 Favors treatment Favors control

12 Norplant versus DMPA 150 mg/mL

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#### 12.1 Mean weight change (kg) at 1 year

	Trea	atmei	nt	Co	ontrol	1		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Moore 1995	-0.81	3.1	50	0.06	1.8	50	100.0%	-0.87 [-1.86, 0.12]	
Total (95% CI)			50			50	100.0%	-0.87 [-1.86, 0.12]	-
Heterogeneity: Not app									-2 -1 0 1 2
Test for overall effect:	Z = 1.72	(P =	0.09)						Favors treatment Favors control

13 Norplant versus non-hormonal IUD

	Tre	atmer	nt .	0	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% Cl
Salem 1984	1.39	0.53	49	0.92	0.34	50	100.0%	0.47 (0.29, 0.65)	-
Total (95% CI)			49			50	100.0%	0.47 [0.29, 0.65]	

#### 13.2 Mean weight change (kg) at 1 year

	Trea	atme	nt	Co	ontro			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	\$D	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Sule 2005	2.5	3.6	188	1.4	3.2	136	100.0%	1.10 [0.36, 1.84]	
Total (95% CI)			188			136	100.0%	1.10 [0.36, 1.84]	+
Heterogeneity: Not ap									-2 -1 0 1 2
Test for overall effect:	Z = 2.90	(P =	0.004)						Favors treatment Favors control

#### 13.3 Mean weight change (kg) at 3 years

	Trea	atmei	nt	Co	ontro			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95%CI
Sule 2005	4.8	4.3	130	3.9	4.2	60	100.0%	0.90 [-0.39, 2.19]	
Total (95% Cl)			130			60	100.0%	0.90 [-0.39, 2.19]	
Heterogeneity: Not app									2 1 0 1 2
Test for overall effect:	Z = 1.36	(P =	0.17)						Favors treatment Favors control

14 Norplant versus barrier, 'local', or no contraceptive method

#### 14.1 Mean weight change (kg) at 6 months

	Tre	atmen	nt .	c	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% CI
Salem 1984	1.39	0.53	49	0.65	0.56	48	100.0%	0.74 [0.52, 0.96]	-88-
Total (95% CI)			49			48	100.0%	0.74 [0.52, 0.96]	•
Heterogeneity: Not app Test for overall effect:		(P < 0	0.00001	)					-1 -0.5 0 0.5 1 Favors treatment Favors control

#### 15 Norplant versus 2-rod LNG

#### 15.1 Mean weight change (kg) at 1 year

	Tre	atmer	nt.	c	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% Cl
Sivin 1998	0.99	3.66	596	0.9	3.67	600	100.0%	0.09 [-0.33, 0.51]	- <u>1</u>
Total (95% Cl)			596			600	100.0%	0.09 [-0.33, 0.51]	+
Heterogeneity: Not ap Test for overall effect:									-2 -1 0 1 2
restion overall effect;	2 = 0.42	(P = (	1.67)						Favors treatment Favors control
15.2 Mean weight char	nge (kg)	at 3 y	ars						

# Treatment Control Mean Difference Mean Difference Study or Subgroup Mean SD Total Mean SD Total Weight N, Rized, SPS.Cl N, Rized, SPS.Cl N, Rized, SPS.Cl Skin 1998 3.12 4.51 462 100.0% 0.00 [-6.00, 0.60] Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 462 460 100.0% 0.00 [-6.00, 0.60] 100.0% Testa (98% CD) 460 100.0% 0.60 [-6.00, 0.60] 100.0% 100.0% Testa (98% CD) 462 460 100.0% 100.0%<

#### 15.3 Mean weight change (kg) at 5 years

	Tre	atmer	nt	C	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% Cl
Sivin 1998	4.14	4.69	302	3.54	4.59	312	100.0%	0.60 [-0.13, 1.33]	-
Total (95% Cl) Heterogeneity: Not app	virable		302			312	100.0%	0.60 [-0.13, 1.33]	
Test for overall effect:		(P = (	0.11)						-2 -1 0 1 2 Favors treatment Favors control

#### 16 Norplant versus COC

16.1 Mean weight change (kg) at 1 year

	Trea	atme	nt	Co	ntrol	1		Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% CI
Sule 2005	2.5	3.6	188	1.4	3.5	38	100.0%	1.10 [-0.13, 2.33]	
Total (95% CI)			188			38	100.0%	1.10 [-0.13, 2.33]	-
Heterogeneity: Not ap	plicable								2 1 0 1 2
Test for overall effect:	Z = 1.76	(P =	(80.0						-2 -1 0 1 2 Favors treatment Favors control
6.2 Mean weight char	190 (kg) :	at 3 y	ears						
6.2 Mean weight char		at 3 y		Co	ontro			Mean Difference	Mean Difference
6.2 Mean weight char Study or Subgroup			nt	Co Mean			Weight	Mean Difference IV, Fixed, 95% CI	
-	Trea	atme	nt						Mean Difference
Study or Subgroup Sule 2005	Trea	atme SD	nt Total 130	Mean	SD	Total 2		IV, Fixed, 95% Cl Not estimable	Mean Difference
Study or Subgroup	Trea	atme SD	nt Total	Mean	SD	Total		IV, Fixed, 95% Cl	Mean Difference
Study or Subgroup Sule 2005	Trea Mean 4.8	atme SD	nt Total 130	Mean	SD	Total 2		IV, Fixed, 95% Cl Not estimable	Mean Difference

17 LNG-IUS versus non-hormonal IUD

17.1 Body composition changes

Study ID	Body composition assessment	LNG-IUS group (mean ± SD)	TCu380A IUD group (mean ± SD)	Reported P value (Wilcoxon paired test)
	Change in weight (kg)	2.9 ± 5.7	1.4 ± 4.4	0.068
	Change in central-peripheral fat ratio (%)	-1.6 ± 18.7	-0.2 ± 11.6	0.364
Dal'Ava 2012	Percent change in fat mass	2.5 ± 8.0	-1.3 ± 6.9	0.029
	Percent change in lean mass	-1.4 ± 4.7	1.0 ± 3.8	0.027

