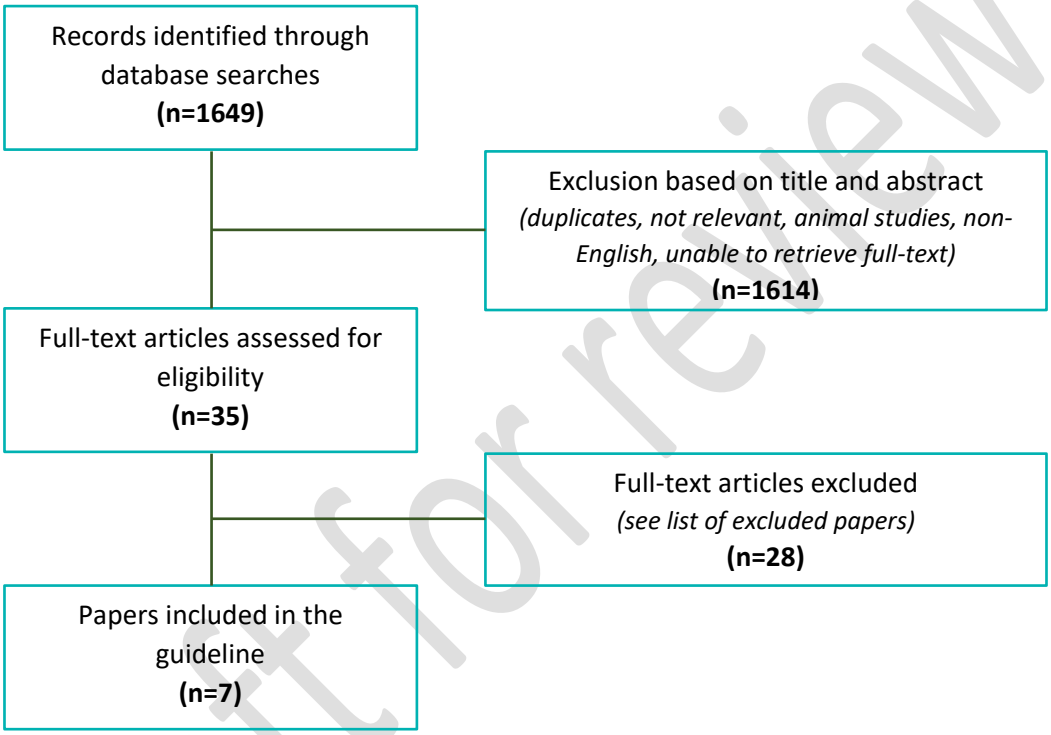
Annex 7: Literature study: flowcharts, list of excluded studies

1. Is the assessment of the predicted response to ovarian stimulation sufficiently reliable?

Flowchart



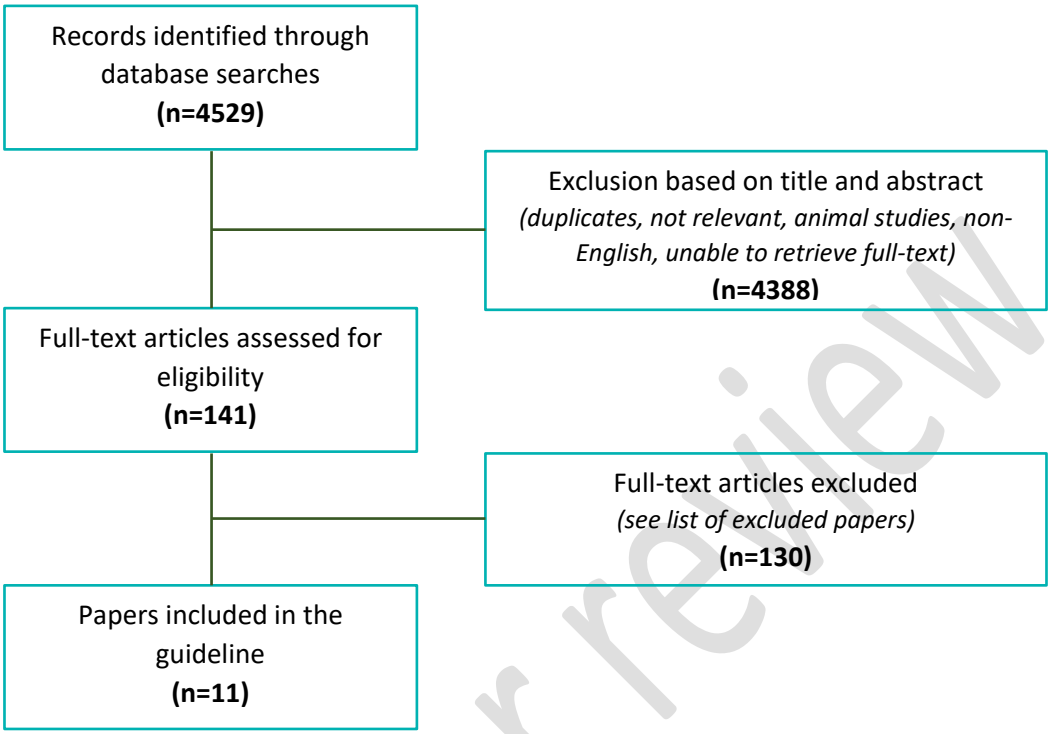
List of excluded papers

	Exclusion criterion
Arvis, P., Rongières, C., Pirrello, O. and Lehert, P. Reliability of AMH and AFC measurements and their correlation: a large multicenter study. J Assist Reprod Genet. 2022; 39 (5): 1045-1053.	Wrong outcomes;
Arvis, P., Rongières, C., Pirrello, O. and Lehert, P. Predicting the ovarian response: towards a determinant model and implications for practice. J Assist Reprod Genet. 2024; 41 (1): 213-222.	Wrong outcomes;
Blazquez, A., Falcó, N., Caño, E., Rodriguez, F., Vassena, R., Miguel-Escalada, I., Popovic, M. and Rodriguez, A. No association between LH levels and ovarian response in oocyte donors triggered with gonadotropin-releasing hormone agonist: A prospective study. Eur J Obstet Gynecol Reprod Biol. 2024; 294 163-169.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Bruno-Gaston, J., Jung, J., Kumar, T., Zarutskie, P., Gibbons, W. and Devaraj, S. Association of ovarian response with picoAMH in women undergoing controlled ovarian hyperstimulation. Clin Biochem. 2021; 95 34-40.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Del Gallego, R., Lawrenz, B., Ata, B., Kalafat, E., Melado, L., Elkhatib, I. and Fatemi, H. Association of 'normal' early follicular FSH concentrations with unexpected poor or suboptimal response when ovarian reserve markers are reassuring: a retrospective cohort study. Reprod Biomed Online. 2024; 48 (3): 103701.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Develioglu, O. H., Cox, B., Toner, J. P., Oehninger, S. and Muasher, S. J. The value of basal serum follicle stimulating hormone, luteinizing hormone and oestradiol concentrations following pituitary down-regulation in predicting ovarian response to stimulation with highly purified follicle stimulating hormone. Hum Reprod. 1999; 14 (5): 1168-74.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Grigoryan, O. R., Mikheev, R. K., Andreeva, E. N. and Dedov, II. Ovarian reserve in women with obesity. Obesity and Metabolism. 2019; 16 (3): 69-75.	Wrong patient population;
Izhar, R., Husain, S., Tahir, M. A., Kausar, M., Sana, T. and Ghalib, F. Antral follicle count and anti-müllerian hormone level as predictors of ovarian hyperstimulation syndrome in women with polycystic ovarian syndrome undergoing controlled ovarian stimulation. Journal of ultrasonography. 2021; 21 (86): e200-e205.	Wrong outcomes;
La Marca, A., Tolani, A. D. and Capuzzo, M. The interchangeability of two assays for the measurement of anti-Müllerian hormone when personalizing the dose of FSH in in-vitro fertilization cycles. Gynecol Endocrinol. 2021; 37 (4): 372-376.	Wrong outcomes;
Laqqan, M. M. and Yassin, M. M. Anti-Müllerian hormone and antral follicle count predict ovarian response in women less than 45 years following GnRH antagonist multiple-dose protocol. Asian pacific journal of reproduction. 2022; 11 (5): 208-216.	Wrong patient population;
Leijdekkers, J. A., van Tilborg, T. C., Torrance, H. L., Oudshoorn, S. C., Brinkhuis, E. A., Koks, C. A. M., Lambalk, C. B., de Bruin, J. P., Fleischer, K., Mochtar, M. H. and et al. Do female age and body weight modify the effect of individualized FSH dosing in IVF/ICSI treatment? A secondary analysis of the OPTIMIST trial. Acta Obstet Gynecol Scand. 2019; 98 (10): 1332-1340.	Wrong outcomes;
Li, H. W. R., Ko, J. K. Y., Lee, V. C. Y., Yung, S. S. F., Lau, E. Y. L., Yeung, W. S. B., Ho, P. C. and Ng, E. H. Y. Comparing antral follicle count and serum anti-Mullerian hormone level for determination of gonadotrophin dosing in in-vitro fertilisation: a randomized trial. Ultrasound in obstetrics & gynecology. 2019;	Wrong outcomes;
Li, H. W. R., Ko, J. K. Y., Lee, V. C. Y., Yung, S. S. F., Lau, E. Y. L., Yeung, W. S. B., Ho, P. C. and Ng, E. H. Y. Comparison of antral follicle count and serum anti Müllerian hormone level for determination of gonadotropin dosing in in-vitro fertilization: randomized trial. Ultrasound Obstet Gynecol. 2020; 55 (3): 303-309.	Wrong outcomes;
Liao, S., Xiong, J., Tu, H., Hu, C., Pan, W., Geng, Y., Pan, W., Lu, T. and Jin, L. Prediction of in vitro fertilization outcome at different antral follicle count thresholds combined with female age, female cause of infertility, and ovarian response in a prospective cohort of 8269 women. Medicine (Baltimore). 2019; 98 (41): e17470.	Wrong outcomes;
Madrazo, I., Vélez, M. F., Hidalgo, J. J., Ortiz, G., Suárez, J. J., Porchia, L. M., Gonzalez-Mejia, M. E. and López-Bayghen, E. Prediction of severe ovarian hyperstimulation syndrome in women undergoing in vitro fertilization using estradiol levels, collected ova, and number of follicles. J Int Med Res. 2020; 48 (8): 300060520945551.	Wrong outcomes;
Nelson, S. M., Larsson, P., Mannaerts, Bmjl, Nyboe Andersen, A. and Fauser, Bcjm. Anti-Müllerian hormone variability and its implications for the number of oocytes retrieved following individualized dosing with follitropin delta. Clin Endocrinol (Oxf). 2019; 90 (5): 719-726.	Wrong outcomes;
Neves, A. R., Blockeel, C., Griesinger, G., Garcia-Velasco, J. A., Marca, A., Rodriguez, I., Drakopoulos, P., Alvarez, M., Tournaye, H. and Polyzos, N. P. The performance of the Elecsys®anti-	Included in systematic review;

Müllerian hormone assay in predicting extremes of ovarian response to corifollitropin alfa. Reprod Biomed Online. 2020; 41 (1): 29-36.	
Peluso, C., Oliveira, R., Laporta, G. Z., Christofolini, D. M., Fonseca, F. L. A., Laganà, A. S., Barbosa, C. P. and Bianco, B. Are ovarian reserve tests reliable in predicting ovarian response? Results from a prospective, cross-sectional, single-center analysis. Gynecol Endocrinol. 2021; 37 (4): 358-366.	High risk of bias due to the included study population;
Razafintsalama-Bourdet, M., Bah, M., Amand, G., Vienet-Lègue, L., Pietin-Vialle, C., Bry-Gauillard, H., Pinto, M., Pasquier, M., Vernet, T., Jung, C., Levaillant, J. M. and Massin, N. Random antral follicle count performed on any day of the menstrual cycle has the same predictive value as AMH for good ovarian response in IVF cycles. J Gynecol Obstet Hum Reprod. 2022; 51 (1): 102233.	Wrong intervention;
Salama, S., Sharaf, M., Salem, S. M., Rasheed, M. A., Salama, E., Elnahas, T. and Lotfy, R. FSH versus AMH: age-related relevance to ICSI results. Middle East Fertil Soc J. 2021; 26 (1): 27.	Wrong outcomes;
Salemi, F., Jambarsang, S., Kheirkhah, A., Salehi-Abargouei, A., Ahmadnia, Z., Hosseini, H. A., Lotfi, M. and Amer, S. The best ovarian reserve marker to predict ovarian response following controlled ovarian hyperstimulation: a systematic review and meta-analysis. Syst Rev. 2024; 13 (1): 303.	More comprehensive SR available;
Sood, A., Goel, A., Boda, S. and Mathur, R. Prediction of significant OHSS by ovarian reserve and ovarian response - implications for elective freeze-all strategy. Hum Fertil (Camb). 2022; 25 (2): 390-396.	Wrong study design;
Şükür, Y. E., Aslan, B., Kaplan, N. B., Doğru, M., Özmen, B., Sönmezer, M., Berker, B., Atabekoğlu, C. S. and Aytaç, R. Inter-cycle variability of anti-Müllerian hormone: implications for predicting controlled ovarian stimulation cycle outcomes. J Ovarian Res. 2024; 17 (1): 209.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Weghofer, A. and Feichtinger, W. The forgotten variable: impact of luteinizing hormone on the prediction of ovarian reserve. Fertil Steril. 2006; 85 (1): 259-61.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Wong, E., Ng, E. H. Y., Li, R. H. W. and Ko, J. K. Y. Comparing the intercycle variation of serum anti-Müllerian hormone and antral follicle count measurements over four consecutive menstrual cycles. Clin Endocrinol (Oxf). 2023; 98 (3): 394-399.	Wrong outcomes;
Wyroba, J., Kochan, J., Kelley, L., Iqbal, S. and Kordowitzki, P. Anti-Müllerian Hormone Concentrations in Women of Different Reproductive Age and the Chances of IVF Outcome: A Paradigm Shift is needed. Aging Dis. 2025;	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Xia, Q., Xie, L., Wu, Q., Cong, J., Ma, H., Li, J., Cai, W. and Wu, X. Elevated baseline LH/FSH ratio is associated with poor ovulatory response but better clinical pregnancy and live birth in Chinese women with PCOS after ovulation induction. Heliyon. 2023; 9 (1): e13024.	Not reporting accuracy in terms of sensitivity and specificity or ROC-AUC;
Zhang, Y., Xu, Y., Xue, Q., Shang, J., Yang, X, Shan, X, Kuai, Y., Wang, S. and Zeng, C. Discordance between antral follicle counts and anti-Müllerian hormone levels in women undergoing in vitro fertilization. Reprod Biol Endocrinol. 2019; 17 (1): 51.	Wrong outcomes;

2. WHAT IS THE PROGNOSTIC VALUE OF HORMONAL ASSESSMENT AT BASELINE?

Flowchart



List of excluded papers

	Exclusion criterion
Abdalla, H. and Thum, M. Y. Repeated testing of basal FSH levels has no predictive value for IVF outcome in women with elevated basal FSH. Hum Reprod. 2006; 21 (1): 171-4.	irrelevant research question;
Arat, Ö, Deveci, D., Özkan, Z. S. and Tuncer Can, S. What is the effect of the early follicular phase FSH/LH ratio on the number of mature oocytes and embryo development? Turk J Med Sci. 2020; 50 (2): 420-425.	Wrong study design;
Arce, Jc, Marca, A., Mirner, Klein B., Nyboe, Andersen A. and Fleming, R. Antimüllerian hormone in gonadotropin releasing-hormone antagonist cycles: prediction of ovarian response and cumulative treatment outcome in good-prognosis patients. 2013; 99 (6): 1644-53.	irrelevant research question;
Armijo, O., Egea, G., Martín-Cameán, M., Lobo, S., Sanz, C., Iniesta, S., Fernández, S., Sánchez, M. J., Silva, P. and Hernández, A. Effects of progesterone variation on IVF Progesterone variation during controlled ovarian stimulation: effects on in vitro results. J Obstet Gynaecol. 2020; 40 (6): 825-829.	irrelevant research question;
Ashrafi, M., Hemat, M., Arabipoor, A., Salman Yazdi, R., Bahman-Abadi, A. and Cheraghi, R. Predictive values of anti-mullerian hormone, antral follicle count and ovarian response prediction index (ORPI) for assisted reproductive technology outcomes. J Obstet Gynaecol. 2017; 37 (1): 82-88.	irrelevant research question;
Aydin, T., Kara, M., Aran, T., Turktekin, N. and Ozdemir, B. The association between anti-Mullerian hormone and IVF-ICSI outcome in poor responder patients performing long protocol. Clin Exp Obstet Gynecol. 2015; 42 (5): 663-5.	irrelevant research question;
Balachandren, N., Salman, M., Diu, N. L., Schwab, S., Rajah, K. and Mavrelos, D. Ovarian reserve as a predictor of cumulative live birth. Eur J Obstet Gynecol Reprod Biol. 2020; 252 273-277.	irrelevant research question;
Barroso, G., Oehninger, S., Monzó, A., Kolm, P., Gibbons, W. E. and Muasher, S. J. High FSH:LH ratio and low LH levels in basal cycle day 3: impact on follicular development and IVF outcome. J Assist Reprod Genet. 2001; 18 (9): 499-505.	irrelevant research question;
Bayram, H., Dundar, O., Donmez Cakil, Y., Uyar, E. E. and Cincik, M. Anti-Müllerian hormone as a predictor of pregnancy in women under 35 years with unexplained infertility undergoing ICSI: a retrospective study. Minerva Obstet Gynecol. 2022; 74 (2): 117-122.	irrelevant research question;
Beck-Fruchter, R., Nothman, S., Baram, S., Geslevich, Y. and Weiss, A. Progesterone and estrogen levels are associated with live birth rates following artificial cycle frozen embryo transfers. J Assist Reprod Genet. 2021; 38 (11): 2925-2931.	irrelevant research question;
Ben-Haroush, A., Farhi, J., Zahalka, Y., Sapir, O., Meizner, I. and Fisch, B. Correlations between antral follicle count and ultrasonographic ovarian parameters and clinical variables and outcomes in IVF cycles. Gynecol Endocrinol. 2012; 28 (6): 432-5.	irrelevant research question;
Benadiva, C. A., Ben-Rafael, Z., Blasco, L., Tureck, R., Mastroianni, L. and Flickinger, G. L. An increased initial follicle-stimulating hormone/luteinizing hormone ratio does not affect ovarian responses and the outcomes of in vitro fertilization. Fertil Steril. 1988; 50 (5): 777-781.	irrelevant research question;
Bernardus, R. E., Jones, G. S., Acosta, A. A., Garcia, J. E., Liu, H. C., Jones, D. L. and Rosenwaks, Z. The significance of the ratio in follicle-stimulating hormone and luteinizing hormone in induction of multiple follicular growth. Fertil Steril. 1985; 43 (3): 373-8.	irrelevant research question;
Brodin, T., Hadziosmanovic, N., Berglund, L., Olovsson, M. and Holte, J. Comparing four ovarian reserve markers--associations with ovarian response and live births after assisted reproduction. Acta Obstet Gynecol Scand. 2015; 94 (10): 1056-63.	irrelevant research question;
Broekmans, F. J., Kwee, J., Hendriks, D. J., Mol, B. W. and Lambalk, C. B. A systematic review of tests predicting ovarian reserve and IVF outcome. Hum Reprod Update. 2006; 12 (6): 685-718.	irrelevant research question;
Broer, S. L., Dólleman, M., van Disseldorp, J., Broeze, K. A., Opmeer, B. C., Bossuyt, P. M., Eijkemans, M. J., Mol, B. W. and Broekmans, F. J. Prediction of an excessive response in in vitro fertilization from patient characteristics and ovarian reserve tests and comparison in subgroups: an individual patient data meta-analysis. Fertil Steril. 2013; 100 (2): 420-9.e7.	irrelevant research question;
Broer, S. L., van Disseldorp, J., Broeze, K. A., Dolleman, M., Opmeer, B. C., Bossuyt, P., Eijkemans, M. J., Mol, B. W. and Broekmans, F. J. Added value of ovarian reserve testing on patient characteristics in the prediction of ovarian response and ongoing pregnancy: an individual patient data approach. Hum Reprod Update. 2013; 19 (1): 26-36.	irrelevant research question;
Celik, C., Asoglu, M. R., Karakis, L. S., Findikli, N., Gultomruk, M., Cavkaytar, S. and Bahceci, M. The impact of serum oestradiol concentration prior to progesterone administration on live birth rate in single vitrified-warmed blastocyst transfer cycles. Reprod Biomed Online. 2019; 39 (6): 1026-1033.	irrelevant research question;
Chae, H. D., Kim, C. H., Kang, B. M. and Chang, Y. S. Clinical usefulness of basal FSH as a prognostic factor in patients undergoing intracytoplasmic sperm injection. J Obstet Gynaecol Res. 2000; 26 (1): 55-60.	irrelevant research question;