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Study	Type of study	Sample size	Comparison groups	Groups that differed	Time frame	Mean change <sup>a</sup>
Ball 1991	RCT	51	OC NET 350 µg vs LNG 30 µg		6 months	0 vs 0.6
Bonny 2009	Prospective, not randomized	33	DMPA + placebo vs DMPA + $E_2C$		6 months	10.3% vs 2.8%; -3.4% vs - 1.2% b
			DMPA + placebo vs no hormonal	Х	6 months	10.3% vs – 0.1%; –3.4% vs 0.6% $b$
Castle 1978	Prospective, not randomized	1000	DMPA 150 vs DMPA 450	-	6 months	0.33 vs 0.32
Dal'Ava 2012	Prospective, not randomized	76	LNG-IUS vs non-hormonal IUD		12 months	2.9 vs 1.4
		76	LNG-IUS vs non-hormonal IUD	х	12 months	2.5% vs – $1.3%$ ; – $1.4%$ vs $1.0%b$
		76	LNG-IUS vs non-hormonal IUD		12 months	$-1.6\% \text{ vs} - 0.2\%^{C}$
Espey 2000	Retrospective	172	DMPA: interval vs postpartum		1 year 2 years	4.2 vs 3.2; 7.2 vs 6.5
Moore 1995	Retrospective	100	Norplant vs DMPA		12 months	-0.81 vs 0.06
Pantoja 2010	Retrospective	758	DMPA vs non-hormonal IUD	X (all 3 years)	1 year 2 years 3 years	1.76 vs – 0.42; 3.1 vs 0.4; 3.9 vs 0.8
Salem 1984	Prospective, not randomized	150	Norplant vs non-hormonal IUD	Х	6 months	1.39 vs 0.92
			Norplant vs other non-hormonal	Х	6 months	1.39 vs 0.65
Salem 1988	RCT	400	DMPA vs NET- EN		1 year	3.5 vs 2.7 <sup>a</sup>
Sivin 1998	RCT	1200	Norplant vs 2- rod LNG		1 year 3 years 5 years	0.99 vs 0.90; 3.12 vs 3.12; 4.14 vs 3.54
Sule 2005	Retrospective	516	Norplant vs non-hormonal IUD	X (at 1 year)	1 year 3 years	2.5 vs 1.4 4.8 vs 3.9;
			Norplant vs COC		1 year 3 years	2.5 vs 1.4; 4.8 vs 0.0
Taneepanichskul 1998	Retrospective	100	DMPA vs non-hormonal IUD		10 years	10.9 vs 11.2
Tankeyoon 1976	Prospective, not randomized	32	DMPA vs COC		12 months	1.8 vs 3.1 (estimated)
Tuchman 2005	Retrospective	222	DMPA vs MPA/E <sub>2</sub> C		6 months; 12 months	0.6 vs 1.2; 1.7 vs 3.0
			DMPA vs COC		6 months; 12 months	0.6 vs 1.1; 1.7 vs 1.0
Westhoff 2007	RCT	534	DMPA-IM 150 vs DMPA-SC 104		3 years	5.8 vs 4.5

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Study	Type of study	Sample size	Sample size Comparison groups	Groups that differed Time frame	Time frame	Mean change <sup>a</sup>
WHO 1983	RCT	3172	DMPA vs NET- EN (60 days)		1 year 2 years	1.9 vs 1.7; 3.3 vs 3.3
			NET-EN: 60 days vs 84 days		1 year 2 years	1.7 vs 1.7; 3.3 vs 3.4

 $^{a}$ Weight change (kg) unless otherwise specified. Salem 1988 did not report units for weight change (lbs or kg).

 $\boldsymbol{b}_{}$  Mean change in total body fat or lean body mass, respectively.

 $^{c}$ Mean change in central-peripheral fat ratio.

# Sensitivity analysis

Study <sup>a</sup>	Type of study	Comparison groups	Groups differed significantly	Mean difference (95% CI)
Ball 1991	RCT	OCs: NET 350 µg vs LNG 30 µg		
Bonny 2009	Prospective, non- randomized	$DMPA + placebo vs DMPA + E_2C or vs no hormonal method$	DMPA + placebo vs no hormonal	11.00 (2.64 to 19.36); -4.00 (-6.93 to - 1.07) <sup>b</sup>
Dal'Ava 2012	Prospective, non- randomized	LNG-IUS vs non-hormonal IUD	LNG-IUS vs non-hormonal IUD	2.5% vs -1.3%; -1.4% vs 1.0% <sup>b</sup>
Salem 1984	Prospective, non- randomized	Implant vs non-hormonal IUD or vs no hormonal method	Implant vs non-hormonal IUD or vs other non- hormonal	0.47 (0.29 to 0.65); 0.74 (0.52 to 0.96) <sup>C</sup>
Sivin 1998	RCT	Implant (6 capsules) vs implant (2-rods)		

 $^{a}$ Excludes retrospective chart reviews and studies with loss to follow up or discontinuation >= 25%.

 $b_{\mbox{Total}}$  body fat (%) and lean body mass (%), respectively.

<sup>c</sup>Weight change (kg).

3

## Quality of evidence by contraceptive method

Study	Comparison groups	Mean difference (95% CI) <sup>*</sup>	Quality of evidence <sup>**</sup>
Progestin-only pills			
Ball 1991	OC NET 350 µg vs LNG 30 µg		High
DMPA			
WHO 1092	DMPA vs NET-EN (60 days)		II. 1
WHO 1983	NET-EN: 60 days vs 84 days		High
Salem 1988	DMPA vs NET-EN		High
Barren 2000	$DMPA + placebo vs DMPA + E_2C$		Madamta
Bonny 2009	DMPA + placebo vs no hormonal	11.00 (2.64 to 19.36); -4.00 (-6.93 to $-1.07$ ) <sup><i>a</i></sup>	Moderate
Westhoff 2007	DMPA-IM 150 vs DMPA-SC 104		Moderate
Castle 1978	DMPA 150 vs DMPA 450		Low
Pantoja 2010	DMPA vs non-hormonal IUD	$3.17 (2.51 \text{ to } 3.83)^b$	Low
Tankeyoon 1976	DMPA vs COC		Low
Taneepanichskul 1998	DMPA vs non-hormonal IUD		Very low
Tuchman 2005	DMPA vs MPA/E <sub>2</sub> C		· Very low
ruennian 2005	DMPA vs COC		very low
Espey 2000	DMPA: interval vs postpartum		Very low
Norplant			
Sivin 1998	Norplant vs 2-rod LNG		High
S.1 1094	Norplant vs non-hormonal IUD	0.47 (0.29 to 0.65) <sup>b</sup>	Malanta
Salem 1984	Norplant vs other non- hormonal	$0.74 (0.52 \text{ to } 0.96)^b$	Moderate
Moore 1995	Norplant vs DMPA		Low
Sule 2005	Norplant vs non-hormonal IUD	1.10 (0.36 to 1.84) <sup>b</sup>	Very low
Suic 2005	Norplant vs COC		V C1 y 10 w
Levonorgestrel-releasi	ng IUS		
Dal'Ava 2012	LNG-IUS vs non-hormonal IUD	2.5% vs -1.3%; -1.4% vs 1.0% <sup>a</sup>	Moderate

\* Data shown if groups differed significantly.

\*\* Grades initially based on study design (RCT = high; prospective non-randomized = moderate; retrospective = low). Downgraded if losses >=25% or if cases were inappropriately excluded.

 $^{a}\mbox{Total}$  body fat (%) and lean body mass (%), respectively.

 $^b \mathrm{Weight}$  (kg), except Salem 1988, which did not report units (lbs or kg).

Characteristics of included	studies
Intracteristics of includ	- 55
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Ball 1991		
Methods	Randomized controlled trial, likely conducted in Oxford, England. No information on method for randomization, except stratified according to pri (unspecified). Main study examined effects of progestin-only OC on lipoprotein levels, glucose tolerance, coagulation factors, and blood pressure.	ikely conducted in Oxford, England. No information on method for randomization, except stratified according to prior OC use; "single-blind" mined effects of progestin-only OC on lipoprotein levels, glucose tolerance, coagulation factors, and blood pressure.
Participants	51 women, 17 to 41 years old, requesting oral contraceptives (OC). New OC users dose combined OC. Exclusion criteria: hypertension (diastolic blood pressure (BP	requesting oral contraceptives (OC). New OC users had not used an OC or hormone therapy for 3 months; switchers were changing from low- criteria: hypertension (diastolic blood pressure (BP) > 100 mm Hg, systolic BP > 140 mm Hg), smoking > 20 cigarettes/day, or diabetes.
Interventions	Progestin-only pills: norethisterone (NET) 350 μg (N=23) versus levonorgestrel (LNG) 30 μg (N=23); 6 treatment cycles.	NG) 30 $\mu$ g (N=23); 6 treatment cycles.
Outcomes	Mean change in weight from baseline to month 6	
Notes		
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias)	Low risk	Five women did not return for follow up, and were excluded from the analysis (groups not specified). Nine withdrew after 3 months (1 NET; 8 LNG). Analysis for weight included 39 women at 6 months; loss 12/51 = 24%.
Bonny 2009		
Methods	Prospective study in 4 urban adolescent health clinics in large metropolitan area (I contraception and bone mineral density	Prospective study in 4 urban adolescent health clinics in large metropolitan area (USA); enrollment 2002 to 2003; part of a larger 2-year study that examined hormonal contraception and bone mineral density
Participants	Postmenarchal girls 12 to 18 years of age. Inclusion criteria: requesting contracept eligible for control group. Exclusion criteria: pregnancy or DMPA use in past 6 m disease) or medication use (e.g., corticosteroids) associated with outcomes of inter absorptiometry [DEXA] scanner); and need for confidential contraceptive care.	Postmenarchal girls 12 to 18 years of age. Inclusion criteria: requesting contraception and selecting DMPA or OC; those who did not want hormonal contraception were eligible for control group. Exclusion criteria: pregnancy or DMPA use in past 6 months; OC use in past 3 months; alcohol or drug dependence; medical condition (e.g., renal disease) or medication use (e.g., corticosteroids) associated with outcomes of interest; contraindication to estrogen use; weight > 250 lbs (upper limit for dual energy x-ray absorptiometry [DEXA] scanner); and need for confidential contraceptive care.
Interventions	Choice of:	
	1 Depot medroxyprogesterone acetate (DMPA) (N=15): randomized to	ogesterone acetate (DMPA) (N=15): randomized to additional monthly injections of placebo (N=8) or estradiol cypionate 5 mg (E <sub>2</sub> C) (N=7)
	<b>2</b> Control (no hormonal contraception) (N=18)	
Outcomes	Change in total body fat (%) and in lean body mass (%) from baseline to 6 months.	
Notes	Researchers also developed multivariate models for change in total body fat and cl also included a third group of those who chose OCs (N=18), which we did not incl OCs as well as combination OCs, so the OC group was excluded here.	Researchers also developed multivariate models for change in total body fat and change in lean body mass; models adjusted for potential confounders. However, the analysis also included a third group of those who chose OCs (N=I8), which we did not include in our review. Type of OC was not specified and might have included progestin-only OCs as well as combination OCs, so the OC group was excluded here.
Risk of bias table		
Bias	Authors' judgement	Support for judgement