Chambers, A. E., Fairbairn, C., Gaudoin, M., Mills, W., Woo, I., Pandian, R., Stanczyk, F. Z., Chung, K. and Banerjee, S. Soluble LH-HCG receptor and oestradiol as predictors of pregnancy and live birth in IVF. Reprod Biomed Online. 2019; 38 (2): 159-168.	irrelevant research question;
Chen, C. D., Chiang, Y. T., Yang, P. K., Chen, M. J., Chang, C. H., Yang, Y. S. and Chen, S. U. Frequency of low serum LH is associated with increased early pregnancy loss in IVF/ICSI cycles. Reprod Biomed Online. 2016; 33 (4): 449-457.	irrelevant research question;
Chen, Y., Li, Y., Li, X., Liu, L., Liu, Z., Gui, W., Liu, X. and Chen, Y. Lower serum LH level was related to poor embryo quality and adverse pregnancy outcomes in fixed GnRH antagonist protocol with estradiol pretreatment. Gynecol Endocrinol. 2024; 40 (1): 2409147.	irrelevant research question;
Chen, Y., Niu, A., Feng, X., Zhang, Y. and Li, F. Prediction of pregnancy outcome in fresh in vitro fertilization/intracytoplasmic sperm injection treatment in patients with poor ovarian reserve. Aging (Albany NY). 2021; 13 (14): 18331-18339.	irrelevant research question;
Chuang, C. C., Chen, C. D., Chao, K. H., Chen, S. U., Ho, H. N. and Yang, Y. S. Age is a better predictor of pregnancy potential than basal follicle-stimulating hormone levels in women undergoing in vitro fertilization. Fertil Steril. 2003; 79 (1): 63-8.	irrelevant research question;
Dai, X., Wang, Y., Yang, H., Gao, T., Yu, C., Cao, F., Xia, X., Wu, J., Zhou, X. and Chen, L. AMH has no role in predicting oocyte quality in women with advanced age undergoing IVF/ICSI cycles. Sci Rep. 2020; 10 (1): 19750.	irrelevant research question;
Del Gallego, R., Lawrenz, B., Ata, B., Kalafat, E., Melado, L., Elkhatib, I. and Fatemi, H. Association of 'normal' early follicular FSH concentrations with unexpected poor or suboptimal response when ovarian reserve markers are reassuring: a retrospective cohort study. Reprod Biomed Online. 2023; 48 (3): 103701.	irrelevant research question;
El-Shawarby, S. A. and Khalaf, Y. Age-specific serum FSH concentrations and their correlation with the outcome of ovarian stimulation for IVF. Reprod Biomed Online. 2009; 18 (6): 750-5.	irrelevant research question;
Eldar-Geva, T., Ben-Chetrit, A., Spitz, I. M., Rabinowitz, R., Markowitz, E., Mimoni, T., Gal, M., Zylber-Haran, E. and Margalioth, E. J. Dynamic assays of inhibin B, anti-Mullerian hormone and estradiol following FSH stimulation and ovarian ultrasonography as predictors of IVF outcome. Hum Reprod. 2005; 20 (11): 3178-83.	irrelevant research question;
Elgindy, E. A., El-Haieg, D. O. and El-Sebaey, A. Anti-Müllerian hormone: correlation of early follicular, ovulatory and midluteal levels with ovarian response and cycle outcome in intracytoplasmic sperm injection patients. Fertil Steril. 2008; 89 (6): 1670-6.	irrelevant research question;
Ezoe, K., Ni, X., Kobayashi, T. and Kato, K. Anti-Müllerian hormone is correlated with cumulative live birth in minimal ovarian stimulation with clomiphene citrate: a retrospective cohort study. BMC Pregnancy Childbirth. 2020; 20 (1): 740.	irrelevant research question;
Fang, T., Su, Z., Wang, L., Yuan, P., Li, R., Ouyang, N., Zheng, L. and Wang, W. Predictive value of age-specific FSH levels for IVF-ET outcome in women with normal ovarian function. Reprod Biol Endocrinol. 2015; 13 63.	irrelevant research question;
Frattarelli, J. L., Bergh, P. A., Drews, M. R., Sharara, F. I. and Scott, R. T. Evaluation of basal estradiol levels in assisted reproductive technology cycles. Fertil Steril. 2000; 74 (3): 518-24.	Included in systematic review;
Frattarelli, J. L., Levi, A. J., Miller, B. T. and Segars, J. H. A prospective assessment of the predictive value of basal antral follicles in in vitro fertilization cycles. Fertil Steril. 2003; 80 (2): 350-5.	irrelevant research question;
Galey-Fontaine, J., Cedrin-Durnerin, I., Chaibi, R., Massin, N. and Hugues, J. N. Age and ovarian reserve are distinct predictive factors of cycle outcome in low responders. Reprod Biomed Online. 2005; 10 (1): 94-9.	irrelevant research question;
Garzia, E., Galiano, V., Guarnaccia, L., Marfia, G., Murru, G., Guermandi, E., Riparini, J., Sulpizio, P. and Marconi, A. M. Basal serum level of Δ4-androstenedione reflects the ovaries' ability to respond to stimulation in IVF cycles: setting up a new reliable index of both ovarian reserve and response. J Assist Reprod Genet. 2022; 39 (8): 1917-1926.	irrelevant research question;
George, J. S., Keefe, K. W., Lanes, A. and Yanushpolsky, E. Premature progesterone elevation during the early and mid-follicular phases in fresh in vitro fertilization (IVF) cycles is associated with lower live birth, clinical pregnancy, and implantation rates. J Assist Reprod Genet. 2023; 40 (5): 1029-1035.	irrelevant research question;
Gizzo, S., Andrisani, A., Esposito, F., Oliva, A., Zicchina, C., Capuzzo, D., Gangemi, M. and Nardelli, G. B. Ovarian reserve test: an impartial means to resolve the mismatch between chronological and biological age in the assessment of female reproductive chances. Reprod Sci. 2014; 21 (5): 632-9.	irrelevant research question;
Gomez, R., Schorsch, M., Hahn, T., Henke, A., Hoffmann, I., Seufert, R. and Skala, C. The influence of AMH on IVF success. Arch Gynecol Obstet. 2016; 293 (3): 667-73.	irrelevant research question;
Griesinger, G., Doody, K., Witjes, H. and Mannaerts, B. Endogenous LH levels do not affect pregnancy rates in an rFSH/ GnRH antagonist protocol: combined analysis of individual patient data from 6 RCTs. Hum Reprod. 2010; 25 i241-i242.	irrelevant research question;

Griesinger, G., Shapiro, D. B., Kolibianakis, E. M., Witjes, H. and Mannaerts, B. M. No association between endogenous LH and pregnancy in a GnRH antagonist protocol: part II, recombinant FSH. Reprod Biomed Online. 2011; 23 (4): 457-65.	irrelevant research question;
Grynnerup, A. G., Løssl, K., Pilsgaard, F., Lunding, S. A., Storgaard, M., Bogstad, J. W., Prætorius, L., Zedeler, A., Bungum, L., Nyboe Andersen, A. and Pinborg, A. Prediction of the lower serum anti-Müllerian hormone threshold for ovarian stimulation prior to in-vitro fertilization using the Elecsys® AMH assay: a prospective observational study. Reprod Biol Endocrinol. 2019; 17 (1): 11.	irrelevant research question;
Haadsma, M. L., Groen, H., Fidler, V., Bukman, A., Roeloffzen, E. M., Groenewoud, E. R., Broekmans, F. J., Heineman, M. J. and Hoek, A. The predictive value of ovarian reserve tests for spontaneous pregnancy in subfertile ovulatory women. Hum Reprod. 2008; 23 (8): 1800-7.	irrelevant research question;
Ho, J. Y., Guu, H. F., Yi, Y. C., Chen, M. J. and Ho, E. S. The serum follicle-stimulating hormone-to-luteinizing hormone ratio at the start of stimulation with gonadotropins after pituitary down-regulation is inversely correlated with a mature oocyte yield and can predict "low responders". Fertil Steril. 2005; 83 (4): 883-8.	irrelevant research question;
Holte, J., Brodin, T., Berglund, L., Hadziosmanovic, N., Olovsson, M. and Bergh, T. Antral follicle counts are strongly associated with live-birth rates after assisted reproduction, with superior treatment outcome in women with polycystic ovaries. Fertil Steril. 2011; 96 (3): 594-9.	irrelevant research question;
Homburg, R., Rao, U., Malamas, F., Palouki, P., Gudi, A., Shah, A., Brooks, S., Drakeley, A. and Faye, S. Automated anti-Mullerian hormone measurement: data review to provide insights and interpretation. Gynecol Endocrinol. 2021; 37 (6): 511-514.	irrelevant research question;
Hu, L., Xiong, Y., Wang, M., Shi, H. and Sun, Y. Effect of progesterone on hCG day-to-basal progesterone ratio on live birth rate in long agonist fresh IVF/ICSI cycles: a 5-year, single-center study of more than 10,000 cycles. Gynecol Endocrinol. 2021; 37 (8): 706-710.	irrelevant research question;
Huang, Q., Nong, Y., Zhang, X., Huang, L., Tang, T., Huang, J. and Liu, F. Effects of increasing serum luteinizing hormone levels during early phase of the gonadotropin-releasing hormone antagonist protocol on clinical outcomes of the in vitro fertilization cycle. Gynecol Endocrinol. 2022; 38 (2): 135-139.	irrelevant research question;
Irez, T., Ocal, P., Guralp, O., Cetin, M., Aydogan, B. and Sahmay, S. Different serum anti-Mullerian hormone concentrations are associated with oocyte quality, embryo development parameters and IVF-ICSI outcomes. Arch Gynecol Obstet. 2011; 284 (5): 1295-301.	irrelevant research question;
Kawachiya, S., Bodri, D., Hirosawa, T., Yao Serna, J., Kuwahara, A. and Irahara, M. Endogenous progesterone levels could predict reproductive outcome in frozen embryo replacement cycles supplemented with synthetic progestogens: A retrospective cohort study. Reprod Med Biol. 2019; 18 (1): 91-96.	irrelevant research question;
Kdous, M., Merdassi, G., Zhioua, F., Elloumi, H., Kacem, K. and Zhioua, A. Basal follicle stimulating hormone level correlated to age is a good prognostic criterion for the outcome of intracytoplasmic sperm microinjection. Tunis Med. 2016; 94 (3): 181-5.	irrelevant research question;
Kim, S. W., Kim, Y. J., Shin, J. H., Kim, H., Ku, S. Y., Suh, C. S., Kim, S. H. and Choi, Y. M. Correlation between Ovarian Reserve and Incidence of Ectopic Pregnancy after In Vitro Fertilization and Embryo Transfer. Yonsei Med J. 2019; 60 (3): 285-290.	irrelevant research question;
Kojima, R., Nakagawa, K., Nakashima, A., Horikawa, T., Ohgi, S. and Saito, H. Elevated basal FSH levels, if it is under 15 IU/L, will not reflect poor ART outcomes. J Assist Reprod Genet. 2008; 25 (2-3): 73-7.	irrelevant research question;
Kolibianakis, E. M., Zikopoulos, K., Schiettecatte, J., Smitz, J., Tournaye, H., Camus, M., Van Steirteghem, A. C. and Devroey, P. Profound LH suppression after GnRH antagonist administration is associated with a significantly higher ongoing pregnancy rate in IVF. Hum Reprod. 2004; 19 (11): 2490-6.	irrelevant research question;
Kolibianakis, E. M., Zikopoulos, K., Smitz, J., Camus, M., Tournaye, H., Van Steirteghem, A. C. and Devroey, P. Elevated progesterone at initiation of stimulation is associated with a lower ongoing pregnancy rate after IVF using GnRH antagonists. Hum Reprod. 2004; 19 (7): 1525-9.	Included in systematic review;
Kong, X., Liu, Z., Huang, C., Hu, X., Mo, M., Zhang, H. and Zeng, Y. How to estimate the probability of a live birth after one or more complete IVF cycles? the development of a novel model in a single-center. BMC Pregnancy Childbirth. 2025; 25 (1): 86.	irrelevant research question;
Kostrzewa, M., Głowacka, E., Stetkiewicz, T., Grzesiak, M., Szyłło, K., Stachowiak, G. and Wilczyński, J. R. Is serum anti-Müllerian hormone (AMH) assay a satisfactory measure for ovarian reserve estimation? A comparison of serum and peritoneal fluid AMH levels. Adv Clin Exp Med. 2020; 29 (7): 853-856.	irrelevant research question;
Kupesic, S. and Kurjak, A. Predictors of IVF outcome by three-dimensional ultrasound. Hum Reprod. 2002; 17 (4): 950-5.	irrelevant research question;
Lee, W. H., Lin, K. T., Hsieh, Y. C., Kao, T. C., Huang, T. C., Chao, K. H., Chen, M. J., Yang, J. H. and Chen, S. U. The value of LH maximum level in predicting optimal oocyte yield following GnRH agonist trigger. Front Endocrinol (Lausanne). 2023; 14 1216584.	irrelevant research question;

Lee, Y., Kim, T. H., Park, J. K., Eum, J. H., Lee, H. J., Kim, J., Lyu, S. W., Kim, Y. S., Lee, W. S. and Yoon, T. K. Predictive value of antral follicle count and serum anti-Mullerian hormone: Which is better for live birth prediction in patients aged over 40 with their first IVF treatment? Eur J Obstet Gynecol Reprod Biol. 2018; 221 151-155.	irrelevant research question;
Leijdekkers, J. A., Eijkemans, M. J. C., van Tilborg, T. C., Oudshoorn, S. C., van Golde, R. J. T., Hoek, A., Lambalk, C. B., de Bruin, J. P., Fleischer, K., Mochtar, M. H., Kuchenbecker, W. K. H., Laven, J. S. E., Mol, B. W. J., Torrance, H. L. and Broekmans, F. J. M. Cumulative live birth rates in low-prognosis women. Hum Reprod. 2019; 34 (6): 1030-1041.	irrelevant research question;
Leijdekkers, J. A., van Tilborg, T. C., Torrance, H. L., Oudshoorn, S. C., Brinkhuis, E. A., Koks, C. A. M., Lambalk, C. B., de Bruin, J. P., Fleischer, K., Mochtar, M. H. and et al. Do female age and body weight modify the effect of individualized FSH dosing in IVF/ICSI treatment? A secondary analysis of the OPTIMIST trial. Acta Obstet Gynecol Scand. 2019; 98 (10): 1332-1340.	irrelevant research question;
Lekamge, D. N., Barry, M., Kolo, M., Lane, M., Gilchrist, R. B. and Tremellen, K. P. Anti-Mullerian hormone as a predictor of IVF outcome. Reprod Biomed Online. 2007; 14 (5): 602-10.	irrelevant research question;
Li, F., Ye, T., Kong, H., Li, J., Hu, L., Jin, H., Guo, Y. and Li, G. Predictive Factors for Live Birth in Fresh In Vitro Fertilization/Intracytoplasmic Sperm Injection Treatment in Poor Ovarian Reserve Patients Classified by the POSEIDON Criteria. Front Endocrinol (Lausanne). 2021; 12 630832.	irrelevant research question;
Li, H. W., Lee, V. C., Lau, E. Y., Yeung, W. S., Ho, P. C. and Ng, E. H. Role of baseline antral follicle count and anti-Mullerian hormone in prediction of cumulative live birth in the first in vitro fertilisation cycle: a retrospective cohort analysis. PLoS One. 2013; 8 (4): e61095.	irrelevant research question;
Li, H. W., Lee, V. C., Lau, E. Y., Yeung, W. S., Ho, P. C. and Ng, E. H. Role of baseline antral follicle count and anti-Mullerian hormone in the index stimulation cycle of IVF treatment in predicting outcome of subsequent frozen-thawed embryo transfers. Gynecol Endocrinol. 2014; 30 (7): 490-3.	irrelevant research question;
Li, N. J., Yao, Q. Y., Yuan, X. Q., Huang, Y. and Li, Y. F. Anti-müllerian hormone as a predictor for live birth among women undergoing IVF/ICSI in different age groups: an update of systematic review and meta-analysis. Arch Gynecol Obstet. 2023; 308 (1): 43-61.	irrelevant research question;
Li, X. L., Huang, R., Fang, C. and Liang, X. Y. Basal Serum Anti-Müllerian Hormone Level as a Predictor of Clinical Outcomes in Freezing-all Embryo Transfer Program. Curr Med Sci. 2018; 38 (5): 861-867.	irrelevant research question;
Liao, S., Xiong, J., Tu, H., Hu, C., Pan, W., Geng, Y., Pan, W., Lu, T. and Jin, L. Prediction of in vitro fertilization outcome at different antral follicle count thresholds combined with female age, female cause of infertility, and ovarian response in a prospective cohort of 8269 women. Medicine (Baltimore). 2019; 98 (41): e17470.	irrelevant research question;
Lin, C., Jing, M., Zhu, W., Tu, X., Chen, Q., Wang, X., Zheng, Y. and Zhang, R. The Value of Anti-Müllerian Hormone in the Prediction of Spontaneous Pregnancy: A Systematic Review and Meta-Analysis. Front Endocrinol (Lausanne). 2021; 12 695157.	irrelevant research question;
Liu, L., Sun, X. Y., Yang, H., Feng, X. J. and Lan, Y. Z. Predictive value of anti-Mullerian hormone for pregnancy outcomes following assisted reproductive techniques (ART) in Southwest China. Reprod Health. 2022; 19 (1): 224.	irrelevant research question;
Liu, L. and Zhou, C. Anti-Müllerian hormone and antral follicle count differ in their ability to predict cumulative treatment outcomes of the first complete ovarian stimulation cycle in patients from POSEIDON groups 3 and 4. J Obstet Gynaecol Res. 2020; 46 (9): 1801-1808.	irrelevant research question;
López Martín, M. J., García, D., Vassena, R. and Rodríguez, A. Oocyte developmental competence is independent of ovarian reserve in women younger than 35 years. Reprod Biomed Online. 2018; 37 (6): 677-684.	irrelevant research question;
Loumaye, E., Engrand, P., Howles, C. M. and O'Dea, L. Assessment of the role of serum luteinizing hormone and estradiol response to follicle-stimulating hormone on in vitro fertilization treatment outcome. Fertil Steril. 1997; 67 (5): 889-899.	irrelevant research question;
Lukaszuk, K., Liss, J., Kunicki, M., Jakiel, G., Wasniewski, T., Woclawek-Potocka, I. and Pastuszek, E. Anti-Mullerian hormone (AMH) is a strong predictor of live birth in women undergoing assisted reproductive technology. Reprod Biol. 2014; 14 (3): 176-81.	irrelevant research question;
Luo, X., Li, L., Lin, N., Ma, R., Li, Y. and Wu, Z. Low Endogenous LH on the COS Initiation Day of a GnRH-Agonist Regimen Increases the Risk of Early Pregnancy Loss and Adverse ART Outcomes. Front Endocrinol (Lausanne). 2022; 13 830567.	irrelevant research question;
Luo, Y., Liu, S., Su, H., Hua, L., Ren, H., Liu, M., Wan, Y., Li, H. and Li, Y. Low Serum LH Levels During Ovarian Stimulation With GnRH Antagonist Protocol Decrease the Live Birth Rate After Fresh Embryo Transfers but Have No Impact in Freeze-All Cycles. Front Endocrinol (Lausanne). 2021; 12 640047.	irrelevant research question;
Lyu, S. W., Kim, J. W., Choi, C. H., Seok, H. H., Yoon, T. K. and Kim, A. Impact of high basal FSH/LH ratio in women with normal FSH levels on in vitro fertilization outcomes. Gynecol Endocrinol. 2013; 29 (5): 424-9.	Wrong study design;