biological constraints         Index risk         Description that is alloce to DMPA by apprinterent. No information that to alloce to DMPA by apprinterent. No information that to alloce to DMPA by apprinterent. No information that to alloce to DMPA by apprinterent. No information that to alloce to DMPA 180 means that the alloce to DMPA by apprinterent. No information that to DMPA 180 means that the alloce to DMPA by apprinterent. No information that the alloce to DMPA 180 means the alloce to DMPA 180 means that the alloce to DMPA 180 m	Allocation concealment (selection bias)	Unclear risk	No information
Prospective study in family planning center in Salisbury, Rhodesia; enrollment Jun 1000 Black women seeking contraception. Ages ranged from 'under 20' to 40 years         1000 Black women seeking contraception. Ages ranged from 'under 20' to 40 years         1       DMPA 150 mg every 3 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       Mean increase in weight at 6 months         Mean increase in weight at 6 months       M=500)         Mean increase in weight at 6 months       M=500         Mean increase in weight at 6 months       M=500         Mean increase in weight at 6 months       M=7000         Mean instructure develor on age and BM between the intervention groups.       M=500         Mean is the attriction or destructure on the functive use (either factolis on refer attriction are used to notelly train in LOG-IUS users.       M=1000         Momen between 18 and 45 years of age, who had initiated contraceptive use (either factolis on refer attring the vereatefeedin	Incomplete outcome data (attrition bias)	Unclear risk	To remain in study, participants had to adhere to DMPA by appointment. No information on controls.
Prospective study in family planning center in Salisbury, Rhodesia; enrollment Jun         1000 Black women seeking contraception. Ages ranged from 'under 20' to 40 years         1       DMPA 150 mg every 3 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         2       Mean increase in weight at 6 months         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Muthors' judgement       Authors' judgement         Muthors' judgement       Mean increase in weight gain BMI bentwere only a gown         Mean increase in weight gain BMI bentwere the fract on the	Castle 1978		
1000 Black women seeking contraception. Ages ranged from 'under 20' to 40 years         1       DMPA 150 mg every 3 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         Mean increase in weight at 6 months (N=500)         Weight measured at each visit while participant wore only a gown         Mean increase in weight at 6 months         Weight measured at each visit while participant wore only a gown         Mean increase in weight at 6 months         Meight result         Weight measured at each visit while participant wore only a gown         Muthors' judgement         High risk         High risk         Muthors' judgement         Prospective study conducted in Brazil: single site.         Prospective study conducted in Brazil: single site.         Muthors' judgement         Moren between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: currenty breastfeeding or breastfeeding during the 6 months befor disease.         Moren apparently chose their method.         Moren apparently chose their method.         Moren apparently chose their method.         An 12 months: Exclusion criteria: currently breastfeeding during the 6 months befor disease.         Moren apparently chose their method.         Moren apparently chose their method.         Moren apparently chose their method.	Methods	Prospective study in family planning center in Salisbury. Rhodesia; enrollment Ju	o Dec 1976
1       DMPA 150 mg every 3 months (N=500)         2       DMPA 450 mg every 6 months (N=500)         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Neight measured at each visit while participant wore only a gown       Mean increase in weight at 6 months         Neight measured at each visit while participant wore only a gown       Mean increase in weight at 6 months         Neight measured at each visit while participant wore only a gown       Mean increase in weight at 6 months         Authors' judgement       Muthors' judgement         Authors' judgement       Mean increase and and a solution of the fourth of the fourt	Participants	1000 Black women seeking contraception. Ages ranged from 'under 20' to 40 yea	or older.
2       DMPA 450 mg every 6 months (N=500)         Mean increase in weight at 6 months       Mean increase in weight at 6 months         Weight measured at each visit while participant wore only a gown       Mean increase in weight at 6 months         Migh risk       Authors' judgement       Mean increase in weight at 6 months         High risk       Authors' indgement       Mean increase in weight gain in LNG-IUS users.         Mmean perveen 18 and 45 vars of age, who had initiated contraceptive use (either graculation betted in graving a chronic divease.       Months betted in the evice (m=38)         Mmean perveen 18 and 45 vars of age, who had initiated contraceptive use (either gravelse in evice) in the contraceptive use (either diverse).       Months betted in the evice (m=38)         Mmean apparently chose their method.       Months a chronic divease.       Months betted in graving a chronic divease.         Monten apparently chose their method.       Months intrauterine system (LNG-IUS) (n=38)       Months intrauterine system (LNG-IUS) (n=38)         Monten apparently chose their method.       Months intrauterine device (m=38)       Months intrauterine diverse in evertset (months intervention diverse in contraceptive use (either diverse in contact) errors in the diverse in contact of an ass         Monten apparently chose their method.       Months intrauterine device (m=38)         Monten apparently chose their method.       Months intrauterine proves their method.         Monten apparently chose their method.	Interventions	1 DMPA 150 mg every 3 months (N=500)	
Mean increase in weight at 6 months           Weight measured at each visit while participant wore only a gown           Authors' judgement           High risk           High risk           Prospective study conducted in Brazil; single site.           Prospective study study and an intiated contraceptive use (either Brazin)           Precent change in tot			
Weight measured at each visit while participant wore only a gown         Authors' judgement         High risk         High risk         Prospective study conducted in Brazil; single site.         Participants matched on age and BMI between the intervention groups.         Sample size based on weight gain in LNG-IUS users.         Women between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: currently breastfeeding or breastfeeding during the 6 months befor disease; having an eating disorder, having a chronic disease.         I       Lewonorgestrel-releasing intrauterine system (LNG-IUS) (n=38)         Z       TCu380A intrauterine device (n=38)         Monen apparently chose their method.       At 12 months: Change in total far naiso (%)         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass         Parcent change in total far mass       Dercent change in total far mass <t< th=""><th>Outcomes</th><th>Mean increase in weight at 6 months</th><th></th></t<>	Outcomes	Mean increase in weight at 6 months	
Authors' judgement       High risk       High risk       Prospective study conducted in Brazil; single site.       Participants matched on age and BMI between the intervention groups.       Sample size based on weight gain in LNG-IUS users.       Women between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: urrently breastfeeding of breastfeeding during the 6 months befi disease: having an eating disorder; having a chronic disease.       1     Levonorgestrel-releasing intrauterine system (LNG-IUS) (n=38)       2     TCu380A intrauterine device (n=38)       Momen apparently chose their method.     At 12 months: Change in excital-peripheral fat ratio (%)       Percent change in total lean mass     Percent change in total lean mass       Limitations: physical activity and daily caloric intake were not monitored during stu	Notes		
Authors' judgement         High risk         High risk         High risk         In Dow risk         Despective study conducted in Brazil; single site.         Participants matched on age and BMI between the intervention groups.         Sample size based on weight gain in LNG-IUS users.         Women between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: currently breastfeeding or breastfeeding during the 6 months beft disease; having an eating disorder; having a chronic disease.         1       Levonorgestre1-releasing intrauterine system (LNG-IUS) (n=38)         2       TCu380A intrauterine device (n=38)         Women apparently chose their method.       At 12 months:         Change in weight (kg)       Change in total fat mass         Percent change in total fat mass       Percent change in total fat mass         Percent change in total lean mass       Denotic intake were not monitored during stu         Limitations: physical activity and daily caloric intake were not monitored during stu	Risk of bias table		
High risk         me       Low risk         Display and the properties and yound the process of the participants matched on age and BMI between the intervention groups. Participants matched on age and BMI between the intervention groups. Sample size based on weight gain in LNG-IUS users.         Prospective study conducted in Brazil; single site.         Participants matched on age and BMI between the intervention groups. Sample size based on weight gain in LNG-IUS users.         Nomen between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: currently breastfeeding or breastfeeding during the 6 months beft disease; having an eating disorder; having a chronic disease.         I       Levonorgestrel-releasing intrauterine system (LNG-IUS) (n=38)         2       TCu380A intrauterine device (n=38)         At 12       Momen apparently chose their method.         At 12       At 12         Change in total fat mass       Percent change in total fat mass         Percent change in total fat mass       Percent change in total fat mass         Percent change in total lean mass       Limitations: physical activity and daily caloric intake were not monitored during stu	Bias	Authors' judgement	Support for judgement
<ul> <li>Low risk</li> <li>Low risk</li> <li>Prospective study conducted in Brazil; single site.</li> <li>Women between 18 and 45 years of age, who had initiated contraceptive use (either Exclusion criteria: currently breastfeeding or breastfeeding during the 6 months beft disease; having an eating disorder; having a chronic disease.</li> <li>I Levonorgestrel-releasing intrauterine system (LNG-IUS) (n=38)</li> <li>2 TCu380A intrauterine device (n=38)</li> <li>At 12 months:</li> <li>At 12 months:</li> <li>Change in total fat mass</li> <li>Percent change in total lean mass</li> <li>Percent change in total lean mass</li> <li>Percent change in total lean mass</li> </ul>	Allocation concealment (selection bias)	High risk	Allocation by patient request
	Incomplete outcome data (attrition bias)	Low risk	Withdrawals from study were 21 for DMPA 150 mg and 17 for DMPA 450 mg. Losses to follow-up: 39% DMPA 150 mg and 23% DMPA 450 mg.
	Dal'Ava 2012		
	Methods	Prospective study conducted in Brazil; single site. Participants matched on age and BMI between the intervention groups. Sample size based on weight gain in LNG-IUS users.	
I         Levonorgestrel-re           2         TCu380A intraute           2         TCu380A intraute           Women apparentl         Women apparentl           At 12 months:         At 12 monthe:           Change in central-peripheral 1         Percent change in total fat ma           Percent change in total lear nr         Limitations: physical activity	Participants	Women between 18 and 45 years of age, who had initiated contraceptive use (eith Exclusion criteria: currently breastfeeding or breastfeeding during the 6 months by disease; having an eating disorder; having a chronic disease.	LNG-IUS or TCu380A IUD) between Oct 2009 and May 2010. ore enrollment; used corticosteroids, thiazide diuretics, or drugs for treatment of thyroid
<ul> <li>2 TCu380A intraute</li> <li>Women apparenti</li> <li>Women apparenti</li> <li>At 12 months:</li> <li>At 12 months:</li> <li>Change in weight (kg)</li> <li>Change in weight (kg)</li> <li>Change in weight (hg)</li> <li>Change in weight (hg)</li> <li>Change in weight (hg)</li> <li>Change in weight (hg)</li> <li>The second have in weight (hg)</li> </ul>	Interventions	1 Levonorgestrel-releasing intrauterine system (LNG-IUS) (n=38)	
Women apparentAt 12 months:Change in weight (kg)Change in central-peripheral 1Percent change in total fat maPercent change in total lean mPercent change in total lean mLimitations: physical activity			
At 12 months: Change in weight (kg) Change in central-peripheral 1 Percent change in total fat ma Percent change in total lean m Percent change in total lean m		Women apparently chose their method.	
Limitations: physical activity	Outcomes	At 12 months: Change in weight (kg) Change in central-peripheral fat ratio (%) Percent change in total fat mass Percent change in total lean mass	
Risk of bias table	Notes	Limitations: physical activity and daily caloric intake were not monitored during s	dy
	Risk of bias table		

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Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias)	Low risk	Reportedly no discontinuations at 12 months.
Espey 2000		
Methods	Retrospective chart review at 3 Indian Health Service facilities in southwestern USA	
Participants	Female members of Navajo tribe. Inclusion criteria: 18 to 40 years old, completed recorded at 1- or 2- year intervals. Exclusion criteria: history of diabetes or thyroid index pregnancy.	Female members of Navajo tribe. Inclusion criteria: 18 to 40 years old, completed at least 5 consecutive injections of DMPA at 10- to 14-week intervals, and had weights recorded at 1- or 2- year intervals. Exclusion criteria: history of diabetes or thyroid disease; women in postpartum group who had pre-eclampsia or multiple gestations within index pregnancy.
Interventions	DMPA initiation	
	a. Interval (N=115): fürst injection at least 20 weeks past pregnancy of 20 weeks or more gestation	veeks or more gestation
	b. Postpartum (N=57): first injection at 5 to 8 weeks after delivery of singleton pregnancy of 20 weeks or more gestation	ston pregnancy of 20 weeks or more gestation
Outcomes	Mean weight gain (lbs) for DMPA at 1 and 2 years by initiation group	
Notes	For another group, not included in this review, method of contraception was report "more frequently used" IUD or tubal ligation and also included COC users.	For another group, not included in this review, method of contraception was reportedly extracted from charts but specifics were not provided. Discussion noted that group "more frequently used" IUD or tubal ligation and also included COC users.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	Not applicable (NA)
Incomplete outcome data (attrition bias)	Low risk	Women with incomplete records were excluded from this retrospective review. However, at 2 years, weight data were not available for 70% of the interval group and 49% of the postpartum group.
Moore 1995		
Methods	Retrospective chart review at rural obstetrics and gynecology clinic in Arizona (USA)	(1)
Participants	Women who used the contraceptive method and were 15 to 30 years old. Exclusion criteria: prior hormonal contraceptive therapy, heig (177.8 cm), weight < 100 lbs (45.5 kg) or > 180 lbs (81.8 kg), presence of diabetes, history of thyroid disease, < 12 months postpartum.	Women who used the contraceptive method and were 15 to 30 years old. Exclusion criteria: prior hormonal contraceptive therapy, height <62 inches (152.4 cm) or >70 inches (177.8 cm), weight <100 lbs ( $45.5 \text{ kg}$ ) or >180 lbs ( $81.8 \text{ kg}$ ), presence of diabetes, history of thyroid disease, <12 months postpartum.
Interventions	1 Norplant (N=50)	
	2 DMPA 150 mg (M=50)	
Outcomes	Weight gain (kg) at 1 year by treatment group.	
Notes	Researchers also analyzed weight gain in model adjusted for age, height, weight, a review. Type of OC was not specified and may have included progestin-only OCs	Researchers also analyzed weight gain in model adjusted for age, height, weight, and parity. That analysis included a third group of OC users, which we excluded from this review. Type of OC was not specified and may have included progestin-only OCs as well as combination OCs.
Risk of bias table		

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Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	NA
Pantoja 2010		
Methods	Retrospective chart review at a university department of obstetrics and gynecology	university department of obstetrics and gynecology in Campina, Brazil. Chart data spanned Jan 1991 to Dec 2000.
Participants	Women who chose DMPA and used the method continuously for 3 years or more. Exclusion criteria: diabetes mellitus, hyperthyroidism or hypothyroidism, chronic transplant. Mean age was 31 years in both groups.	Women who chose DMPA and used the method continuously for 3 years or more and women who used TCu380A IUD for similar time period. Exclusion criteria: diabetes mellitus, hyperthyroidism or hypothyroidism, chronic renal failure, rheumatic diseases requiring chronic use of corticoids, and any type of organ transplant. Mean age was 31 years in both groups.
Interventions	1 DMPA (N=379)	
	2 TCu380A IUD (N=379)	
Outcomes	Change in weight (kg) at 1, 2, and 3 years by contraceptive group and baseline BMI group (BMI (kg/m <sup>2</sup> ) < 25; 25 to 29.9; $>= 30$ )	group (BMI $(kg/m^2) < 25$ ; 25 to 29.9; >= 30)
Notes	After pairing for age and baseline BMI, the samples were 379 for each contracepti annually.	ine BMI, the samples were 379 for each contraceptive group. Weight and height were measured at baseline (time of method initiation) and
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	NA; charts were selected for those with 3 years of continuous use.
Salem 1984		
Methods	Prospective study in postpartum clinic of university hospital in Assiut, Egypt. Studinfant growth.	Prospective study in postpartum clinic of university hospital in Assiut, Egypt. Study focused on effect of Norplant use on lactating women and on lactation performance and infant growth.
Participants	150 lactating women. Inclusion criteria: normal delivery of normal living baby and Mean age was 29 years for each group.	150 lactating women. Inclusion criteria: normal delivery of normal living baby and exclusively breastfeeding, one month after delivery, and infant weight at least 3500 gm. Mean age was 29 years for each group.
Interventions	Acceptors (50 in each group):	
	1 Norplant	
	2 Barrier, 'local,' or no contraceptive method	
	3 TCu380A1UD	
Outcomes	Weight gain at 6 months by study group	
Notes		
Risk of bias table		