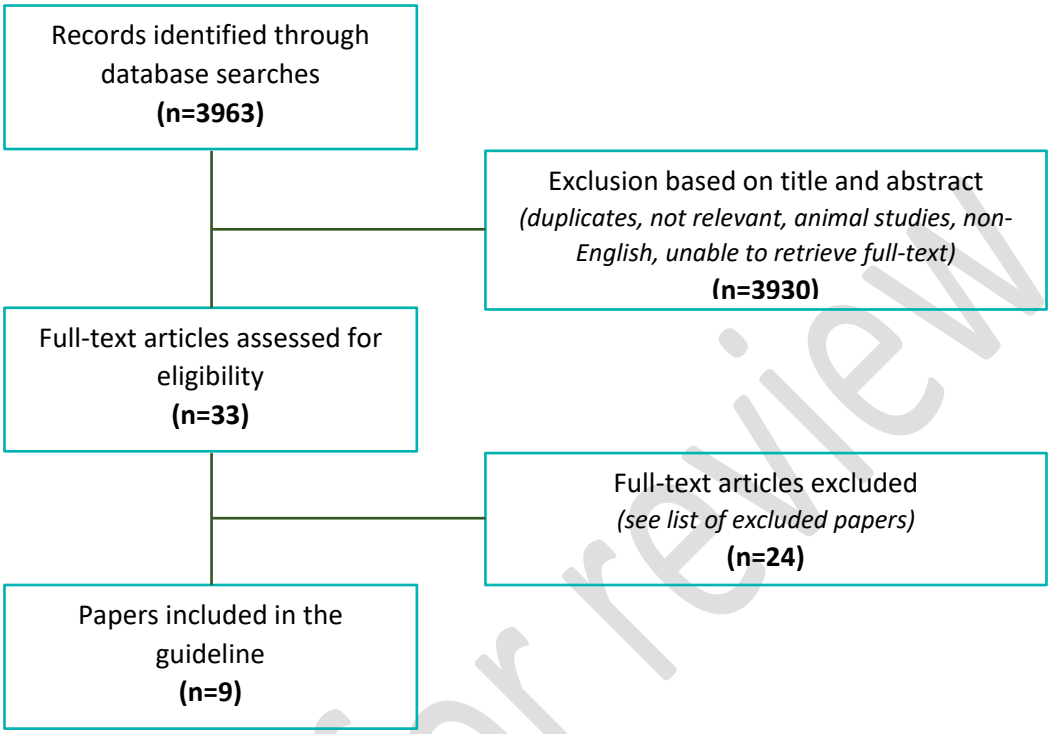
Maged, A. M., Nabil, H., Dieb, A. S., Essam, A., Ibrahim, S., Deeb, W. and Fahmy, R. M. Prediction of metaphase II oocytes according to different levels of serum AMH in poor responders using the antagonist protocol during ICSI: a cohort study. Gynecol Endocrinol. 2020; 36 (8): 728-733.	irrelevant research question;
Maman, E., Baum, M., Machtinger, R., Seidman, D. S., Dor, J. and Hourvitz, A. IVF treatment should not be postponed for patients with high basal FSH concentrations. Reprod Biomed Online. 2010; 21 (5): 631-5.	irrelevant research question;
Maseelall, P. B., Hernandez-Rey, A. E., Oh, C., Maagdenberg, T., McCulloh, D. H. and McGovern, P. G. Antral follicle count is a significant predictor of livebirth in in vitro fertilization cycles. Fertil Steril. 2009; 91 (4 Suppl): 1595-7.	irrelevant research question;
Melado Vidales, L., Fernandez-Nistal, A., Martinez Fernandez, V., Verdu Merino, V., Bruna Catalan, I. and Bajo Arenas, J. M. Anti-Mullerian hormone levels to predict oocyte maturity and embryo quality during controlled ovarian hyperstimulation. Minerva Ginecol. 2017; 69 (3): 225-232.	irrelevant research question;
Metello, J. L., Tomás, C. and Ferreira, P. Can we predict the IVF/ICSI live birth rate? JBRA Assist Reprod. 2019; 23 (4): 402-407.	irrelevant research question;
Mutlu, M. F., Erdem, M., Erdem, A., Yildiz, S., Mutlu, I., Arisoy, O. and Oktem, M. Antral follicle count determines poor ovarian response better than anti-Müllerian hormone but age is the only predictor for live birth in in vitro fertilization cycles. J Assist Reprod Genet. 2013; 30 (5): 657-65.	irrelevant research question;
Nahum, R., Shifren, J. L., Chang, Y., Leykin, L., Isaacson, K. and Toth, T. L. Antral follicle assessment as a tool for predicting outcome in IVF--is it a better predictor than age and FSH? J Assist Reprod Genet. 2001; 18 (3): 151-5.	irrelevant research question;
Nelson, S. M., Fleming, R., Gaudoin, M., Choi, B., Santo-Domingo, K. and Yao, M. Antimullerian hormone levels and antral follicle count as prognostic indicators in a personalized prediction model of live birth. Fertil Steril. 2015; 104 (2): 325-32.	irrelevant research question;
Nelson, S. M., Yates, R. W. and Fleming, R. Serum anti-Müllerian hormone and FSH: prediction of live birth and extremes of response in stimulated cycles--implications for individualization of therapy. Hum Reprod. 2007; 22 (9): 2414-21.	irrelevant research question;
Ng, E. H., Tang, O. S., Chan, C. C. and Ho, P. C. Ovarian stromal vascularity is not predictive of ovarian response and pregnancy. Reprod Biomed Online. 2006; 12 (1): 43-9.	irrelevant research question;
Oghoetuoma, J., Polson, D. W., Troup, S. A. and Lieberman, B. A. Are follicle stimulating hormone measurements predictive of ovarian response to hyperstimulation with human menopausal gonadotrophin? J Obstet Gynaecol. 1997; 17 (2): 188-91.	irrelevant research question;
Orvieto, R., Meltcer, S., Liberty, G., Rabinson, J., Anteby, E. Y. and Nahum, R. Does day-3 LH/FSH ratio influence in vitro fertilization outcome in PCOS patients undergoing controlled ovarian hyperstimulation with different GnRH-analogue? Gynecol Endocrinol. 2012; 28 (6): 422-4.	Wrong study design;
Paffoni, A., Cesana, S., Corti, L., Ballabio, E., Salemi, C., Kunderfranco, A. and Bianchi, M. C. Pregnancy rate in IVF patients with unexpected poor response to ovarian stimulation. Gynecol Endocrinol. 2022; 38 (9): 736-741.	irrelevant research question;
Panaino, T. R., Silva, J. B., Lima, M. A., Lira, P., Arêas, P. C., Mancebo, A. C., Souza, M. M., Antunes, R. A. and Souza, M. D. High Progesterone levels in the beginning of ICSI antagonist cycles and clinical pregnancy: still a concern? JBRA Assist Reprod. 2017; 21 (1): 11-14.	not update;
Peñarrubia, J., Fábregues, F., Manau, D., Creus, M., Casals, G., Casamitjana, R., Carmona, F., Vanrell, Ja and Balasch, J. Basal and stimulation day 5 anti-Mullerian hormone serum concentrations as predictors of ovarian response and pregnancy in assisted reproductive technology cycles stimulated with gonadotropin-releasing hormone agonist--gonadotropin treatment. 2005; 20 (4): 915-22.	not update;
Peñarrubia, J., Peralta, S., Fábregues, F., Carmona, F., Casamitjana, R. and Balasch, J. Day-5 inhibin B serum concentrations and antral follicle count as predictors of ovarian response and live birth in assisted reproduction cycles stimulated with gonadotropin after pituitary suppression. Fertil Steril. 2010; 94 (7): 2590-5.	irrelevant research question;
Polanski, L., Beebeejaun, Y., El-Toukhy, S. and El-Toukhy, T. The impact of age and number of oocytes retrieved on the cumulative live birth rate in women with poor ovarian response: A15-year study. Eur J Obstet Gynecol Reprod Biol. 2025; 305 5-10.	irrelevant research question;
Popovic-Todorovic, B., Santos-Ribeiro, S., Drakopoulos, P., De Vos, M., Racca, A., Mackens, S., Thorrez, Y., Verheyen, G., Tournaye, H., Quintero, L. and Blockeel, C. Predicting suboptimal oocyte yield following GnRH agonist trigger by measuring serum LH at the start of ovarian stimulation. Hum Reprod. 2019; 34 (10): 2027-2035.	Wrong outcomes;
Pruksananonda, K., Boonkasemsanti, W. and Virutamasen, P. Basal follicle--stimulating hormone levels on day 3 of previous cycle are predictive of in vitro fertilization outcome. J Med Assoc Thai. 1996; 79 (6): 365-9.	irrelevant research question;
Rezende, C. P., Rocha, A. L., Dela Cruz, C., Borges, L. E., Del Puerto, H. L. and Reis, F. M. Serum antimullerian hormone measurements with second generation assay at two distinct menstrual	irrelevant research question;

cycle phases for prediction of cycle cancellation, pregnancy and live birth after in vitro fertilization. J Assist Reprod Genet. 2014; 31 (10): 1303-10.	
Riggs, R. M., Duran, E. H., Baker, M. W., Kimble, T. D., Hobeika, E., Yin, L., Matos-Bodden, L., Leader, B. and Stadtmauer, L. Assessment of ovarian reserve with anti-Müllerian hormone: a comparison of the predictive value of anti-Müllerian hormone, follicle-stimulating hormone, inhibin B, and age. Am J Obstet Gynecol. 2008; 199 (2): 202.e1-8.	irrelevant research question;
Romito, A., Bardhi, E., Errazuriz, J., Blockeel, C., Santos-Ribeiro, S., Vos, M., Racca, A., Mackens, S., Kelen, A. V., Panici, P. B., Vaiarelli, A., Tournaye, H. and Drakopoulos, P. Heterogeneity Among Poor Ovarian Responders According to Bologna Criteria Results in Diverging Cumulative Live Birth Rates. Front Endocrinol (Lausanne). 2020; 11 208.	irrelevant research question;
Sahin, G., Akdogan, A., Aydın, M. H., Tekindal, M. A., Göker, E. N. T. and Tavmergen, E. In-Vitro Fertilization Outcome Predictors in Women With High Baseline Follicle-Stimulating Hormone Levels: Analysis of Over 1000 Cycles From A Tertiary Center. JBRA Assist Reprod. 2021; 25 (2): 235-241.	irrelevant research question;
Sahmay, S., Guralp, O., Aydogan, B., Cepni, I., Oral, E. and Irez, T. Anti-Müllerian hormone and polycystic ovary syndrome: assessment of the clinical pregnancy rates in in vitro fertilization patients. Gynecol Endocrinol. 2013; 29 (5): 440-3.	irrelevant research question;
Sahmay, S., Oncul, M., Tuten, A., Tok, A., Acikgoz, A. S. and Cepni, I. Anti-mullerian hormone levels as a predictor of the pregnancy rate in women of advanced reproductive age. J Assist Reprod Genet. 2014; 31 (11): 1469-74.	irrelevant research question;
Seckin, B., Turkcapar, F. and Ozaksit, G. Elevated day 3 FSH/LH ratio: a marker to predict IVF outcome in young and older women. J Assist Reprod Genet. 2012; 29 (3): 231-6.	irrelevant research question;
Sefrioui, O., Madkour, A., Aboulmaouahib, S., Kaarouch, I. and Louanjli, N. Women with extreme low AMH values could have in vitro fertilization success. Gynecol Endocrinol. 2019; 35 (2): 170-173.	irrelevant research question;
Seifer, D. B., Lambert-Messerlian, G., Hogan, J. W., Gardiner, A. C., Blazar, A. S. and Berk, C. A. Day 3 serum inhibin-B is predictive of assisted reproductive technologies outcome. Fertil Steril. 1997; 67 (1): 110-4.	irrelevant research question;
Shan, D., Zhao, J., Lu, X., Zhang, H., Lu, J. and Shen, Q. Effect of basal luteinizing hormone/follicle-stimulating hormone ratio on clinical outcome of In Vitro fertilization in patients with polycystic ovarian syndrome: a retrospective cohort study. PeerJ. 2024; 12 e18635.	irrelevant research question;
Sheng, Y., Lu, G., Liu, J., Liang, X., Ma, Y., Zhang, X., Zhang, S., Sun, Y., Sun, Y., Chen, W. and et al. Effect of body mass index on the outcomes of controlled ovarian hyperstimulation in Chinese women with polycystic ovary syndrome: a multicenter, prospective, observational study. J Assist Reprod Genet. 2017; 34 (1): 61-70.	irrelevant research question;
Shrim, A., Elizur, S. E., Seidman, D. S., Rabinovici, J., Wiser, A. and Dor, J. Elevated day 3 FSH/LH ratio due to low LH concentrations predicts reduced ovarian response. Reprod Biomed Online. 2006; 12 (4): 418-22.	irrelevant research question;
Siegel, D. R., Grau, L., Sammel, M., Nel-Themaaat, L., Santoro, N. and Polotsky, A. J. Anti-Müllerian Hormone and Follicle-Stimulating Hormone Are Poor Independent Predictors of Live Birth After Assisted Reproductive Technology. Reprod Sci. 2023; 30 (4): 1316-1323.	irrelevant research question;
Soldevila, P. N., Carreras, O., Tur, R., Coroleu, B. and Barri, P. N. Sonographic assessment of ovarian reserve. Its correlation with outcome of in vitro fertilization cycles. Gynecol Endocrinol. 2007; 23 (4): 206-12.	irrelevant research question;
Styer, A. K., Gaskins, A. J., Brady, P. C., Sluss, P. M., Chavarro, J. E., Hauser, R. B. and Toth, T. L. Dynamic antimullerian hormone levels during controlled ovarian hyperstimulation predict in vitro fertilization response and pregnancy outcomes. Fertil Steril. 2015; 104 (5): 1153-61.e1.	irrelevant research question;
Su, N., Zhan, J., Xie, M., Zhao, Y., Huang, C., Wang, S., Liao, L., Zhang, X. and Liu, F. High anti-Mullerian hormone level is adversely associated with cumulative live birth rates of two embryo transfers after the first initiated cycle in patients with polycystic ovary syndrome. Front Endocrinol (Lausanne). 2023; 14 1123125.	irrelevant research question;
Sun, T. C., Zhou, S. J., Song, L. L., Li, J. H., Chen, X. and Tian, L. High anti-Müllerian hormone levels might not reflect the likelihood of clinical pregnancy rate in IVF/ICSI treatment. JBRA Assist Reprod. 2021; 25 (2): 266-271.	irrelevant research question;
Sun, X. Y., Lan, Y. Z., Liu, S., Long, X. P., Mao, X. G. and Liu, L. Relationship Between Anti-Müllerian Hormone and In Vitro Fertilization-Embryo Transfer in Clinical Pregnancy. Front Endocrinol (Lausanne). 2020; 11 595448.	irrelevant research question;
Tal, R., Seifer, C. M., Khanimov, M., Seifer, D. B. and Tal, O. High serum Antimullerian hormone levels are associated with lower live birth rates in women with polycystic ovarian syndrome undergoing assisted reproductive technology. Reprod Biol Endocrinol. 2020; 18 (1): 20.	irrelevant research question;

Tal, R., Tal, O., Seifer, B. J. and Seifer, D. B. Antimullerian hormone as predictor of implantation and clinical pregnancy after assisted conception: a systematic review and meta-analysis. Fertil Steril. 2015; 103 (1): 119-30.e3.	irrelevant research question;
Tarlatzis, B. C., Grimbizis, G., Pournaropoulos, F., Bontis, J., Lagos, S., Spanos, E. and Mantalenakis, S. The prognostic value of basal luteinizing hormone:follicle-stimulating hormone ratio in the treatment of patients with polycystic ovarian syndrome by assisted reproduction techniques. Hum Reprod. 1995; 10 (10): 2545-9.	irrelevant research question;
Thum, M. Y., Kalu, E. and Abdalla, H. Elevated basal FSH and embryo quality: lessons from extended culture embryos: raised FSH and blastocyst quality. J Assist Reprod Genet. 2009; 26 (6): 313-8.	irrelevant research question;
Vitek, W., Sun, F., Hoeger, K. M., Santoro, N., Diamond, M. P., Zhang, H. and Legro, R. S. Short-term weight change and live birth among women with unexplained infertility and polycystic ovary syndrome undergoing ovulation induction. Fertil Steril. 2020; 114 (5): 1032-1039.	irrelevant research question;
Wang, S., Zhang, Y., Mensah, V., Huber, W. J., 3rd, Huang, Y. T. and Alvero, R. Discordant anti-müllerian hormone (AMH) and follicle stimulating hormone (FSH) among women undergoing in vitro fertilization (IVF): which one is the better predictor for live birth? J Ovarian Res. 2018; 11 (1): 60.	irrelevant research question;
Wei, C. X., Zhang, L., Pang, C. H., Qi, Y. H. and Zhang, J. W. Effect of the ratios of estradiol increase on the outcome of in vitro fertilization-embryo transfer with antagonist regimens: a single center retrospective cohort study. BMC Pregnancy Childbirth. 2023; 23 (1): 134.	irrelevant research question;
Wu, Q., Li, J., Ng, E. H. Y., Liu, J. P., Mol, B. W. J., Wu, X. K., Wang, C. C., Kuang, H. Y., Ma, H. L., Gao, J. S. and et al. Do baseline AMH levels in women with polycystic ovary syndrome predict ovulation rate and time to ovulation: a secondary analysis of PCOSAct trial? Bjog. 2021; 128 (9): 1477-1486.	irrelevant research question;
Wunder, D. M., Guibourdenche, J., Birkhäuser, M. H. and Bersinger, N. A. Anti-Müllerian hormone and inhibin B as predictors of pregnancy after treatment by in vitro fertilization/intracytoplasmic sperm injection. Fertil Steril. 2008; 90 (6): 2203-10.	irrelevant research question;
Wyroba, J., Kochan, J., Kelley, L., Iqbal, S. and Kordowitzki, P. Anti-Müllerian Hormone Concentrations in Women of Different Reproductive Age and the Chances of IVF Outcome: A Paradigm Shift is needed. Aging Dis. 2025; The study of Anti-Müllerian Hormone (AMH) has garnered considerable attention due to its critical implications in assessing and understanding both female and male fertility potential. Traditionally, AMH is recognized for its pivotal role in evaluating ovarian reserve and is a cornerstone in reproductive health assessments for women. The aim of this study was to challenge the traditional interpretation of AMH as a standalone predictor of IVF success. Through a retrospective analysis of 600 patients undergoing ICSI, we reveal that women with low AMH levels, traditionally classified as poor responders, can achieve unexpectedly high oocyte numbers, blastocyst formation, and pregnancy rates. This highlights the limitations of using AMH alone to predict IVF outcomes. Our findings advocate the importance of integrating additional factors, such as follicle-stimulating hormone (FSH), and the need for a more individualized approach to fertility treatment planning.	irrelevant research question;
Xia, Q., Xie, L., Wu, Q., Cong, J., Ma, H., Li, J., Cai, W. and Wu, X. Elevated baseline LH/FSH ratio is associated with poor ovulatory response but better clinical pregnancy and live birth in Chinese women with PCOS after ovulation induction. Heliyon. 2023; 9 (1): e13024.	Wrong intervention;
Youngster, M., Kedem, A., Avraham, S., Yerushalmi, G., Baum, M., Maman, E., Hourvitz, A. and Gat, I. Treatment safety of ART cycles with extremely high oestradiol concentrations using GnRH agonist trigger. Reprod Biomed Online. 2023; 46 (3): 519-526.	irrelevant research question;
Zebitay, A. G., Cetin, O., Verit, F. F., Keskin, S., Sakar, M. N., Karahuseyinoglu, S., Ilhan, G. and Sahmay, S. The role of ovarian reserve markers in prediction of clinical pregnancy. J Obstet Gynaecol. 2017; 37 (4): 492-497.	irrelevant research question;
Zhang, Y., Xu, Y., Xue, Q., Shang, J., Yang, X., Shan, X., Kuai, Y., Wang, S. and Zeng, C. Discordance between antral follicle counts and anti-Müllerian hormone levels in women undergoing in vitro fertilization. Reprod Biol Endocrinol. 2019; 17 (1): 51.	irrelevant research question;
Zhao, F., Wen, D., Zeng, L., Wang, R., Wang, D., Xu, H., Li, R. and Chi, H. High anti-Müllerian hormone level as a predictor of poor pregnancy outcomes in women with polycystic ovary syndrome undergoing in vitro fertilization/intracytoplasmic sperm injection: a retrospective cohort study. Reprod Biol Endocrinol. 2025; 23 (1): 15.	irrelevant research question;
Zollner, U., Lanig, K., Steck, T. and Dietl, J. Assessment of endocrine status in patients undergoing in-vitro fertilization treatment. Is it necessary? Arch Gynecol Obstet. 2001; 265 (1): 16-20.	irrelevant research question;