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Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	Excluded data: 1 in Norplant group who lost her baby and wanted to get pregnant; 2 who got pregnant in group with barrier, local, or no contraceptive.
Salem 1988		
Methods	Randomized controlled trial of DMPA and NET-EN in family planning center in <i>l</i> of 2 injectables regarding side effects, continuation, and termination.	Randomized controlled trial of DMPA and NET-EN in family planning center in Assiut, Egypt. Random numbers table was prepared by WHO. Study examined performance of 2 injectables regarding side effects, continuation, and termination.
Participants	400 women attending family planning clinic. Inclusion criteria: 18 to 40 years old, one method. Exclusion criteria: breast-feeding; cardiovascular disease; liver diseas vaginal bleeding; suspected pregnancy.	400 women attending family planning clinic. Inclusion criteria: 18 to 40 years old, proven fertility and frequent risk of pregnancy, regular menstrual cycles, willing to rely on one method. Exclusion criteria: breast-feeding; cardiovascular disease; liver disease; known or suspected breast malignancy, genital malignancy, uterine fibroids; undiagnosed vaginal bleeding; suspected pregnancy.
Interventions	200 in each group:	
	<b>1</b> DMPA 150 mg every 3 months	
_	2 Norethisterone enanthate (NET-EN) 200 mg every 2 months	
	Study duration was 1 year	
Outcomes	Mean change in weight at 1 year by contraceptive group. Units were not specified (kg or lbs).	kg or lbs).
Notes	Report had mean change for those who had an increase, decrease, or no change in	Report had mean change for those who had an increase, decrease, or no change in weight. Review authors calculated combined weight change means and standard deviations.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Low risk	Sealed envelopes contained assignments
Incomplete outcome data (attrition bias)	Low risk	Losses to follow up were reportedly 19% for DMPA and 13.3% for NET-EN. One-year method continuation rates were 68.8% DMPA and 57.1% NET-EN. Those who finished the study were 54% and 47%, respectively.
Sivin 1998		
Methods	Randomized controlled trial at 7 centers, including USA and Finland. Study focused on by "linear congruential method"; blocks of 50 per clinic. Enrollment from 1990 to 1994.	centers, including USA and Finland. Study focused on effectiveness of reformulated 2-rod LNG implant versus 6-rod implant. Randomization blocks of 50 per clinic. Enrollment from 1990 to 1994.
Participants	1200 healthy women, 18 to 40 years old, who sought implant contraception. Inclusion criteria: no contraindications to implant use Exclusion criteria: cancer, severe cardiovascular problem, hyperlipidemia, diabetes mellitus, mental illness, epilepsy, severe or fre bleeding, hyperprolactinaemia or bloody breast discharge, pelvic inflammatory disease since last pregnancy or ectopic pregnancy.	1200 healthy women, 18 to 40 years old, who sought implant contraception. Inclusion criteria: no contraindications to implant use, willing to undergo study procedures. Exclusion criteria: cancer, severe cardiovascular problem, hyperlipidemia, diabetes mellitus, mental illness, epilepsy, severe or frequent headaches, undiagnosed genital bleeding, hyperprolactinaemia or bloody breast discharge, pelvic inflammatory disease since last pregnancy or ectopic pregnancy.
Interventions	Levonorgestrel implants	
	1 Norplant: 6 capsules, containing levonorgestrel 216 mg (total)	
	2 LNG rod (Jadelle): 2 rods containing levonorgestrel 150 mg (total); different elastomer in core than earlier implant Follow up: 1, 3, 6 months, and then semi-annually up to 5 years	erent elastomer in core than earlier implant

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Outcomes	Mean weight change per year by implant group. Weight change was also presented for the 10th, 50th, and 90th percentiles of body weight (at admission)	weight (at admission).
Notes	Weighing method not specified	
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Low risk	Implants were in sealed opaque envelopes that were numbered sequentially, according to randomization lists.
Incomplete outcome data (attrition bias)	Low risk	Two sets of Norplant were contaminated and not used (1198 analyzed)
Sule 2005		
Methods	Retrospective chart review at family planning clinic at a university hospital in Zaria, Nigeria. Study examined hormonal contraceptives and weight changes.	ia, Nigeria. Study examined hormonal contraceptives and weight changes.
Participants	All new clients registered between 01 Jan 1993 and 31 Dec 1995 and followed for DMPA, NET-EN, or Norplant); IUD users were considered to be controls.	een 01 Jan 1993 and 31 Dec 1995 and followed for at least 1 year (N=516). Included were those who used hormonal contraceptives (COC, ); IUD users were considered to be controls.
Interventions	Users of	
	<b>1</b> Norplant (N=188)	
	<b>2</b> Combined oral contraceptives (COC) (N=38)	
	<b>3</b> IUD (N=136) (non-hormonal)	
Outcomes	Mean weight gain or loss by contraceptive group at 1 year and 3 years	
Notes	Report had mean change for those who had an increase, decrease, or no change in weight. Review authors calculated combined weight change means and standard deviations. Injectable users were not used in this review, as DMPA and NET-EN had been grouped for analysis.	weight. s. ouped for analysis.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	Researchers selected charts with at least one year of data. Only 236 were followed for 3 years, producing an overall loss of 54%: Norplant 31%, COC 95%, and IUD 56%.
Taneepanichskul 1998		
Methods	Retrospective study in family planning clinic at a hospital in Bangkok, Thailand. Study examined weight change in long-term users of DMPA versus IUD.	tudy examined weight change in long-term users of DMPA versus IUD.
Participants	100 women, aged 37 to 50 years, attending family planning clinic. Inclusion criteri alcohol intake. IUD users had not used any hormonal contraceptive. Exclusion crit	100 women, aged 37 to 50 years, attending family planning clinic. Inclusion criteria: used DMPA or IUD for 120 months, followed "regularly," no history of smoking or alcohol intake. IUD users had not used any hormonal contraceptive. Exclusion criteria: developed chronic disease or metabolic disorder during DMPA or IUD use.
Interventions	Chosen: 1 DMPA (N=50)	

	2 Copper T380A IUD (N=50)	
Outcomes	Mean change in body weight by 120 months	
Notes	Weight was measured in standard manner at 120 months; methods used previously were not specified.	were not specified.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	Excluding those who developed a chronic disease or disorder during method use may have biased the results. Weight gain is associated with development of some diseases and disorders.
Tankeyoon 1976		
Methods	Prospective metabolic study in Bangkok, Thailand. Study focused on metabolic effects of the contraceptive methods.	fects of the contraceptive methods.
Participants	Two groups of 16 healthy women attending the family planning clinic. Inclusion c 38 years.	Two groups of 16 healthy women attending the family planning clinic. Inclusion criteria: >6 weeks postpartum and no other steroid use for past 3 months. Age range was 18 to 38 years.
Interventions	<b>1</b> DMPA 150 mg (3-month intervals) (N=16)	
	<b>2</b> COC: d-norgestrel 50 μg + EE 50 μg (N=16)	
	Follow up at 1, 2, 3, 6, 9, 12 months	
Outcomes	Percent of cases with >= 1 kg increase or decrease in body weight by contraceptive method	e method
Notes		
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias)	Unclear risk	Losses by 12 months: DMPA 2/16 (13%); COC 4/16 (25%) Reasons for missing data not specified.
Tuchman 2005		
Methods	Retrospective chart review at urban, hospital-based, teen health center (USA)	
Participants	222 females, aged 12 to 21 years, attending health center for contraception betwee contraceptive. 'New start' was defined as no OC in past 3 months or DMPA in past	222 females, aged 12 to 21 years, attending health center for contraception between 01 Jan 2001 and 31 Dec 2001. Inclusion criteria: first-time use of oral or injectable contraceptive. 'New start' was defined as no OC in past 3 months or DMPA in past 6 months prior to new method initiation.
Interventions	Choice of:	
	1 DMPA every 3 months	
_	2 Medroxyprogesterone acetate + estradiol cypionate 5 mg (MPA/F <sub>2</sub> C) monthly	monthly

	3 COC	
Outcomes	Mean weight change (kg) and mean percent weight change at 3, 6, 9, 12 months by contraceptive method	y contraceptive method
Notes	Standardized weight and height measures described. Measures closest to baseline and each follow up were used.	and each follow up were used.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	NA
Incomplete outcome data (attrition bias)	Low risk	Numbers were provided for those who continued method use at each follow-up time. At 12 months, discontinuation rates were 54% to 58%.
Westhoff 2007		
Methods	Randomized controlled trial at sites in North and South America. Trial was evaluator-blinded	tor-blinded.
Participants	Women, 18 to 49 years old, sexually active and wanting long-term contraception. Inclu willing to rely on DMPA for a year. Exclusion criteria: used OCs, implants, or hormon Pap, undiagnosed genital bleeding, other contraindications to hormonal contraceptives.	Women, 18 to 49 years old, sexually active and wanting long-term contraception. Inclusion criteria: no OC use for past 2 months, regular menstruation in past 3 months, willing to rely on DMPA for a year. Exclusion criteria: used OCs, implants, or homonal IUD in past 2 months or DMPA-IM in past 10 months, pregnant or infertile, abnormal Pap, undiagnosed genital bleeding, other contraindications to hormonal contraceptives.
Interventions	1 DMPA-SC 104 mg (N=266) or	
	2 DMPA-IM 150 mg (N=268);	
	every 3 months for 3 years	
Outcomes	Weight change at 36 months	
Notes	Weight assessed as safety endpoint. Researchers also analyzed weight change by F found by BMI groups.	Weight assessed as safety endpoint. Researchers also analyzed weight change by BMI group: <= 25, 25 to 30, > 30 kg/m <sup>2</sup> . Report notes that no consistent differences were found by BMI groups.
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias)	Unclear risk	By 3 years, continuation in the study was 25% for DMPA-SC 104 and 21% for DMPA-IM 150. Reasons for discontinuation were unclear.
WHO 1983		
Methods	Phase III randomized controlled trial in 13 centers in Africa, Asia, Central and Sou blinding was done (e.g., assessors).	Phase III randomized controlled trial in 13 centers in Africa, Asia, Central and South America, and Europe. No information on method for randomization and whether any blinding was done (e.g., assessors).
Participants	Non-breastfeeding women who chose injectable contraception. Exclusion criteria:	chose injectable contraception. Exclusion criteria: contraindication for long-acting contraceptive methods. Mean age was 27.4 years.
Interventions	<ol> <li>DMPA 150 mg at 90-day intervals (N=1587)</li> <li>NET-EN 200 mg at 60-day intervals (N=789)</li> </ol>	

	3 NET-EN 200 mg at 60-day intervals for 6 months then 84-day intervals (N=796)	(N=796)
Outcomes	Mean weight change at 12 and 24 months by contraceptive group	
Notes	Method for measuring weight not mentioned	
Risk of bias table		
Bias	Authors' judgement	Support for judgement
Allocation concealment (selection bias)	Unclear risk	No information
Incomplete outcome data (attrition bias)	Low risk	Losses to follow up were reportedly 10.7% DMPA, 8.9% NET-EN 60 days, and 9.8% NET-EN 84 days. Life-table rates for total discontinuation were 71 to 74.

Reason for exclusion	Insufficient weight change data: presented in figure without any specific numbers, other than mean gain for DMPA group in text.
Bahamondes 2010	
Reason for exclusion	Mean weight change not reported. BMI included as control variable for examining bone mineral density. Study examined weight change among participants who had been using the method (LNG-IUS) for at least 7 years before the study.
Barsivala 1974	
Reason for exclusion	Insufficient data: study duration not reported (our criteria was >= 3 months); also, authors did not specify whether the variance reported is standard deviation or standard error.
Beksinska 2010	
Reason for exclusion	Analysis combined users of DMPA, NET-EN, or both. Authors noted the subgroups were too small to analyze separately and that differences in weight gain were not significant.
Berenson 1997	
Reason for exclusion	Insufficient weight change data: means reported without any variance measure
Berenson 2009	
Reason for exclusion	Insufficient weight change data: mean change reported without any variance. Of 240 who chose DMPA, 182 (76%) discontinued the method. Of the 182, 68 remained in study <= 2 more years (4 began the COC used in the study and 24 chose non-hormonal methods). Reportedly, DMPA users who had > 5% increase in weight at 6-month visit were more likely to be lost to follow up at the next visit than those who had not gained weight. Secondary report (Rahman 2012) provided weight gain (by kg categories) over any 6-month period; therefore, categories overlapped.
Bonny 2006	
Reason for exclusion	Analysis combined groups that received DMPA or DMPA with estradiol supplement; researchers reported the two DMPA groups did not differ in weight gain. Method discontinuation for DMPA was 37% at 18 months. Secondary report (Bonny 2011) used weight change to examine bone mineral density but did not report means or standard deviations. Data from 2000 to 2003.
Chen 2011	
Reason for exclusion	Abstract notes that weight gain was reported as side effect. Wrote to investigator regarding whether weight change was measured. Unable to obtain further information.
Clark 2005	
Reason for exclusion	Insufficient weight change data: means (not mean change) presented in a figure. Text mentions mean change for DMPA at 30 months (no variance measure) and that the control group was basically unchanged. Due to discontinuations of DMPA and initiation of hormonal contraception among controls, the samples sizes were 17% (DMPA) and 19% (controls) of baseline by the last visit.
Costa 2012	
Reason for exclusion	Mean change in weight was not reported. Participants were 1.5 months post-partum.
Dahlberg 1982	
Reason for exclusion	Insufficient weight change data: means reported without any variance measure
El Mahgoub 1980	
Reason for exclusion	Insufficient weight change data: mean change reported without any variance measure. Also, percent that lost or gain weight was reported, but no specific amount of weight was provided.
Hall 1980	
Reason for exclusion	Insufficient weight change data: mean change in 'ideal body weight' shown in figure, except for mean change for progestin-only group reported in text.
Havranek 1972	
Reason for exclusion	Insufficient weight data: mean change for one group reported without any variance measure