3. DOES HORMONE PRE-TREATMENT IMPROVE EFFICACY AND SAFETY OF OVARIAN STIMULATION?

Flowchart



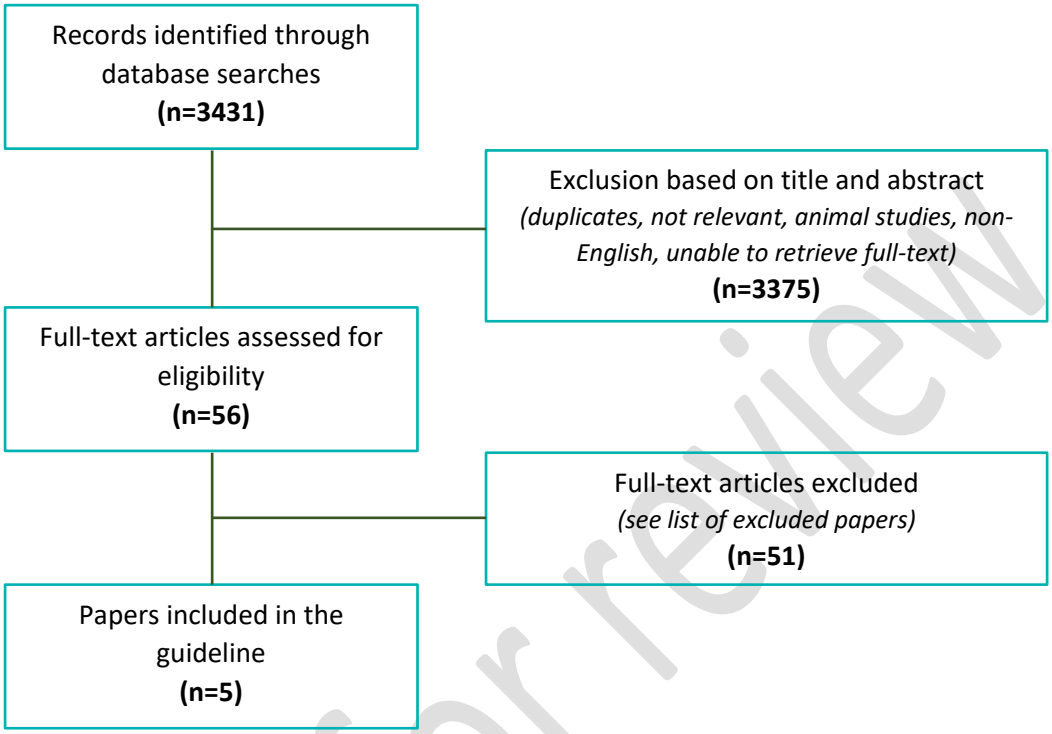
List of excluded papers

	Exclusion criterion
Aubead, N. M., Alghazali, B. S. and Abbood, M. S. Acomparison between luteal phase treatment with estradiol and gnrh antagonist for ovarian follicular synchronization in icsi cycle. Indian journal of public health research and development. 2019; 10 (8): 1229-1235.	Wrong outcomes
Ceyhan, T., Ozturk, M., Yildız, U. G., Fidan, U., Agacayak, E., Ulubay, M. and Korkmaz, C. Repeated application of luteal phase oestradiol/GnRH antagonist priming increases IVF success for poor ovarian reserve patients. J Obstet Gynaecol. 2023; 43 (2): 2211664.	Wrong study design;
Chen, Z., Tan, J., Wang, H., Zheng, B., Liu, J., Hao, G., Guo, Z., Sun, Z. and Yu, Q. A Randomized Cohort Study: Is It Worth the Time to Receive Antiandrogenic Pretreatment Before Ovulation Induction for Women With Polycystic Ovary Syndrome? Front Endocrinol (Lausanne). 2022; 13 813188.	Wrong intervention;
Davar, R., Rahsepar, M. and Rahmani, E. Editorial Expression of Concern: Acomparative study of luteal estradiol pre-treatment in GnRH antagonist protocols and in micro dose flare protocols for poor-responding patients. Arch Gynecol Obstet. 2024; 309 (1): 343.	Not in the scope;
Davar, R., Rahsepar, M. and Rahmani, E. Correction: Acomparative study of luteal estradiol pre-treatment in GnRH antagonist protocols and in micro dose flare protocols for poor-responding patients. Arch Gynecol Obstet. 2024; 309 (6): 2961.	Not in the scope;
Federica, D. G., De Rijdt, S., Racca, A., Drakopoulos, P., Mackens, S., Strypstein, L., Tournaye, H., De Vos, M. and Blockeel, C. Impact of GnRH antagonist pretreatment on oocyte yield after ovarian stimulation: A retrospective analysis. PLoS One. 2024; 19 (10): e0308666.	Cohort study in the presence of higher quality evidence
Hadji, P., Neulen, J., Schaudig, K., Schwenkhagen, A., Grimmbacher, S. and Wiegratz, I. Extended-cycle versus conventional treatment with a combined oral contraceptive containing ethinylestradiol (30 µg) and levonorgestrel (150 µg) in a randomized controlled trial. Gynecol Endocrinol. 2020; 36 (6): 513-520.	Not in the scope;
Hosseinishenatal, S., Amidi, F., Parsanezhad, M. E., Rostami, S., Eslami, M. and Sobhani, A. The Comparison the Impact of Flare-up GnRH Agonist with Delayed-Start GnRH Antagonist Protocols on the IVF Outcome of Poor Responder Patients: a Randomized Controlled Trial. International Journal of Women's Health and Reproduction Sciences. 2022; 10 (4): 202-208.	Wrong comparator;
Li, J., Sun, Y., Mo, S., Wang, S. and Luo, W. Effects of oral contraceptive for different responder women before GnRH antagonists: a systematic review and meta-analysis. Gynecol Endocrinol. 2021; 37 (11): 977-986.	Pooled data from RCTs and cohort studies;
Lossl, K., Andersen, A. N., Loft, A., Freiesleben, N. L., Bangsbøll, S. and Andersen, C. Y. Androgen priming using aromatase inhibitor and hCG during early-follicular-phase GnRH antagonist down-regulation in modified antagonist protocols. Hum Reprod. 2006; 21 (10): 2593-600.	Wrong intervention
Lossl, K., Andersen, C. Y., Loft, A., Freiesleben, N. L., Bangsbøll, S. and Andersen, A. N. Short-term androgen priming by use of aromatase inhibitor and hCG before controlled ovarian stimulation for IVF. A randomized controlled trial. Hum Reprod. 2008; 23 (8): 1820-9.	Wrong intervention
Lu, Y., Niu, Y., Wang, Y., He, Y., Ding, Y., Lu, X., Xu, B., Lindheim, S. R. and Sun, Y. Optimal Candidates to Do Fresh Embryo Transfer in Those Using Oral Contraceptive Pretreatment in IVF Cycles. Front Physiol. 2021; 12 576917.	Wrong intervention;
Lu, Y., Wang, Y., Zhang, T., Wang, G., He, Y., Lindheim, S. R., Yu, Z. and Sun, Y. Effect of pretreatment oral contraceptives on fresh and cumulative live birth in vitro fertilization outcomes in ovulatory women. Fertil Steril. 2020; 114 (4): 779-786.	Cohort study in the presence of higher quality evidence
Montoya-Botero, P., Martinez, F., Rodríguez-Purata, J., Rodríguez, I., Coroleu, B. and Polyzos, N. P. The effect of type of oral contraceptive pill and duration of use on fresh and cumulative live birth rates in IVF/ICSI cycles. Hum Reprod. 2020; 35 (4): 826-836.	Cohort study in the presence of higher quality evidence
Nejad, E. S. T., Ghaleh, F. B., Eslami, B., Haghollahi, F., Bagheri, M. and Masoumi, M. Comparison of pre-treatment with OCPs or estradiol valerate vs. No pre-treatment prior to GnRH antagonist used for IVF cycles: an RCT. International journal of reproductive biomedicine. 2018; 16 (8): 535-540.	Included in a systematic review;
Sefrioui, O., Madkour, A., Kaarouch, I. and Louanjli, N. Luteal estradiol pretreatment of poor and normal responders during GnRH antagonist protocol. Gynecol Endocrinol. 2019; 35 (12): 1067-1071.	Cohort study in the presence of higher quality evidence
Song, S. Y., Yang, J. B., Song, M. S., Oh, H. Y., Lee, G. W., Lee, M., Ko, Y. B., Lee, K. H., Chang, H. K., Kwak, S. M. and Yoo, H. J. Effect of pretreatment with combined oral contraceptives on outcomes of assisted reproductive technology for women with polycystic ovary syndrome: a meta-analysis. Arch Gynecol Obstet. 2019; 300 (3): 737-750.	Pooled data from RCTs and cohort studies;

Vuong, L. N., Ho, T. M., Ha, A. N., Pham, T. D., Le, T. T. N., Yding Andersen, C. and Humaidan, P. The effect of intra-ovarian androgen priming on ovarian reserve parameters in Bologna poor responders. Reprod Biomed Online. 2020; 40 (2): 223-228.	Wrong comparator;
Wei, D., Shi, Y., Li, J., Wang, Z., Zhang, L., Sun, Y., Zhou, H., Xu, Y., Wu, C., Liu, L., Wu, Q., Zhuang, L., Du, Y., Li, W., Zhang, H., Legro, R. S. and Chen, Z. J. Effect of pretreatment with oral contraceptives and progestins on IVF outcomes in women with polycystic ovary syndrome. Hum Reprod. 2017; 32 (2): 354-361.	Included in a systematic review;
Xu, L., Ding, L., Jiang, J., Liu, P., Wei, D. and Qin, Y. Effects of oral contraceptive pretreatment on IVF outcomes in women following a GnRH agonist protocol. Reprod Biomed Online. 2019; 39 (6): 924-930.	Cohort study in the presence of higher quality evidence
Xu, Z., Meng, L., Pan, C., Chen, X, Huang, X and Yang, H. Does oral contraceptives pretreatment affect the pregnancy outcome in polycystic ovary syndrome women undergoing ARTwith GnRH agonist protocol? Gynecol Endocrinol. 2019; 35 (2): 124-127.	Included in a systematic review;
Yang, S., Liu, N., Li, Y., Zhang, L. and Yue, R. Efficacy of the delayed start antagonist protocol for controlled ovarian stimulation in Bologna poor ovarian responders: a systematic review and meta-analysis. Arch Gynecol Obstet. 2021; 303 (2): 347-362.	Wrong comparator;
Zarei, A., Parsanezhad, M. E., Kutenaei, M. A., Jahromi, B. N., Esfahani, P. S. and Bakhshaei, P. Delayed Start Protocol with Gonadotropin-releasing Hormone Antagonist in Poor Responders Undergoing In Vitro Fertilization: A Randomized, Double-blinded, Clinical Trial. Oman Med J. 2018; 33 (6): 506-511.	Included in a systematic review;
Zivi, E., Eldar-Geva, T., Rubinstein, E., Dekel, N., Schonberger, O. and Ben-Ami, I. Impact of pre-treatment in GnRH-antagonist cycles triggered with GnRH agonist on reproductive outcomes. JBRA Assist Reprod. 2023; OBJECTIVE: Pre-treatment (PT) therapies in IVF are known to be used as pre-stimulation modality to improve cycle outcomes. This study aims to assess whether PT in GnRH antagonist cycles triggered with GnRH-agonist impact oocyte maturation response. METHODS: Data were retrospectively collected for patients who underwent GnRH antagonist cycle with agonist triggering with and without PT. The patients were allocated to groups according to their PT status. The primary outcome evaluated was suboptimal maturation response. Suboptimal maturation to trigger was defined as no oocyte upon retrieval when adequate response was expected. RESULTS: The study population included 196 patients who underwent GnRH antagonist cycle with agonist triggering. The study group included 69 patients who received PT. The control group included 127 patients with no PT. In univariate analysis, the PT group significantly displayed suboptimal response compared to the controls ($p = 0.008$). All the patients in the study group with suboptimal response (with or without hCG re-triggering) were treated with GnRH-agonist as PT. Basal and pre-trigger LH values were significantly lower in the study group compared to controls ($p < 0.001$). Multivariate regression analysis revealed that PT with GnRH agonist was a significant predictor for suboptimal response. CONCLUSIONS: Pre-treatment, and particularly the use of GnRH-agonist as PT in antagonist cycles triggered with agonist, increases the risk of suboptimal response to GnRH-agonist trigger. This might be explained by prolonged pituitary suppression, which lasts beyond the PT cessation.	Wrong intervention;

4A. ACCORDING TO PREDICTED RESPONSE-BASED STRATIFICATION, WHICH STIMULATION PROTOCOL IS MOST EFFICIENT AND SAFE FOR HIGH RESPONDERS?

Flowchart



List of excluded papers

	Exclusion criterion
Abe, T., Yabuuchi, A., Ezoe, K., Skaletsky, H., Fukuda, J., Ueno, S., Fan, Y., Goldsmith, S., Kobayashi, T., Silber, S. and Kato, K. Success rates in minimal stimulation cycle IVF with clomiphene citrate only. J Assist Reprod Genet. 2020; 37 (2): 297-304.	Wrong comparator;
Bachmann, A., Kissler, S., Laubert, I., Mehrle, P., Mempel, A., Reissmann, C., Sauer, D. S., Tauchert, S. and Bielfeld, A. P. An eight centre, retrospective, clinical practice data analysis of algorithm-based treatment with follitropin delta. Reprod Biomed Online. 2022; 44 (5): 853-857.	Wrong comparator;
Bissonnette, F., Minano Masip, J., Kadoch, I. J., Librach, C., Sampalis, J. and Yuzpe, A. Individualized ovarian stimulation for in vitro fertilization: a multicenter, open label, exploratory study with a mixed protocol of follitropin delta and highly purified human menopausal gonadotropin. Fertil Steril. 2021; 115 (4): 991-1000.	Wrong comparator;
Bülow, N. S., Dreyer Holt, M., Skouby, S. O., Birch Petersen, K., Englund, A. L. M., Pinborg, A. and Macklon, N. S. Co-treatment with letrozole during ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Reprod Biomed Online. 2022; 44 (4): 717-736.	Pooled results of CS and RCT;
Chen, L. H., Chin, T. H., Huang, S. Y., Yu, H. T., Chang, C. L., Huang, H. Y., Wang, H. S., Soong, Y. K. and Wu, H. M. Supplementation with human menopausal gonadotropin in the gonadotropin-releasing hormone antagonist cycles of women with high AMH: Pregnancy outcomes and serial hormone levels. Taiwan J Obstet Gynecol. 2021; 60 (4): 739-744.	Wrong intervention;
Chen, Y., Zhao, J. and Zhang, H. Comparative Effectiveness of Three Ovarian Hyperstimulation Protocol in In Vitro Fertilization (IVF) Cycles for Women with Polycystic Ovary Syndrome. Med Sci Monit. 2018; 24 9424-9428.	Wrong comparator;
Choi, B. C., Zhou, C., Ye, H., Sun, Y., Zhong, Y., Gong, F., Sini, I., Abramova, N., Longobardi, S., Hickey, M. and D'Hooghe, T. A comparative, observational study evaluating dosing characteristics and ovarian response using the recombinant human follicle-stimulating hormone pen injector with small-dose dial in assisted reproductive technologies treatment in Asia: IMPROVE study. Reprod Biol Endocrinol. 2022; 20 (1): 15.	Wrong intervention;
Cooney, L. G., Sammel, M. D., Lee, I., Clapp, M. A., Goldsammler, M., Scott, E., Bjorkman, S., Fisher, B. T. and Dokras, A. The details matter: personalized prediction of live birth after in vitro fertilization in women with polycystic ovary syndrome. Fertil Steril. 2024; 121 (6): 1010-1019.	Wrong comparator;
Cui, L., Lin, Y., Lin, J. and Wang, F. AMH-based ovarian stimulation versus conventional ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Arch Gynecol Obstet. 2020; 301 (4): 913-922.	More recent meta-analysis available;
Datta, A. K., Maheshwari, A., Felix, N., Campbell, S. and Nargund, G. Mild versus conventional ovarian stimulation for IVF in poor, normal and hyper-responders: a systematic review and meta-analysis. Hum Reprod Update. 2021; 27 (2): 229-253.	Wrong comparator;
Eftekhar, M., Hoseini, M. and Saeed, L. Progesterone-primed ovarian stimulation in polycystic ovarian syndrome: An RCT. Int J Reprod Biomed. 2019; 17 (9): 671-676.	Wrong intervention;
Fanton, M., Nutting, V., Rothman, A., Maeder-York, P., Hariton, E., Barash, O., Weckstein, L., Sakkas, D., Copperman, A. B. and Loewke, K. An interpretable machine learning model for individualized gonadotrophin starting dose selection during ovarian stimulation. Reprod Biomed Online. 2022; 45 (6): 1152-1159.	Wrong comparator;
Fernández-Sánchez, M., Visnova, H., Yuzpe, A., Klein, B. M., Mannaerts, B. and Arce, J. C. Individualization of the starting dose of follitropin delta reduces the overall OHSS risk and/or the need for additional preventive interventions: cumulative data over three stimulation cycles. Reprod Biomed Online. 2019; 38 (4): 528-537.	Wrong comparator;
Friis Petersen, J., Løkkegaard, E., Andersen, L. F., Torp, K., Egeberg, A., Hedegaard, L., Nysom, D. and Nyboe Andersen, A. A randomized controlled trial of AMH-based individualized FSH dosing in a GnRH antagonist protocol for IVF. Hum Reprod Open. 2019; 2019 (1): hoz003.	Included in systematic review;
Gao, R., Liao, X., Huang, W., Zeng, R., Qin, L. and Bai, P. Follicular-Phase GnRH Agonist Protocol Is Another Choice for Polycystic Ovary Syndrome Patients With Lower LH/FSH and Lower AMH Levels Without Increasing Severe OHSS Risk. Front Endocrinol (Lausanne). 2022; 13 905263.	Wrong comparator;
Ghaebi, N. K., Amirian, M., Vahed, S. H. M., Arian, Y., Vakili, V., Yousefi, Y. and Hashemi, S. A. T. Pregnancy outcomes in PCOS patients undergoing IVF with long GnRH agonist protocol versus flexible GnRH antagonist. Iranian journal of obstetrics, gynecology and infertility. 2018; 21 (9): 1-9.	Wrong intervention;
Grädel, F., von Wolff, M., Kohl Schwartz, A. S. and Mitter, V. R. Low-dose clomiphene citrate does not reduce implantation and live birth rates in otherwise unstimulated modified natural cycle IVF-retrospective cohort study. Arch Gynecol Obstet. 2023; 307 (4): 1073-1081.	Wrong comparator;
Guan, L., Wu, H., Wei, C., Pang, C., Liu, D., Yu, X., Xiang, S. and Lian, F. The effect of mildly stimulated cycle versus artificial cycle on pregnancy outcomes in overweight/obese women with	Wrong comparator;

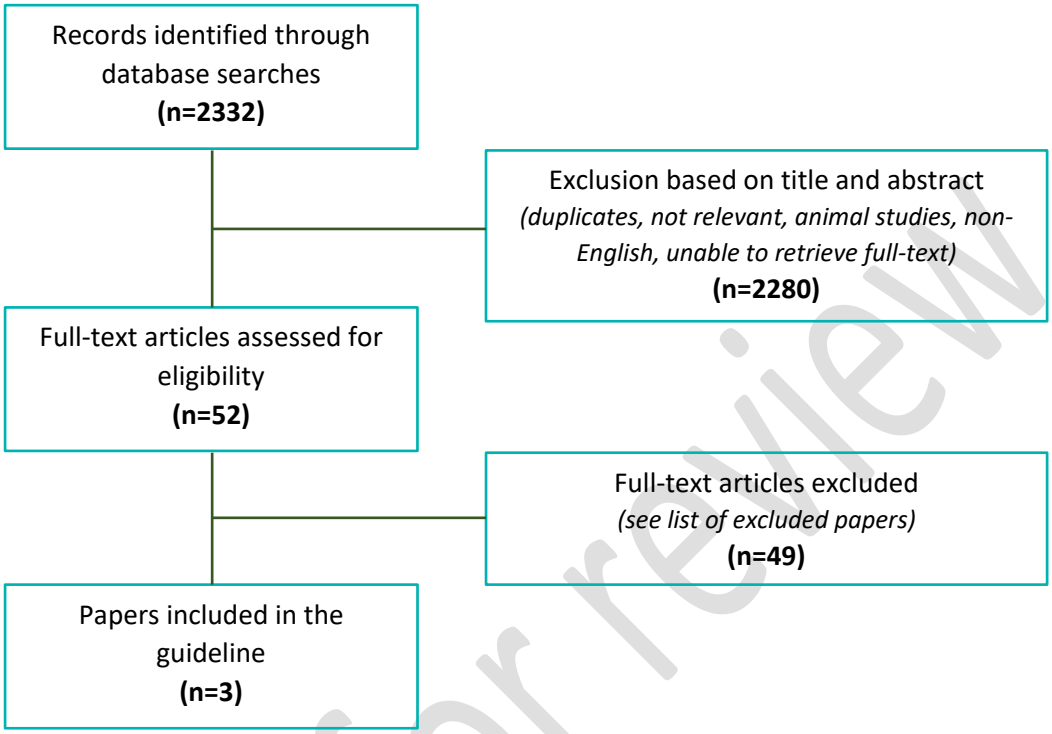
PCOS prior to frozen embryo transfer: a retrospective cohort study. BMC Pregnancy Childbirth. 2022; 22 (1): 394.	
Guo, Y., Jiang, H., Hu, S., Liu, S., Li, F. and Jin, L. Efficacy of three COS protocols and predictability of AMH and AFC in women with discordant ovarian reserve markers: a retrospective study on 19,239 patients. J Ovarian Res. 2021; 14 (1): 111.	Wrong comparator;
Gurbuz, A. S. and Gode, F. Dydrogesterone-primed ovarian stimulation is an effective alternative to gonadotropin-releasing hormone antagonist protocol for freeze-all cycles in polycystic ovary syndrome. J Obstet Gynaecol Res. 2020; 46 (8): 1403-1411.	Wrong intervention;
Hu, L., Bai, L., Qin, R., Wang, X., Zhou, J., Yu, C., Chen, Y., Wang, S., Zhao, S., Chen, L. and Lu, R. Optimizing FSH Concentration Modulation in the Short-Acting GnRH-a Long Protocol for IVF/ICSI: A Retrospective Study. Adv Ther. 2024; 41 (1): 215-230.	Wrong comparator;
Huang, H., Gao, H., Shi, Y., Deng, B., He, X., Lin, J. and Li, P. Can AMH levels predict the need to step up FSH dose for controlled ovarian stimulation following a long GnRH agonist protocol in PCOS women? Reprod Biol Endocrinol. 2023; 21 (1): 121.	Wrong comparator;
Huang, T. C., Huang, M. Z., Seow, K. M., Yang, I. J., Pan, S. P., Chen, M. J., Hwang, J. L. and Chen, S. U. Progestin primed ovarian stimulation using corifollitropin alfa in PCOS women effectively prevents LH surge and reduces injection burden compared to GnRH antagonist protocol. Sci Rep. 2021; 11 (1): 22732.	Wrong intervention;
Ishihara, O. and Arce, J. C. Individualized follitropin delta dosing reduces OHSS risk in Japanese IVF/ICSI patients: a randomized controlled trial. Reprod Biomed Online. 2021; 42 (5): 909-918.	Included in systematic review;
Kadoura, S., Alhalabi, M. and Nattouf, A. H. Conventional GnRH antagonist protocols versus long GnRH agonist protocol in IVF/ICSI cycles of polycystic ovary syndrome women: a systematic review and meta-analysis. Sci Rep. 2022; 12 (1): 4456.	Wrong intervention;
Liu, Y., Lin, J., Chen, L., Mao, X., Wang, L., Chen, Q., Yu, S. and Kuang, Y. Letrozole cotreatment with progestin-primed ovarian stimulation in women with polycystic ovary syndrome undergoing IVF treatment. Front Physiol. 2022; 13 965210.	Cohort study in the presence of higher quality evidence
Luo, X., Pei, L., Li, F., Li, C., Huang, G. and Ye, H. Fixed versus flexible antagonist protocol in women with predicted high ovarian response except PCOS: a randomized controlled trial. BMC Pregnancy Childbirth. 2021; 21 (1): 348.	Wrong intervention;
Martini, A. E., Beall, S., Ball, G. D., Hayward, B., D'Hooghe, T., Mahony, M. C., Collares, F. and Catherino, A. B. Fine-tuning the dose of recombinant human follicle-stimulating hormone alfa to individualize treatment in ovulation induction and ovarian stimulation cycles: a real-world database analysis. Front Endocrinol (Lausanne). 2023; 14 1195632.	Wrong comparator;
Martins, Cmrb, Ruivo, Pcpfgc, Vaz-Oliani, D. C. M., Martins, R. A. S. and Oliani, A. H. Evaluation of Protocols of Controlled Ovarian Stimulation in Obtaining Mature Oocytes (MII): Retrospective Study on Assisted Reproductive Technology Procedures. JBRA Assist Reprod. 2022; 26 (3): 387-397.	Wrong intervention;
Papaleo, E., Revelli, A., Costa, M., Bertoli, M., Zaffagnini, S., Tomei, F., Manno, M., Rebecchi, A., Villanacci, R., Vanni, V. S., Cantatore, F., Ruffa, A., Colia, D., Sironi, M., Tessari, T., Parissone, F., Romanello, I., Reschini, M., Dallagiovanna, C. and Somigliana, E. Do we trust scientific evidence? A multicentre retrospective analysis of first IVF/ICSI cycles before and after the OPTIMIST trial. Hum Reprod. 2021; 36 (5): 1367-1375.	Wrong comparator;
Perovic, M., Mikovic, Z., Zecevic, N., Zecevic, T., Salovic, B., Dugalic, S., Mihailovic, M., Radakovic-Cosic, J. and Soldatovic, I. Individualized dosing of rec-FSH for ovarian stimulation in women with PCOS reduces asynchronous follicle growth. Arch Gynecol Obstet. 2025; 311 (1): 145-153.	Wrong comparator;
Qiao, J., Zhang, Y., Liang, X., Ho, T., Huang, H. Y., Kim, S. H., Goethberg, M., Mannaerts, B. and Arce, J. C. A randomised controlled trial to clinically validate follitropin delta in its individualised dosing regimen for ovarian stimulation in Asian IVF/ICSI patients. Hum Reprod. 2021; 36 (9): 2452-2462.	Included in systematic review;
Revelli, A., Gennarelli, G., Sestero, M., Canosa, S., Carosso, A., Salvagno, F., Pittatore, G., Filippini, C. and Benedetto, C. Correction to: A prospective randomized trial comparing corifollitropin-α late-start (day 4) versus standard administration (day 2) in expected poor, normal, and high responders undergoing controlled ovarian stimulation for IVF. J Assist Reprod Genet. 2020; 37 (7): 1765.	Wrong comparator;
Robins, J. C., Khair, A. F., Widra, E. A., Alper, M. M., Nelson, W. W., Foster, E. D., Sinha, A., Ando, M., Heiser, P. W. and Daftary, G. S. Economic evaluation of highly purified human menotropin or recombinant follicle-stimulating hormone for controlled ovarian stimulation in high-responder patients: analysis of the Menopur in Gonadotropin-releasing Hormone Antagonist Single Embryo Transfer-High Responder (MEGASET-HR) trial. F S Rep. 2020; 1 (3): 257-263.	Wrong intervention;
Roque, M., Bianco, B., Christofolini, D. M., Barchi Cordts, E., Vilarino, F., Carvalho, W., Valle, M., Sampaio, M., Geber, S., Esteves, S. C. and Parente Barbosa, C. Pharmacogenetic algorithm for	Systematic review without meta-analysis;

individualized controlled ovarian stimulation in assisted reproductive technology cycles. Panminerva Med. 2019; 61 (1): 76-81.	
Sánchez, M. F., Larsson, P., Serrano, M. F., Bosch, E., Velasco, J. A. G., López, E. S. and Mannaerts, B. Live birth rates following individualized dosing algorithm of follitropin delta in a long GnRH agonist protocol. Reprod Biol Endocrinol. 2023; 21 (1): 45.	Wrong comparator;
Shin, J. J., Park, K. E., Choi, Y. M., Kim, H. O., Choi, D. H., Lee, W. S. and Cho, J. H. Early gonadotropin-releasing hormone antagonist protocol in women with polycystic ovary syndrome: A preliminary randomized trial. Clin Exp Reprod Med. 2018; 45 (3): 135-142.	Wrong comparator;
Shu, L., Xu, Q., Meng, Q., Dai, X., Zhang, Y., Zhou, W., Yi, H., Wu, C., Hou, Z., Cui, Y. and et al. Clinical outcomes following long GnRHa ovarian stimulation with highly purified human menopausal gonadotropin plus rFSH or rFSH in patients undergoing in vitro fertilization-embryo transfer: a multi-center randomized controlled trial. Ann Transl Med. 2019; 7 (7): Article Number: 146.	Wrong intervention;
Si, M., Qi, X., Zhen, X., Yang, C., Tian, T., Long, X. and Qiao, J. Dose Nomogram of Individualization of the Initial Follicle-Stimulating Hormone Dosage for Patients with Polycystic Ovary Syndrome Undergoing IVF/ICSI with the GnRH-Ant Protocol: A Retrospective Cohort Study. Adv Ther. 2023; INTRODUCTION: For high responders with polycystic ovary syndrome (PCOS), there is no clear recommendation for the initial follicle-stimulating hormone (FSH) dosage to ensure an optimal number of retrieved oocytes and avoid ovarian hyperstimulation syndrome (OHSS). The aim of this study was to determine the ideal initial FSH dosage of in patients with PCOS undergoing in vitro fertilization (IVF)/intracytoplasmic sperm injection (ICSI) using the gonadotropin-releasing hormone antagonist (GnRH-ant) protocol to obtain the optimal number of retrieved oocytes and minimize the risk of OHSS. METHODS: The data of 1898 patients with PCOS aged 20-40 years from January 2017 to December 2020 were retrospectively analyzed to explore the factors related to the number of retrieved oocytes. Statistically significant variables were used to construct a dose nomogram and it was then validated using an independent cohort of patients with PCOS from January 2021 to December 2021. RESULTS: Multivariate analyses demonstrated that body mass index (BMI) was the most significant factor to predict the number of retrieved oocytes compared to body weight (BW) and body surface area (BSA). Among patients with PCOS aged 20-40 years undergoing their first IVF cycles with the GnRH-ant protocol, age was not a significant predictor of the initial FSH dosage. We developed a nomogram based on BMI, basal FSH, basal luteinizing hormone (bLH), anti-Müllerian hormone (AMH), and antral follicle count (AFC) to calculate the ideal initial FSH dosage for patients with PCOS undergoing IVF/ICSI using the GnRH-ant protocol. In addition, low BMI and high bLH and AMH levels and AFC appear to be risk factors for OHSS. CONCLUSIONS: We clearly demonstrated that the initial FSH dosage for patients with PCOS undergoing IVF/ICSI with the GnRH-ant protocol may be calculated on the basis of the woman's BMI and ovarian reserve markers. The nomogram will help guide clinicians in the selection of the most appropriate initial FSH dose in the future.	Wrong comparator;
Sopa, N., Larsen, E. C., Westring Hvidman, H. and Andersen, A. N. An AMH-based FSH dosing algorithm for OHSS risk reduction in first cycle antagonist protocol for IVF/ICSI. Eur J Obstet Gynecol Reprod Biol. 2019; 237 42-47.	Wrong comparator;
Takeuchi, K., Orita, Y., Iwakawa, T., Kuwatsuru, Y., Kuroki, Y., Fukumoto, Y., Mizobe, Y., Tokudome, M. and Moewaki, H. Original delayed-start ovarian stimulation protocol with a gonadotropin-releasing hormone antagonist, medroxyprogesterone acetate, and high-dose gonadotropin for poor responders and patients with poor-quality embryos. Front Endocrinol (Lausanne). 2023; 14 1277873.	Wrong comparator;
Višnová, H., Papaleo, E., Martin, F. S., Koziol, K., Klein, B. M. and Mannaerts, B. Clinical outcomes of potential high responders after individualized FSH dosing based on anti-Müllerian hormone and body weight. Reprod Biomed Online. 2021; 43 (6): 1019-1026.	Cohort study in the presence of higher quality evidence
Wang, D., Chu, T., Yu, T. and Zhai, J. Is early-follicular long-acting GnRH agonist protocol an alternative for patients with polycystic ovary syndrome undergoing in vitro fertilization? Reprod Biol Endocrinol. 2022; 20 (1): 137.	Wrong comparator;
Witz, C. A., Daftary, G. S., Doody, K. J., Park, J. K., Seifu, Y., Yankov, V. I. and Heiser, P. W. Randomized, assessor-blinded trial comparing highly purified human menotropin and recombinant follicle-stimulating hormone in high responders undergoing intracytoplasmic sperm injection. Fertil Steril. 2020; 114 (2): 321-330.	Wrong intervention;
Xiao, Z. N., Peng, J. L., Yang, J. and Xu, W. M. Flexible GnRH Antagonist Protocol versus Progestin-primed Ovarian Stimulation (PPOS) Protocol in Patients with Polycystic Ovary Syndrome: Comparison of Clinical Outcomes and Ovarian Response. Curr Med Sci. 2019; 39 (3): 431-436.	Wrong intervention;
Yahyaei, A., Vesali, S. and Ghaffari, F. Introduce an optimal method of ovarian stimulation in the polycystic ovarian syndrome affected: a randomized controlled trial. BMC Womens Health. 2023; 23 (1): 323.	Wrong intervention;

Yanagihara, Y., Tanaka, A., Nagayoshi, M., Tanaka, I., Shinohara, R., Fukushima, F., Tanaka, A., Ohno, M., Yamaguchi, T. and Itakura, A. A modified GnRH antagonist method in combination with letrozole, cabergoline, and GnRH antagonist for PCOS: Safe and effective ovarian stimulation to treat PCOS and prevent OHSS. Reprod Med Biol. 2022; 21 (1): e12429.	Wrong intervention;
Yang, R., Zhang, Y., Liang, X., Song, X., Wei, Z., Liu, J., Yang, Y., Tan, J., Zhang, Q., Sun, Y., Wang, W., Qian, W., Jin, L., Wang, S., Xu, Y., Yang, J., Goethberg, M., Mannaerts, B., Wu, W., Zheng, Z. and Qiao, J. Comparative clinical outcome following individualized follitropin delta dosing in Chinese women undergoing ovarian stimulation for in vitro fertilization /intracytoplasmic sperm injection. Reprod Biol Endocrinol. 2022; 20 (1): 147.	Wrong comparator;
Zhang, W., Xie, D., Zhang, H., Huang, J., Xiao, X., Wang, B., Tong, Y., Miao, Y. and Wang, X. Cumulative Live Birth Rates After the First ART Cycle Using Flexible GnRH Antagonist Protocol vs. Standard Long GnRH Agonist Protocol: A Retrospective Cohort Study in Women of Different Ages and Various Ovarian Reserve. Front Endocrinol (Lausanne). 2020; 11 287.	Wrong intervention;
Zhou, R., Dong, M., Huang, L., Wang, S., Fan, L., Liang, X., Zhang, X. and Liu, F. Comparison of cumulative live birth rates between progestin-primed ovarian stimulation protocol and gonadotropin-releasing hormone antagonist protocol in different populations. Front Endocrinol (Lausanne). 2023; 14 1117513.	Wrong intervention;
Zhu, J., Zhang, J., Yang, J., Li, D., Wang, C., Elizur, S. E., Zhao, K., Kuang, Y. and Wang, Y. A comprehensive evaluation of progestin-primed ovarian stimulation protocol in patients with or without PCOS undergoing in vitro fertilization. Reprod Biol. 2021; 21 (4): 100540.	Wrong intervention;

4B. ACCORDING TO PREDICTED RESPONSE-BASED STRATIFICATION, WHICH STIMULATION PROTOCOL IS MOST EFFICIENT AND SAFE FOR NORMAL RESPONDERS?