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Kaunitz 2009	
Reason for exclusion	Insufficient weight data. Mean change was reported within adverse event section without any variance measure. Data from 2001 to 2004.
Mangan 2002	
Reason for exclusion	Comparison groups were DMPA users and OC users. Types of OC were not specified and might have included progestin-only as well as combination OC.
Olsson 1988	
Reason for exclusion	Insufficient data for analysis: no N per group for analysis. First-year continuation rate was 59% for Norplant and 77% for Norplant-2; methods suggest these were life-table rates.
Ortayli 2001	
Reason for exclusion	Insufficient data: report does not provide sample sizes used for analysis. Outcome data are from a pilot conducted in 1995 and the main study conducted from 1996 to 1998.
Risser 1999	
Reason for exclusion	Comparison groups were DMPA users and OC users. Types of OC were not specified and might have included progestin-only as well as combination OC.
Segall-Gutierrez 2012	
Reason for exclusion	Single-arm study comparing normal weight and obese women. The one intervention was subcutaneous DMPA.
WHO 1978	
Reason for exclusion	Insufficient weight data: mean gains reported without any variance measure
Yela 2006	
Reason for exclusion	Insufficient weight change data: tables show weight and BMI means (not change) by year; text mentions mean change per group over 5 years without any variance measure. Study began in 1998.
Zheng 1999	
Reason for exclusion	Insufficient weight change data: means reported without any variance measure

# Characteristics of studies awaiting classification

Madden 2013	
Methods	Observational, cohort study; non-probability sample. Purpose: learn whether women who use progestin-only methods will experience weight change compared to women using the non- hormonal copper IUD. Primary hypothesis: users of DMPA will gain excess weight and increase their BMI above the copper-IUD users. Secondarily, compare users' data in LNG-IUD and ENG implant groups to copper-IUD group.
Participants	427 women Inclusion criteria: enrolled in CHOICE between the age 18 and 45 years and consented to future studies; chose levonorgestrel-releasing IUD, copper IUD, implant, or DMPA as CHOICE baseline method; baseline height and weight data collected from on-campus enrollment site; able to return to on-campus enrollment site for study activities. Exclusion criteria: recent history of DMPA use before starting baseline CHOICE method; used current method < 11 months or > 12 months and 3 weeks.
Interventions	DMPA, LNG-IUD, copper-T IUD, or implant.
Outcomes	Weight change by 12 months
Notes	After the updated review was submitted, the investigator communicated that an article was accepted for publication. Those results will be add to the next update. Note: Reportedly, the adjusted model indicated no significant difference between the study arms in weight gain.

Bonny 2012	
Study name	Drug Exposure and Depot Medroxyprogesterone Acetate (DMPA) in Adolescent Subjects
Methods	Randomized, open-label; pharmacokinetic study. Purpose: learn whether DMPA affects weight gain and bone mineral density in teens.
Participants	45 healthy young women Inclusion criteria: healthy, postmenarchal females. age 12 to 21 years; self-selected to initiate DMPA; willingness to use a barrier method of contraception in addition to DMPA. Exclusion criteria: chronic disease known to affect weight or bone mineral density (BMD) (e.g. diabetes, kidney); use of medication known to affect weight or BMD (e.g. corticosteroids); DMPA use in past 12 months; pregnancy in past 6 months; etonogestrel implant, levonorgestrel-releasing intrauterine system or combined estrogen/progesterone contraceptive in past 3 months (OC, patch, vaginal ring); weight > 250 lbs; need for confidential contraceptive care for individuals < 18 years of age.
Interventions	DMPA, intramuscular injection
	150 mg; approved for use (US Food and Drug Administration (FDA)) when given into muscle.
	104 mg; FDA-approved for use only when given under the skin; therefore considered experimental.
	75 mg; considered experimental; not FDA-approved regardless of how given.
Outcomes	> 5% weight gain at 24 weeks; > 10% weight gain at 48 weeks.
Starting date	Sep 2011. Estimated completion: Dec 2013.
Contact information	Lauren Bird, RN; 614-722-2650; Lauren.Bird@NationwideChildrens.org Hannah Lange, MPH; 614-722-3465; Hannah.Lange@NationwideChildrens.org Principal Investigator: Andrea Bonny, MD
Notes	
Madden 2012b	
Study name	Comparison of Body Composition & Weight Change in Users of Progestin-only Contraception During the First Year of Use (DEXA)
Methods	Observational prospective cohort; non-probability sample. Purpose: learn if women gain weight using progestin-only methods of contraception and if so, how much.
Participants	345 women Inclusion criteria: women aged 18 to 45 years, starting the copper IUD or implant through their provider, first study visit must occur within 14 days of method insertion. Exclusion criteria: DMPA in past 16 weeks; POPs, LNG-IUC, or implant in past 4 weeks; thyroid disease, autoimmune disease, diabetes (excluding gestational); history of eating disorder; currently taking antidepressants for < 6 months, antipsychotics; oral glucocorticoids (steroids, i.e. prednisone) for > 6 months; currently breastfeeding or < 6 months postpartum.
Interventions	1 Levonorgestrel-containing intrauterine contraceptive (LNG-IUC)
	2 Etonogestrel (ENG) subdermal implant
	3 Copper IUD.
Outcomes	Weight change at 12 months; compare changes in body weight and BMI. Body composition assessed with dual-energy x-ray absorptiometry (DEXA); diet and activity via validated questionnaires.
Starting date	April 2010; estimated completion Jan 2013
Starting date Contact information	April 2010; estimated completion Jan 2013 Danielle S Grunloh, BS; 314-747-1425; grunlohd@wudosis.wustl.edu Tessa E Madden, MD, MPH; Washington University School of Medicine