Flowchart



List of excluded papers

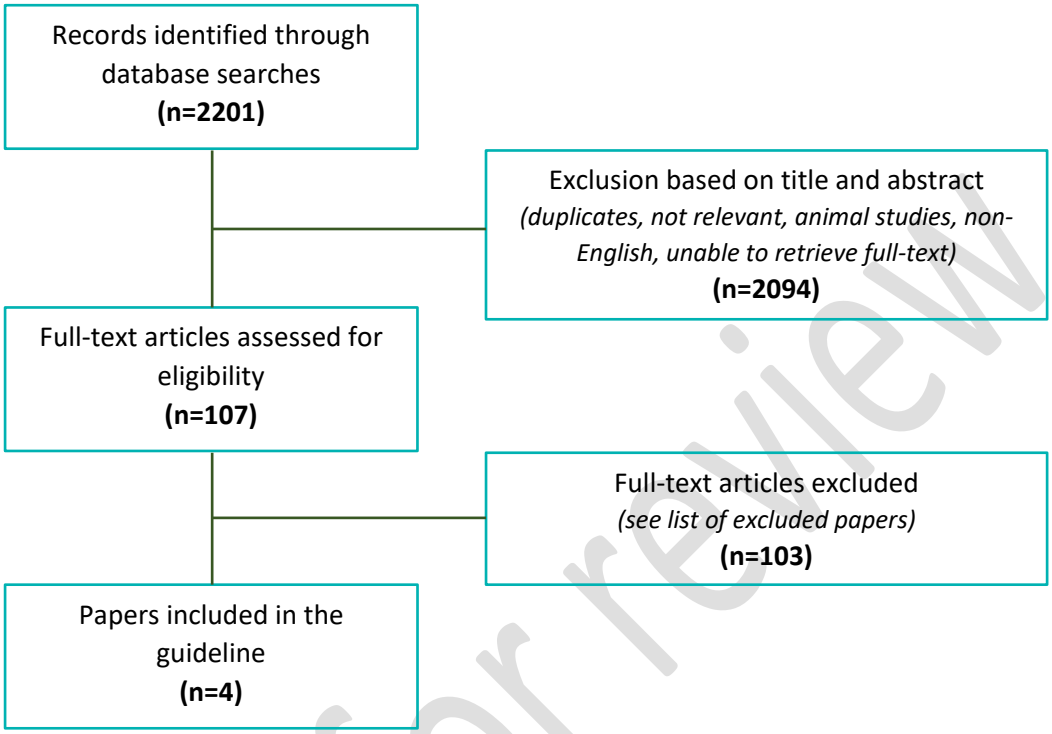
	Exclusion criterion
Abbas, H. H., Abbas, H. H., Chiad, Z. J. and Al-Jarah, D. M. Short agonist and antagonist protocols in normoresponding patients undergoing ICSI, a comparative study. Pakistan journal of medical and health sciences. 2020; 14 (4): 1655-1663.	Wrong intervention;
Abe, T., Yabuuchi, A., Ezoe, K., Skaletsky, H., Fukuda, J., Ueno, S., Fan, Y., Goldsmith, S., Kobayashi, T., Silber, S. and Kato, K. Success rates in minimal stimulation cycle IVF with clomiphene citrate only. J Assist Reprod Genet. 2020; 37 (2): 297-304.	Wrong comparator;
Al-Obaidi, M. Effect of early GnRH antagonist administration on assisted reproductive technique outcomes in normal responders. J Med Life. 2022; 15 (2): 258-263.	Wrong comparator;
Ali, R. A., Mukheef, M. A., Majeed, H. H. and Abdulrahman Hadi, B. A. Ovarian hyper-stimulation protocols in good prognosis patients: Agonist versus Antagonist protocol, an Iraqi view. J Pak Med Assoc. 2021; 71(Suppl 9) (12): S50-s55.	Wrong intervention;
Bachmann, A., Kissler, S., Laubert, I., Mehrle, P., Mempel, A., Reissmann, C., Sauer, D. S., Tauchert, S. and Bielfeld, A. P. An eight centre, retrospective, clinical practice data analysis of algorithm-based treatment with follitropin delta. Reprod Biomed Online. 2022; 44 (5): 853-857.	Wrong comparator;
Barrière, P., Procu-Buisson, G., Avril, C. and Hamamah, S. Added value of anti-Müllerian hormone serum concentration in assisted reproduction clinical practice using highly purified human menopausal gonadotropin (HP-hMG). J Gynecol Obstet Hum Reprod. 2022; 51 (2): 102289.	Wrong comparator;
Bissonnette, F., Minano Masip, J., Kadoch, I. J., Librach, C., Sampalis, J. and Yuzpe, A. Individualized ovarian stimulation for in vitro fertilization: a multicenter, open label, exploratory study with a mixed protocol of follitropin delta and highly purified human menopausal gonadotropin. Fertil Steril. 2021; 115 (4): 991-1000.	Wrong comparator;
Bülow, N. S., Dreyer Holt, M., Skouby, S. O., Birch Petersen, K., Englund, A. L. M., Pinborg, A. and Macklon, N. S. Co-treatment with letrozole during ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Reprod Biomed Online. 2022; 44 (4): 717-736.	Wrong intervention;
Choi, B. C., Zhou, C., Ye, H., Sun, Y., Zhong, Y., Gong, F., Sini, I., Abramova, N., Longobardi, S., Hickey, M. and D'Hooghe, T. A comparative, observational study evaluating dosing characteristics and ovarian response using the recombinant human follicle-stimulating hormone pen injector with small-dose dial in assisted reproductive technologies treatment in Asia: IMPROVE study. Reprod Biol Endocrinol. 2022; 20 (1): 15.	Wrong comparator;
Correa, N., Cerquides, J., Arcos, J. L., Vassena, R. and Popovic, M. Personalizing the first dose of FSH for IVF/ICSI patients through machine learning: a non-inferiority study protocol for a multi-center randomized controlled trial. Trials. 2024; 25 (1): 38.	Wrong comparator;
Cui, L., Lin, Y., Lin, J. and Wang, F. AMH-based ovarian stimulation versus conventional ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Arch Gynecol Obstet. 2020; 301 (4): 913-922.	More recent systematic review available;
D'Amato, G., Caringella, A. M., Stanziano, A., Cantatore, C., D'Amato, A., Cicinelli, E. and Vitagliano, A. Corifolitropin-Alfa plus Five Days Letrozole Versus Daily Recombinant-FSH in Expected Normo-Responder Patients: A Retrospective Comparative Study. Diagnostics (Basel). 2023; 13 (7):,	Cohort study in the presence of higher quality evidence
Datta, A. K., Maheshwari, A., Felix, N., Campbell, S. and Nargund, G. Mild versus conventional ovarian stimulation for IVF in poor, normal and hyper-responders: a systematic review and meta-analysis. Hum Reprod Update. 2021; 27 (2): 229-253.	Pooled data from delayed start with reduced gonadotropin dose;
Doroftei, B., Ilie, O. D., Dabuleanu, A. M., Armeanu, T. and Maftei, R. The pregnancy outcomes among women receiving individualized algorithm dosing with follitropin delta: a systematic review of randomized controlled trials. J Assist Reprod Genet. 2024; 41 (7): 1851-1861.	Wrong comparator
Ebid, Ahim, Motaleb, S. M. A., Mostafa, M. I. and Soliman, M. M. A. Novel nomogram-based integrated gonadotropin therapy individualization in in vitro fertilization/intracytoplasmic sperm injection: A modeling approach. Clin Exp Reprod Med. 2021; 48 (2): 163-173.	Wrong comparator;
Eftekhar, M. and Saeed, L. Effect of adding letrozole to gonadotropin on in vitro fertilization outcomes: An RCT. Int J Reprod Biomed. 2020; 18 (4): 287-294.	More relevant for other question;
Friis Petersen, J., Løkkegaard, E., Andersen, L. F., Torp, K., Egeberg, A., Hedegaard, L., Nysom, D. and Nyboe Andersen, A. A randomized controlled trial of AMH-based individualized FSH dosing in a GnRH antagonist protocol for IVF. Hum Reprod Open. 2019; 2019 (1): hoz003.	Included in systematic review;
Geng, Y., Xun, Y., Hu, S., Lai, Q. and Jin, L. GnRH antagonist versus follicular-phase single-dose GnRH agonist protocol in patients of normal ovarian responses during controlled ovarian stimulation. Gynecol Endocrinol. 2019; 35 (4): 309-313.	Wrong intervention;

Gianaroli, L., Vitagliano, A., Ferraretti, A. P., Azzena, S., Terzuoli, G., Perruzza, D., Ambrosini, G., Tabanelli, C. and Magli, M. C. IVF Lite: a smart IVF programme based on mild ovarian stimulation for good prognosis patients. Reprod Biomed Online. 2022; 45 (2): 256-263.	Wrong comparator;
Grädel, F., von Wolff, M., Kohl Schwartz, A. S. and Mitter, V. R. Low-dose clomiphene citrate does not reduce implantation and live birth rates in otherwise unstimulated modified natural cycle IVF-retrospective cohort study. Arch Gynecol Obstet. 2023; 307 (4): 1073-1081.	Cohort study in the presence of higher quality evidence
Guo, Y., Jiang, H., Hu, S., Liu, S., Li, F. and Jin, L. Efficacy of three COS protocols and predictability of AMH and AFC in women with discordant ovarian reserve markers: a retrospective study on 19,239 patients. J Ovarian Res. 2021; 14 (1): 111.	Wrong comparator;
Hsu, C. C., Hsu, I., Chang, H. H., Hsu, R. and Dorjee, S. Extended Injection Intervals of Gonadotropins by Intradermal Administration in IVF Treatment. J Clin Endocrinol Metab. 2022; 107 (2): e716-e733.	Wrong comparator;
Jia, Z. C., Li, Y. Q., Li, R., Hou, S., Xia, Q. C., Yang, K., Wang, P. X., Li, S. M., Sun, Z. G. and Guo, Y. Comparison of two different starting dose of rhFSH in GnRH antagonist protocol for patients with normal ovarian reserve. Front Endocrinol (Lausanne). 2023; 14 1068141.	Cohort study in the presence of higher quality evidence
Kobanawa, M. and Yoshida, J. Verification of the utility of the gonadotropin starting dose calculator in progestin-primed ovarian stimulation: A comparison of empirical and calculated controlled ovarian stimulation. Reprod Med Biol. 2024; 23 (1): e12586.	Wrong comparator;
Lee, D., Han, S. J., Kim, S. K. and Jee, B. C. A retrospective analysis of the follicle-stimulating hormone starting dose in expected normal responders undergoing their first in vitro fertilization cycle: proposed dose versus empiric dose. Clin Exp Reprod Med. 2018; 45 (4): 183-188.	Wrong comparator;
Liang, Y., Guo, Q., Wu, X. H., Zhang, L. N., Ge, J., Xu, M. L., Feng, Z. L. and Wu, X. Q. Does the additional use of clomiphene citrate or letrozole for in vitro fertilization deserve more attention? BMC Pregnancy Childbirth. 2021; 21 (1): 275.	Cohort study in the presence of higher quality evidence
Liu, M., Wang, C., He, L., Pan, X., Wu, C., Pu, X. and Pan, X. Effect of different starting doses of FSH on laboratory and clinical outcomes in patients with moderate AMH level. Hormones (Athens). 2024; 23 (2): 331-338.	Wrong comparator;
Liu, S., Lv, Y., Liu, M., Han, S., Liu, X., Zhao, Z., Cui, W., Yang, A. and Li, Y. Luteinizing hormone-based modified GnRH antagonist protocol in normal responders undergoing in vitro fertilization treatment: A multi-center randomized controlled trial. Front Endocrinol (Lausanne). 2022; 13 922950.	Wrong comparator;
Lobo, R., Falahati, A., Moley, K., Pinborg, A., Santos-Ribeiro, S., Macklon, N. S. and Jepsen, I. E. Oocyte yield and live birth rate after follitropin delta dosing and fresh embryo transfer: an individual patient data meta-analysis. Reprod Biomed Online. 2025; 50 (2): 104451.	Wrong comparator;
Lobo, R., Soerdal, T., Ekerhovd, E., Cohlen, B., Porcu, E., Schenk, M., Shufaro, Y., Smeenk, J., Suerdieck, M. B., Pinton, P. and et al. BEYOND: a randomized controlled trial comparing efficacy and safety of individualized follitropin delta dosing in a GnRH agonist versus antagonist protocol during the first ovarian stimulation cycle. Hum Reprod. 2024;	Wrong comparator;
Marino, A., Gullo, S., Sammartano, F., Volpes, A. and Allegra, A. Algorithm-based individualization methodology of the starting gonadotropin dose in IVF/ICSI and the freeze-all strategy prevent OHSS equally in normal responders: a systematic review and network meta-analysis of the evidence. J Assist Reprod Genet. 2022; 39 (7): 1583-1601.	More recent systematic review available;
Martins, Cmrb, Ruivo, Pcpfgc, Vaz-Oliani, D. C. M., Martins, R. A. S. and Oliani, A. H. Evaluation of Protocols of Controlled Ovarian Stimulation in Obtaining Mature Oocytes (MII): Retrospective Study on Assisted Reproductive Technology Procedures. JBRA Assist Reprod. 2022; 26 (3): 387-397.	Wrong intervention;
Nelson, S. M., Shaw, M., Alrashid, K. and Anderson, R. A. Individualized dosing of follitropin delta affects live birth and safety in in vitro fertilization treatment: an individual participant data meta-analysis of randomized controlled trials. Fertil Steril. 2024; 122 (3): 445-454.	Cochrane review available with large overlap in included studies;
Papaleo, E., Revelli, A., Costa, M., Bertoli, M., Zaffagnini, S., Tomei, F., Manno, M., Rebecchi, A., Villanacci, R., Vanni, V. S., Cantatore, F., Ruffa, A., Colia, D., Sironi, M., Tessari, T., Parissone, F., Romanello, I., Reschini, M., Dallagiovanna, C. and Somigliana, E. Do we trust scientific evidence? A multicentre retrospective analysis of first IVF/ICSI cycles before and after the OPTIMIST trial. Hum Reprod. 2021; 36 (5): 1367-1375.	Wrong comparator;
Peng, Y., Ma, S., Hu, L., Li, Y., Wang, X., Xiong, Y., Tan, J. and Gong, F. Comparison of stimulation protocols for dose determination of gonadotropins: A systematic review and Bayesian network meta-analysis based on randomized controlled trials. Int J Gynaecol Obstet. 2024; 167 (1): 66-79.	Cochrane review available with large overlap in included studies;
Qiao, J., Zhang, Y., Liang, X., Ho, T., Huang, H. Y., Kim, S. H., Goethberg, M., Mannaerts, B. and Arce, J. C. A randomised controlled trial to clinically validate follitropin delta in its individualised	Included in systematic review;

dosing regimen for ovarian stimulation in Asian IVF/ICSI patients. Hum Reprod. 2021; 36 (9): 2452-2462.	
Roque, M., Bianco, B., Christofolini, D. M., Barchi Cordts, E., Vilarino, F., Carvalho, W., Valle, M., Sampaio, M., Geber, S., Esteves, S. C. and Parente Barbosa, C. Pharmacogenetic algorithm for individualized controlled ovarian stimulation in assisted reproductive technology cycles. Panminerva Med. 2019; 61 (1): 76-81.	systematic review without meta-analysis;
Sánchez, M. F., Larsson, P., Serrano, M. F., Bosch, E., Velasco, J. A. G., López, E. S. and Mannaerts, B. Live birth rates following individualized dosing algorithm of follitropin delta in a long GnRH agonist protocol. Reprod Biol Endocrinol. 2023; 21 (1): 45.	Wrong comparator;
Schouten, N., Wang, R., Torrance, H., Van Tilborg, T., Bastu, E., Bergh, C., D'Hooghe, T., Friis Petersen, J., Jayaprakasan, K., Khalaf, Y., Klinkert, E., La Marca, A., Vuong, L., Lapensée, L., Lensen, S., Magnusson, Å, Allegra, A., Nyboe Andersen, A., Oudshoorn, S., Popovic-Todorovic, B., Mol, B. W., Eijkemans, M. and Broekmans, F. Development and validation of a gonadotropin dose selection model for optimized ovarian stimulation in IVF/ICSI: an individual participant data meta-analysis. Hum Reprod Update. 2024;	Wrong comparator;
Sopa, N., Larsen, E. C., Westring Hvidman, H. and Andersen, A. N. An AMH-based FSH dosing algorithm for OHSS risk reduction in first cycle antagonist protocol for IVF/ICSI. Eur J Obstet Gynecol Reprod Biol. 2019; 237 42-47.	Wrong comparator;
Tian, L. F., Tan, J., Zou, Y., Su, Q., Li, Y., Xu, D. F. and Wu, Q. F. Mild starting dosage ovarian stimulation combined with a modified prolonged GnRH-a protocol improved IVF/ICSI outcomes in normal ovarian responders. Arch Med Sci. 2019; 15 (5): 1294-1300.	Cohort study in the presence of higher quality evidence
Xia, M. and Zheng, J. Comparison of clinical outcomes between the depot gonadotrophin-releasing hormone agonist protocol and gonadotrophin-releasing hormone antagonist protocol in normal ovarian responders. BMC Pregnancy Childbirth. 2021; 21 (1): 372.	Wrong intervention;
Xu, B., Geerts, D., Hu, S., Yue, J., Li, Z., Zhu, G. and Jin, L. The depot GnRH agonist protocol improves the live birth rate per fresh embryo transfer cycle, but not the cumulative live birth rate in normal responders: a randomized controlled trial and molecular mechanism study. Hum Reprod. 2020; 35 (6): 1306-1318.	Wrong intervention;
Yang, R., Zhang, Y., Liang, X., Song, X., Wei, Z., Liu, J., Yang, Y., Tan, J., Zhang, Q., Sun, Y., Wang, W., Qian, W., Jin, L., Wang, S., Xu, Y., Yang, J., Goethberg, M., Mannaerts, B., Wu, W., Zheng, Z. and Qiao, J. Comparative clinical outcome following individualized follitropin delta dosing in Chinese women undergoing ovarian stimulation for in vitro fertilization /intracytoplasmic sperm injection. Reprod Biol Endocrinol. 2022; 20 (1): 147.	Wrong comparator;
Zhang, D., Xia, L., Xu, H., Chen, Q., Jin, B., Zhang, A. and Xu, B. Flexible Low-Dose GnRH Antagonist Protocol Is Effective in Patients With Sufficient Ovarian Reserve in IVF. Front Endocrinol (Lausanne). 2018; 9 767.	Wrong comparator;
Zhang, S., Gao, F., Fu, M., Shen, H., Wang, Y. and Han, H. Effects of letrozole co-treatment on the cumulative live-birth rate among normal responders in gonadotropin-releasing hormone antagonist cycles. Front Med (Lausanne). 2022; 9 1070583.	Cohort study in the presence of higher quality evidence
Zhang, Y., Zhao, W., Han, Y., Chen, X., Xu, S., Hu, Y., Diao, H. and Zhang, C. The follicular-phase depot GnRH agonist protocol results in a higher live birth rate without discernible differences in luteal function and child health versus the daily mid-luteal GnRH agonist protocol: a single-centre, retrospective, propensity score matched cohort study. Reprod Biol Endocrinol. 2022; 20 (1): 140.	Wrong intervention;
Zhou, R., Dong, M., Huang, L., Wang, S., Fan, L., Liang, X., Zhang, X. and Liu, F. Comparison of cumulative live birth rates between progestin-primed ovarian stimulation protocol and gonadotropin-releasing hormone antagonist protocol in different populations. Front Endocrinol (Lausanne). 2023; 14 1117513.	Wrong intervention;
Zhu, X., Ye, J. and Fu, Y. Late Follicular Phase Ovarian Stimulation Without Exogenous Pituitary Modulators. Front Endocrinol (Lausanne). 2020; 11 487.	Wrong comparator;

4C. ACCORDING TO PREDICTED RESPONSE-BASED STRATIFICATION, WHICH STIMULATION PROTOCOL IS MOST EFFICIENT AND SAFE FOR LOW RESPONDERS?

Flowchart



List of excluded papers

	Exclusion criterion
Abe, T., Yabuuchi, A., Ezoe, K., Skaletsky, H., Fukuda, J., Ueno, S., Fan, Y., Goldsmith, S., Kobayashi, T., Silber, S. and Kato, K. Success rates in minimal stimulation cycle IVF with clomiphene citrate only. J Assist Reprod Genet. 2020; 37 (2): 297-304.	Wrong comparator
Al-Jeborry, M. M. Comparison of sandwich, conventional antagonist and microdose protocols in poor responders. Annals of tropical medicine and public health. 2019; 22 (10):	Wrong intervention;
Al-Jeborry, M. M., Alizzi, F. J. and Al-Anbari, L. A. A comparison of 3 different controlled ovarian stimulation protocols in poor women responders chosen according to poseidon criteria: micro-dose, standard flare-up, and antagonist protocol. International Journal of Women's Health and Reproduction Sciences. 2020; 8 (2): 147-152.	Wrong study design;
Andrisani, A., Marin, L., Ragazzi, E., Donà, G., Bordin, L., Dessole, F., Armanini, D., Esposito, F., Vitagliano, A., Sabbadin, C. and Ambrosini, G. Is corifollitropin alfa effective in controlled ovarian stimulation among all poor ovarian responders? A retrospective comparative study. Gynecol Endocrinol. 2019; 35 (10): 894-898.	Wrong intervention;
Arvis, P., Massin, N. and Lehert, P. Effect of recombinant LH supplementation on cumulative live birth rate compared with FSH alone in poor ovarian responders: a large, real-world study. Reprod Biomed Online. 2021; 42 (3): 546-554.	Wrong intervention;
Ashrafi, M., Arabipoor, A., Yahyaei, A., Zolfaghari, Z. and Ghaffari, F. Does the "delayed start" protocol with gonadotropin-releasing hormone antagonist improve the pregnancy outcome in Bologna poor responders? a randomized clinical trial. Reprod Biol Endocrinol. 2018; 16 (1): 124.	Included in systematic review;
Bachmann, A., Kissler, S., Laubert, I., Mehrle, P., Mempel, A., Reissmann, C., Sauer, D. S., Tauchert, S. and Bielfeld, A. P. An eight centre, retrospective, clinical practice data analysis of algorithm-based treatment with follitropin delta. Reprod Biomed Online. 2022; 44 (5): 853-857.	Wrong comparator;
Bavarsadkarimi, M., Omidi, S., Shahmoradi, F., Heidar, Z. and Mirzaei, S. Comparison of two ovarian stimulation protocols among women with poor response: A randomized clinical trial. Eur J Transl Myol. 2022; 32 (3):	Wrong intervention;
Berker, B., Şükür, Y. E., Özdemir, EÜ, Özmen, B., Sönmezer, M., Atabekoğlu, C. S. and Aytaç, R. Human Menopausal Gonadotropin Commenced on Early Follicular Period Increases Live Birth Rates in POSEIDON Group 3 and 4 Poor Responders. Reprod Sci. 2021; 28 (2): 488-494.	Wrong comparator;
Bissonnette, F., Minano Masip, J., Kadoch, I. J., Librach, C., Sampalis, J. and Yuzpe, A. Individualized ovarian stimulation for in vitro fertilization: a multicenter, open label, exploratory study with a mixed protocol of follitropin delta and highly purified human menopausal gonadotropin. Fertil Steril. 2021; 115 (4): 991-1000.	Wrong patient population;
Cai, R., Zheng, B., Lin, Q., Deng, J., Zeng, X., Lin, W. and Shi, D. A meta-analysis of the efficacy of progestin-primed ovarian stimulation with medroxyprogesterone acetate in ovulation induction in poor ovarian responders. J Gynecol Obstet Hum Reprod. 2021; 50 (7): 102049.	Wrong intervention;
Canosa, S., Carosso, A. R., Mercaldo, N., Ruffa, A., Evangelista, F., Bongioanni, F., Benedetto, C., Revelli, A. and Gennarelli, G. Effect of rLH Supplementation during Controlled Ovarian Stimulation for IVF: Evidence from a Retrospective Analysis of 1470 Poor/Suboptimal/Normal Responders Receiving Either rFSH plus rLH or rFSH Alone. J Clin Med. 2022; 11 (6):	Wrong intervention;
Chen, Q., Chai, W., Wang, Y., Cai, R., Zhang, S., Lu, X., Zeng, X., Sun, L. and Kuang, Y. Progestin vs. Gonadotropin-Releasing Hormone Antagonist for the Prevention of Premature Luteinizing Hormone Surges in Poor Responders Undergoing in vitro Fertilization Treatment: A Randomized Controlled Trial. Front Endocrinol (Lausanne). 2019; 10 796.	Wrong intervention;
Choi, B. C., Zhou, C., Ye, H., Sun, Y., Zhong, Y., Gong, F., Sini, I., Abramova, N., Longobardi, S., Hickey, M. and D'Hooghe, T. A comparative, observational study evaluating dosing characteristics and ovarian response using the recombinant human follicle-stimulating hormone pen injector with small-dose dial in assisted reproductive technologies treatment in Asia: IMPROVE study. Reprod Biol Endocrinol. 2022; 20 (1): 15.	Wrong patient population;
Conforti, A., Esteves, S. C., Di Rella, F., Strina, I., De Rosa, P., Fiorenza, A., Zullo, F., De Placido, G. and Alviggi, C. The role of recombinant LH in women with hypo-response to controlled ovarian stimulation: a systematic review and meta-analysis. Reprod Biol Endocrinol. 2019; 17 (1): 18.	Wrong intervention;
Correa, N., Cerquides, J., Arcos, J. L., Vassena, R. and Popovic, M. Personalizing the first dose of FSH for IVF/ICSI patients through machine learning: a non-inferiority study protocol for a multi-center randomized controlled trial. Trials. 2024; 25 (1): 38.	Wrong study design;
Cozzolino, M., Cecchino, G. N., Bosch, E., Garcia-Velasco, J. A. and Garrido, N. Minimal ovarian stimulation is an alternative to conventional protocols for older women according to Poseidon's stratification: a retrospective multicenter cohort study. J Assist Reprod Genet. 2021; 38 (7): 1799-1807.	Cohort study in the presence of higher quality evidence

Cozzolino, M., Franasiak, J., Andrisani, A., Ambrosini, G. and Vitagliano, A. "Delayed start" gonadotropin-releasing hormone antagonist protocol in Bologna poor-responders: A systematic review and meta-analysis of randomized controlled trials. Eur J Obstet Gynecol Reprod Biol. 2020; 244 154-162.	More recent systematic review available;
Cui, L., Lin, Y., Lin, J. and Wang, F. AMH-based ovarian stimulation versus conventional ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Arch Gynecol Obstet. 2020; 301 (4): 913-922.	Wrong patient population;
Datta, A. K., Maheshwari, A., Felix, N., Campbell, S. and Nargund, G. Mild versus conventional ovarian stimulation for IVF in poor responders: a systematic review and meta-analysis. Reprod Biomed Online. 2020; 41 (2): 225-238.	More recent systematic review available;
Datta, A. K., Maheshwari, A., Felix, N., Campbell, S. and Nargund, G. Mild versus conventional ovarian stimulation for IVF in poor, normal and hyper-responders: a systematic review and meta-analysis. Hum Reprod Update. 2021; 27 (2): 229-253.	More detailed systematic review available;
Demirdağ, E., Akdulum, M. F. C., Guler, I., Oguz, Y., Erdem, A. and Erdem, M. IVF Outcomes of Microdose Flare-up, GnRH Antagonist, and Long Protocols in Patients having a Poor Ovarian Response in the First Treatment Cycle. J Coll Physicians Surg Pak. 2021; 30 (5): 523-527.	Wrong intervention;
Di, M., Wang, X., Wu, J. and Yang, H. Ovarian stimulation protocols for poor ovarian responders: a network meta-analysis of randomized controlled trials. Arch Gynecol Obstet. 2023; 307 (6): 1713-1726.	More detailed systematic review available;
Drakopoulos, P., Di Guardo, F., Boudry, L., Mackens, S., De Vos, M., Verheyen, G., Tournaye, H. and Blockeel, C. Does the dose or type of gonadotropins affect the reproductive outcomes of poor responders undergoing modified natural cycle IVF (MNC-IVF)? Eur J Obstet Gynecol Reprod Biol. 2022; 278 95-99.	Wrong intervention;
Drakopoulos, P., Romito, A., Errázuriz, J., Santos-Ribeiro, S., Popovic-Todorovic, B., Racca, A., Tournaye, H., De Vos, M. and Blockeel, C. Modified natural cycle IVF versus conventional stimulation in advanced-age Bologna poor responders. Reprod Biomed Online. 2019; 39 (4): 698-703.	Cohort study in the presence of higher quality evidence
Du, M., Zhang, J., Li, Z., Liu, X., Li, J., Liu, W. and Guan, Y. Comparison of the Cumulative Live Birth Rates of Progestin-Primed Ovarian Stimulation and Flexible GnRH Antagonist Protocols in Patients With Low Prognosis. Front Endocrinol (Lausanne). 2021; 12 705264.	Wrong intervention;
Duan, X. Y., Li, Z., Li, M. M. and Ma, X. Efficacies of different ovarian hyperstimulation protocols in elderly patients with poor ovarian response. Eur Rev Med Pharmacol Sci. 2023; 27 (23): 11606-11613.	Wrong intervention;
Errázuriz, J., Drakopoulos, P., Pening, D., Racca, A., Romito, A., De Munck, N., Tournaye, H., De Vos, M. and Blockeel, C. Pituitary suppression protocol among Bologna poor responders undergoing ovarian stimulation using corifollitropin alfa: does it play any role? Reprod Biomed Online. 2019; 38 (6): 1010-1017.	Wrong intervention;
Errázuriz, J., Romito, A., Drakopoulos, P., Frederix, B., Racca, A., De Munck, N., Tournaye, H., De Vos, M. and Blockeel, C. Cumulative Live Birth Rates Following Stimulation With Corifollitropin Alfa Compared With hp-hMG in a GnRH Antagonist Protocol in Poor Ovarian Responders. Front Endocrinol (Lausanne). 2019; 10 175.	Wrong intervention;
Ezra, O., Haas, J., Nahum, R., Maman, E., Cohen, Y., Segev-Zahav, A. and Orvieto, R. Do poor-responder patients undergoing IVF benefit from splitting and increasing the daily gonadotropin dose? Gynecol Endocrinol. 2019; 35 (10): 890-893.	Wrong intervention;
Ferreira, A. F., Pais, A. S., Sousa, A. P., Cortesão, P. and Almeida-Santos, T. Low responders may benefit from undergoing ovarian stimulation with a long GnRH agonist protocol with corifollitropin alfa followed by hMG. JBRA Assist Reprod. 2023;	Wrong intervention;
Friis Petersen, J., Løkkegaard, E., Andersen, L. F., Torp, K., Egeberg, A., Hedegaard, L., Nysom, D. and Nyboe Andersen, A. A randomized controlled trial of AMH-based individualized FSH dosing in a GnRH antagonist protocol for IVF. Hum Reprod Open. 2019; 2019 (1): hoz003.	Wrong patient population;
Fusi, F. M., Zanga, L., Arnoldi, M., Melis, S., Cappato, M., Candeloro, I. and Di Pasqua, A. Corifollitropin alfa for poor responders patients, a prospective randomized study. Reprod Biol Endocrinol. 2020; 18 (1): 67.	Wrong intervention;
Ghaffari, F., Jahangiri, N., Madani, T., Khodabakhshi, S. and Chehrazi, M. Randomized controlled trial of gonadotropin-releasing hormone agonist microdose flare-up versus flare-up among poor responders undergoing intracytoplasmic sperm injection. Int J Gynaecol Obstet. 2020; 148 (1): 59-64.	Wrong intervention;
Hochberg, A., Dahan, M. H., Yarali, H., Vuong, L. N. and Esteves, S. C. Effect of follicle-stimulating hormone dose on the risk of being classified as suboptimal responders according to the POSEIDON criteria. J Assist Reprod Genet. 2024; 41 (12): 3387-3398.	Cohort study in the presence of higher quality evidence
Hosseinishenatal, S., Amidi, F., Parsanezhad, M. E., Rostami, S., Eslami, M. and Sobhani, A. The Comparison the Impact of Flare-up GnRH Agonist with Delayed-Start GnRH Antagonist Protocols	Wrong intervention;

on the IVF Outcome of Poor Responder Patients: a Randomized Controlled Trial. International Journal of Women's Health and Reproduction Sciences. 2022; 10 (4): 202-208.	
Huang, P., Tang, M. and Qin, A. Progestin-primed ovarian stimulation is a feasible method for poor ovarian responders undergoing in IVF/ICSI compared to a GnRH antagonist protocol: A retrospective study. J Gynecol Obstet Hum Reprod. 2019; 48 (2): 99-102.	Wrong intervention;
Jamaludin, R., Ahmad, M. F., Park, D. K., Zain, M. M., Yoon, T. K., Lee, W. S., Koong, M. K. and Lee, K. A. The stimulation protocol in poor responder IVF; a minimal or high-dose stimulation? - A meta-analysis. Horm Mol Biol Clin Investig. 2019; 41 (1):	More recent systematic review available;
Ji, Z., Quan, X., Lan, Y., Zhao, M., Tian, X. and Yang, X. Gonadotropin versus Follicle-Stimulating Hormone for Ovarian Response in Patients Undergoing in vitro Fertilization: A Retrospective Cohort Comparison. Curr Ther Res Clin Exp. 2020; 92 100572.	Wrong intervention;
Kaçar, M. T., Biler, A., Köse, C., Şahin Güleç, E. and Demir, A. Letrozole as an adjunct treatment in antagonist cycles that previously failed in poor responders. Ginekol Pol. 2022; 93 (4): 267-272.	Cohort study in the presence of higher quality evidence
Kahraman, A. and Tulek, F. Effects of letrozole co-treatment on outcomes of gonadotropin-releasing hormone antagonist cycles in POSEIDON groups 3 and 4 expected poor responders. Arch Gynecol Obstet. 2022; 306 (4): 1313-1319.	Cohort study in the presence of higher quality evidence
Kahyaoglu, I., Tutkun Kilinc, E. C., Gulerman, C., Yilmaz, N., Ceran, M. U., Bardakci, Y. and Engin Ustun, Y. Early or late response in poor responders: does it make a difference in cycle outcome? Hum Fertil (Camb). 2023; 1-6.	Wrong intervention;
Kao, T. C., Hsieh, Y. C., Yang, I. J., Wu, M. Y., Chen, M. J., Yang, J. H. and Chen, S. U. Progestin-primed ovarian stimulation versus GnRH antagonist protocol in poor responders: Risk of premature LH surge and outcome of oocyte retrieval. J Formos Med Assoc. 2023; 122 (1): 29-35.	Wrong intervention;
Khezri, A., Kashani, L., Moini, A., Mojtahedi, M. F., Yamini, N. and Ataee, M. GnRH agonist STOP-antagonist protocol versus the GnRH antagonist protocol in patients with poor ovarian response undergoing IVF. Revista latinoamericana de hipertension. 2022; 17 (1): 46-52.	Wrong intervention;
Khezri, A., Kashani, L., Moini, A., Mojtahedi, M. F., Yamini, N. and Ataee, M. nRH agonists stop antagonist protocol versus GnRH antagonist protocol in poor ovarian responders undergoing IVF. Revista latinoamericana de hipertension. 2022; 17 (5): 365-370.	Wrong intervention;
Khojah, M., Khayat, S. and Dahan, M. H. Comparison of in vitro fertilization cycles stimulated with 20 mg letrozole daily versus high-dose gonadotropins in Rotterdam Consensus ultra-poor responders: A proof of concept. Int J Gynaecol Obstet. 2022; 156 (1): 102-106.	More relevant for other question;
Labarta, E., Marin, D., Remohí, J. and Bosch, E. Conventional versus minimal ovarian stimulation: an intra-patient comparison of ovarian response in poor-responder women according to Bologna Criteria. Reprod Biomed Online. 2018; 37 (4): 434-441.	Wrong comparator
Le, H., Nguyen, D. D., Cao, A. T., Nguyen, H. T. L., Tham, D. C., Le, T. D. and Hugues, J. N. Comparative Effectiveness of Mild or Conventional GnRH-Antagonist Protocols for Ovarian Stimulation in Poor Responders (Poseidon Group 4). Front Reprod Health. 2020; 2 606036.	Cohort study in the presence of higher quality evidence
Leijdekkers, J. A., van Tilborg, T. C., Torrance, H. L., Oudshoorn, S. C., Brinkhuis, E. A., Koks, C. A. M., Lambalk, C. B., de Bruin, J. P., Fleischer, K., Mochtar, M. H., Kuchenbecker, W. K. H., Laven, J. S. E., Mol, B. W. J., Broekmans, F. J. M. and Eijkemans, M. J. C. Do female age and body weight modify the effect of individualized FSH dosing in IVF/ICSI treatment? A secondary analysis of the OPTIMIST trial. Acta Obstet Gynecol Scand. 2019; 98 (10): 1332-1340.	Wrong study design;
Li, F., Ye, T., Kong, H., Li, J., Hu, L., Jin, H., Su, Y. and Li, G. Efficacies of different ovarian hyperstimulation protocols in poor ovarian responders classified by the POSEIDON criteria. Aging (Albany NY). 2020; 12 (10): 9354-9364.	Wrong intervention;
Li, W., Zhang, W., Zhao, H., Chu, Y. and Liu, X. Efficacy of the depot gonadotropin-releasing hormone agonist protocol on in vitro fertilization outcomes in young poor ovarian responders from POSEIDON group 3. Int J Gynaecol Obstet. 2022; 157 (3): 733-740.	Cohort study in the presence of higher quality evidence
Liang, Y., Guo, Q., Wu, X. H., Zhang, L. N., Ge, J., Xu, M. L., Feng, Z. L. and Wu, X. Q. Does the additional use of clomiphene citrate or letrozole for in vitro fertilization deserve more attention? BMC Pregnancy Childbirth. 2021; 21 (1): 275.	Cohort study in the presence of higher quality evidence
Lin, H. T., Wu, M. H., Tsai, L. C., Chen, T. S. and Ou, H. T. Co-Administration of Clomiphene Citrate and Letrozole in Mild Ovarian Stimulation Versus Conventional Controlled Ovarian Stimulation Among POSEIDON Group 4 Patients. Front Endocrinol (Lausanne). 2021; 12 780392.	Cohort study in the presence of higher quality evidence
Liu, A., Li, J., Shen, H., Zhang, L., Li, Q. and Zhang, X. Progestin-primed ovarian stimulation protocol with or without clomiphene citrate for poor ovarian responders: a retrospective cohort study. BMC Womens Health. 2022; 22 (1): 527.	Wrong intervention;
Liu, L., Xu, Y., Huang, J. and Zhou, C. Patients with higher anti-Müllerian hormone levels from POSEIDON group 4 benefit from GnRH-agonist long protocol: A retrospective study. Eur J Obstet Gynecol Reprod Biol. 2021; 257 88-94.	Wrong intervention;

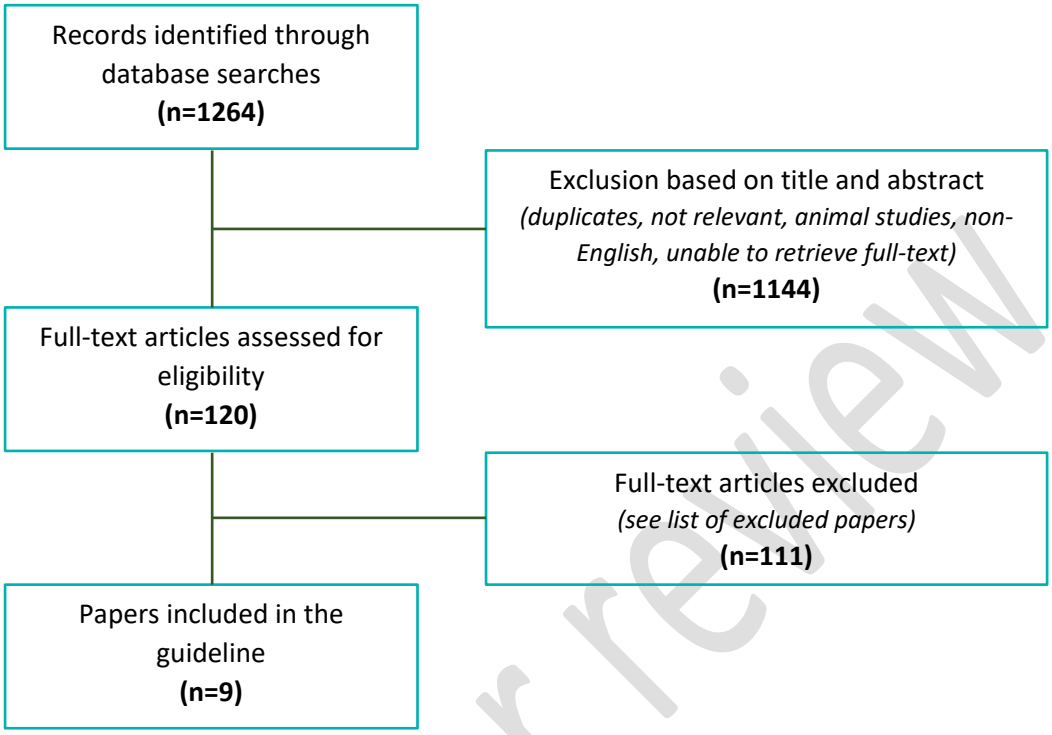
Liu, S., Liu, X., Li, H., Liu, M., Lv, Y. and Li, Y. Clomiphene citrate priming increases sensitivity during ovarian stimulation in poor ovarian responders undergoing in vitro fertilization treatment: a retrospective cohort study. Hum Fertil (Camb). 2022; 1-7.	Cohort study in the presence of higher quality evidence
Liu, X., Li, T., Wang, B., Xiao, X., Liang, X. and Huang, R. Mild stimulation protocol vs conventional controlled ovarian stimulation protocol in poor ovarian response patients: a prospective randomized controlled trial. Arch Gynecol Obstet. 2020; 301 (5): 1331-1339.	Included in systematic review
Liu, X., Li, W., Mol, B. W., Wen, W., Wang, T., Tian, L., Li, N., Sun, T., Wang, T., Zhou, H., Zhang, N., Qu, P., Liu, S. and Shi, J. Who may benefit from an increased gonadotropin dosing in predicted poor responders undergoing IVF/ICSI? A secondary analysis assessing treatment selection markers of a randomized trial. Eur J Obstet Gynecol Reprod Biol. 2023; 291 76-81.	Wrong outcomes;
Liu, X., Wang, D., Wen, W., Wang, T., Tian, L., Li, N., Sun, T., Wang, T., Zhou, H., Qu, P., Liu, S., Mol, B. W., Li, W. and Shi, J. Effect of increased gonadotropin dosing on maternal and neonatal outcomes in predicted poor responders undergoing IVF: follow-up of a randomized trial. Eur J Obstet Gynecol Reprod Biol. 2023; 285 123-129.	Wrong outcomes;
Liu, X., Wen, W., Wang, T., Tian, L., Li, N., Sun, T., Wang, T., Zhou, H., Zhang, N., Qu, P., Mol, B. W., Li, W. and Shi, J. Increased versus standard gonadotrophin dosing in predicted poor responders of IVF: an open-label randomized controlled trial. Hum Reprod. 2022; 37 (8): 1806-1815.	Included in systematic review;
Liu, Y., Su, R. and Wu, Y. Cumulative Live Birth Rate and Cost-Effectiveness Analysis of Gonadotropin Releasing Hormone-Antagonist Protocol and Multiple Minimal Ovarian Stimulation in Poor Responders. Front Endocrinol (Lausanne). 2020; 11 605939.	Cohort study in the presence of higher quality evidence
Maged, A. M., Ragab, M. A., Shohayeb, A., Saber, W., Ekladious, S., Hussein, E. A., El-Mazny, A. and Hany, A. Comparative study between single versus dual trigger for poor responders in GnRH-antagonist ICSI cycles: A randomized controlled study. Int J Gynaecol Obstet. 2021; 152 (3): 395-400.	Wrong intervention;
Martins, Cmrb, Ruivo, Pcpfgc, Vaz-Oliani, D. C. M., Martins, R. A. S. and Oliani, A. H. Evaluation of Protocols of Controlled Ovarian Stimulation in Obtaining Mature Oocytes (MII): Retrospective Study on Assisted Reproductive Technology Procedures. JBRA Assist Reprod. 2022; 26 (3): 387-397.	Wrong intervention;
Mauries, C., Ranisavljevic, N., Mollevi, C., Brunet, C., Hamamah, S., Brouillet, S. and Anahory, T. "Short agonist stop" protocol, an ovarian stimulation for poor responders in in vitro fertilization (IVF): A pilot study. Front Endocrinol (Lausanne). 2022; 13 1056520.	Wrong intervention;
Mehrabian, F., Ataie-Khorasgani, M., Ghadimi, K., Naghshineh, E. and Mohammadi, S. The effects of letrozole+gnrh antagonist versus mere gnrh antagonist during ivf in patients with poor ovarian response. Int J Clin Exp Med. 2021; 14 (6): 2010-2015.	Wrong outcomes;
Mendret-Pellerin, S., Leperlier, F., Reignier, A., Lefebvre, T., Barrière, P. and Fréour, T. A pilot study comparing corifollitropin alfa associated with hp-HMG versus high dose rFSH antagonist protocols for ovarian stimulation in poor responders. Hum Fertil (Camb). 2020; 23 (2): 93-100.	Wrong intervention;
Mu, Z., Sa, Y., Sun, Z. and Yi, Y. Ovulation induction with high progesterone levels may be more suitable for elderly patients with low ovarian response. J Gynecol Obstet Hum Reprod. 2021; 50 (2): 101661.	Wrong intervention;
Murillo, F., Fanton, M., Baker, V. L. and Loewke, K. Causal inference indicates that poor responders have similar outcomes with the antagonist protocol compared with flare. Fertil Steril. 2023; 120 (2): 289-296.	Wrong intervention;
Ob'edkova, K. V., Kogan, I. Y., Muller, V. C., Tapilskaya, N. I., Krikhely, I. O., Dzhemlikhanova, L. K., Abdulkadirova, Z. K., Mekina, I. D., Lesik, E. A., Komarova, E. A., Ishchuk, M. A. and Gzgzian, A. M. IVF protocol efficacy in women with expected suboptimal response depending on ovary stimulation mode. Gynecol Endocrinol. 2021; 37 (sup1): 44-48.	Wrong intervention;
Orvieto, R., Kirshenbaum, M., Galiano, V., Elkan-Miller, T., Zilberberg, E., Haas, J. and Nahum, R. Stop GnRH-Agonist Combined With Multiple-Dose GnRH-Antagonist Protocol for Patients With "Genuine" Poor Response Undergoing Controlled Ovarian Hyperstimulation for IVF. Front Endocrinol (Lausanne). 2020; 11 182.	Wrong comparator;
Orvieto, R., Nahum, R., Aizer, A., Haas, J. and Kirshenbaum, M. A Novel Stimulation Protocol for Poor-Responder Patients: Combining the Stop GnRH-ag Protocol with Letrozole Priming and Multiple-Dose GnRH-ant: A Proof of Concept. Gynecol Obstet Invest. 2021; 86 (1-2): 149-154.	Wrong comparator;
Pantou, A., Giannelou, P., Grigoriadis, S., Maziotis, E., Tzonis, P., Koutsouni, A., Pappa, C., Philippou, A., Koutsilieris, M., Pantos, K., Simopoulou, M. and Sfakianoudis, K. Evaluating different strategies for poor ovarian response management: a retrospective cohort study and literature review. Ann N Y Acad Sci. 2021; 1500 (1): 93-111.	Cohort study in the presence of higher quality evidence
Papaleo, E., Revelli, A., Costa, M., Bertoli, M., Zaffagnini, S., Tomei, F., Manno, M., Rebecchi, A., Villanacci, R., Vanni, V. S., Cantatore, F., Ruffa, A., Colia, D., Sironi, M., Tessari, T., Parissone, F., Romanello, I., Reschini, M., Dallagiovanna, C. and Somigliana, E. Do we trust scientific evidence?	Wrong outcomes;

Amulticentre retrospective analysis of first IVF/ICSI cycles before and after the OPTIMIST trial. Hum Reprod. 2021; 36 (5): 1367-1375.	
Papamentzelopoulou, M., Stavros, S., Mavrogianni, D., Kalantzis, C., Loutradis, D. and Drakakis, P. Meta-analysis of GnRH-antagonists versus GnRH-agonists in poor responder protocols. Arch Gynecol Obstet. 2021; 304 (2): 547-557.	Wrong intervention;
Peng, Q., Cao, X., Wang, J., Wang, L., Xu, J., Ji, X., Liu, S., Zhu, J. and Dong, X. Progestin-primed ovarian stimulation vs mild stimulation in women with advanced age above 40: a retrospective cohort study. Reprod Biol Endocrinol. 2019; 17 (1): 91.	No ORT, unable to check if poor responder;
Qiao, J., Zhang, Y., Liang, X., Ho, T., Huang, H. Y., Kim, S. H., Goethberg, M., Mannaerts, B. and Arce, J. C. A randomised controlled trial to clinically validate follitropin delta in its individualised dosing regimen for ovarian stimulation in Asian IVF/ICSI patients. Hum Reprod. 2021; 36 (9): 2452-2462.	Wrong patient population; No separate data form patients with poor ovarian response;
Revelli, A., Gennarelli, G., Sestero, M., Canosa, S., Carosso, A., Salvagno, F., Pittatore, G., Filippini, C. and Benedetto, C. Correction to: a prospective randomized trial comparing corifollitropin-α late-start (day 4) versus standard administration (day 2) in expected poor, normal, and high responders undergoing controlled ovarian stimulation for IVF (Journal of Assisted Reproduction and Genetics, (2021), 10.1007/s10815-020-02042-8). J Assist Reprod Genet. 2021;	Wrong study design;
Saharkhiz, N., Salehpoor, S., Hosseini, S., Nazari, L., Sheibani, S. and Doohandeh, T. Comparison In Vitro Fertilization Outcomes between DouStim and Minimal Stimulation Protocols in Poor Ovarian Responders: A Randomized Clinical Trial. Int J Fertil Steril. 2024; 18 (2): 135-139.	Wrong comparator;
Sánchez, M. F., Larsson, P., Serrano, M. F., Bosch, E., Velasco, J. A. G., López, E. S. and Mannaerts, B. Live birth rates following individualized dosing algorithm of follitropin delta in a long GnRH agonist protocol. Reprod Biol Endocrinol. 2023; 21 (1): 45.	Wrong patient population;
Shapira, M., Orvieto, R., Lebovitz, O., Nahum, R., Aizer, A., Segev-Zahav, A. and Haas, J. Does daily co administration of gonadotropins and letrozole during the ovarian stimulation improve IVF outcome for poor and sub optimal responders? J Ovarian Res. 2020; 13 (1): 66.	Cohort study in the presence of higher quality evidence
Sopa, N., Larsen, E. C., Westring Hvidman, H. and Andersen, A. N. An AMH-based FSH dosing algorithm for OHSS risk reduction in first cycle antagonist protocol for IVF/ICSI. Eur J Obstet Gynecol Reprod Biol. 2019; 237 42-47.	Wrong comparator;
Souza, T. O., Ben Â, J., Dongen, J. M. V., Bosmans, J. E. and Cunha-Filho, Jsld. Effectiveness and Cost-effectiveness of Minimal Ovarian Stimulation in-vitro Fertilization versus Conventional Ovarian Stimulation in Poor Responders: Economic Evaluation Alongside a Propensity Score Adjusted Prospective Observational Study. JBRA Assist Reprod. 2023; 27 (2): 204-214.	Cohort study in the presence of higher quality evidence
Takeuchi, K., Orita, Y., Iwakawa, T., Kuwatsuru, Y., Kuroki, Y., Fukumoto, Y., Mizobe, Y., Tokudome, M. and Moewaki, H. Original delayed-start ovarian stimulation protocol with a gonadotropin-releasing hormone antagonist, medroxyprogesterone acetate, and high-dose gonadotropin for poor responders and patients with poor-quality embryos. Front Endocrinol (Lausanne). 2023; 14 1277873.	Cohort study in the presence of higher quality evidence
Taronger, R., Martínez-Cuenca, S., Ferreros, I., Rubio, J. M., Fernández-Colom, P. J., Martínez-Triguero, M. L. and Pellicer, A. Ovarian stimulation with corifollitropin alfa followed by hp-hMG compared to hp-hMG in patients at risk of poor ovarian response undergoing ICSI: A randomized controlled trial. Eur J Obstet Gynecol Reprod Biol. 2018; 231 192-197.	Wrong intervention;
Triantafyllidou, O., Sigalos, G., Gkoles, L., Kastora, S., Vakas, P., Batsiou, E. and Vlahos, N. The addition of clomiphene citrate to ovarian stimulation protocols for poor responders. Eur J Obstet Gynecol Reprod Biol. 2020; 251 136-140.	Cohort study in the presence of higher quality evidence
van Tilborg, T. C., Torrance, H. L., Oudshoorn, S. C., Eijkemans, M. J. C., Koks, C. A. M., Verhoeve, H. R., Nap, A. W., Scheffer, G. J., Manger, A. P., Schoot, B. C., Sluijmer, A. V., Verhoeff, A., Groen, H., Laven, J. S. E., Mol, B. W. J. and Broekmans, F. J. M. Individualized versus standard FSH dosing in women starting IVF/ICSI: an RCT. Part 1: The predicted poor responder. Hum Reprod. 2017; 32 (12): 2496-2505.	Included in systematic review;
Vuong, L. N., Ho, T. M., Ha, A. N., Pham, T. D., Le, T. T. N., Yding Andersen, C. and Humaidan, P. The effect of intra-ovarian androgen priming on ovarian reserve parameters in Bologna poor responders. Reprod Biomed Online. 2020; 40 (2): 223-228.	Wrong intervention;
Walker, Z. W., Lanes, A., Srouji, S. S., Hornstein, M. D. and Ginsburg, E. S. Ultra-low-dose and very-low-dose Lupron downregulation protocols for poor responders based on POSEIDON group 3 and 4 classifications. J Assist Reprod Genet. 2023; 40 (8): 1881-1895.	Wrong intervention;
Yakin, K., Oktem, O., Balaban, B. and Urman, B. Bologna criteria are predictive for ovarian response and live birth in subsequent ovarian stimulation cycles. Arch Gynecol Obstet. 2019; 299 (2): 571-577.	Wrong intervention;

Yang, R., Zhang, C., Chen, L., Wang, Y., Li, R., Liu, P. and Qiao, J. Cumulative live birth rate of low prognosis patients with POSEIDON stratification: a single-centre data analysis. Reprod Biomed Online. 2020; 41 (5): 834-844.	Wrong intervention;
Yang, R., Zhang, Y., Liang, X., Song, X., Wei, Z., Liu, J., Yang, Y., Tan, J., Zhang, Q., Sun, Y., Wang, W., Qian, W., Jin, L., Wang, S., Xu, Y., Yang, J., Goethberg, M., Mannaerts, B., Wu, W., Zheng, Z. and Qiao, J. Comparative clinical outcome following individualized follitropin delta dosing in Chinese women undergoing ovarian stimulation for in vitro fertilization /intracytoplasmic sperm injection. Reprod Biol Endocrinol. 2022; 20 (1): 147.	Wrong patient population;
Yang, S., Liu, N., Li, Y., Zhang, L. and Yue, R. Efficacy of the delayed start antagonist protocol for controlled ovarian stimulation in Bologna poor ovarian responders: a systematic review and meta-analysis. Arch Gynecol Obstet. 2021; 303 (2): 347-362.	Wrong intervention;
Yang, Y. C., Li, Y. P., Pan, S. P., Chao, K. H., Chang, C. H., Yang, J. H. and Chen, S. U. The different impact of stimulation duration on oocyte maturation and pregnancy outcome in fresh cycles with GnRH antagonist protocol in poor responders and normal responders. Taiwan J Obstet Gynecol. 2019; 58 (4): 471-476.	Wrong intervention;
Youssef, M. A., van Wely, M., Al-Inany, H., Madani, T., Jahangiri, N., Khodabakhshi, S., Alhalabi, M., Akhondi, M., Ansaripour, S., Tokhmechy, R., Zarandi, L., Rizk, A., El-Mohamedy, M., Shaeer, E., Khattab, M., Mochtar, M. H. and van der Veen, F. A mild ovarian stimulation strategy in women with poor ovarian reserve undergoing IVF: a multicenter randomized non-inferiority trial. Hum Reprod. 2017; 32 (1): 112-118.	Low dose antagonist protocol vs. High dose Agonist protocol (mixing protocols and doses);
Yuan, R. Y., Li, S., Feng, X., Li, X. L., Lin, X. T., Gao, F. M., Zhu, H. J., Li, Y. S., Li, Y. C. and Ou, X. H. Comparison of embryo quality and pregnancy outcomes for patients with low ovarian reserve in natural cycles and mildly stimulated cycles: a cohort study. J Obstet Gynaecol. 2024; 44 (1): 2303693.	No conventional stimulation control arm;
Zarei, A., Parsanezhad, M. E., Kutenaei, M. A., Jahromi, B. N., Esfahani, P. S. and Bakhshaei, P. Delayed start protocol with gonadotropinreleasing hormone antagonist in poor responders undergoing in vitro fertilization: a randomized, Double-Blinded, clinical trial. Oman medical journal. 2018; 33 (6): 506-511.	Wrong intervention;
Zhang, J., Du, M., Li, Z., Liu, W., Ren, B., Zhang, Y. and Guan, Y. Comparison of Dydrogesterone and Medroxyprogesterone in the Progestin-Primed Ovarian Stimulation Protocol for Patients With Poor Ovarian Response. Front Endocrinol (Lausanne). 2021; 12 708704.	Wrong intervention;
Zhang, J., Du, M., Zhang, C., Wu, Y. and Guan, Y. Cumulative live birth rate in mild versus conventional stimulation in progestin-primed ovarian stimulation protocols for individuals with low prognosis. Front Endocrinol (Lausanne). 2023; 14 1249625.	Wrong intervention;
Zhang, S., Yin, Y., Li, Q. and Zhang, C. Comparison of Cumulative Live Birth Rates Between GnRH-A and PPOS in Low-Prognosis Patients According to POSEIDON Criteria: A Cohort Study. Front Endocrinol (Lausanne). 2021; 12 644456.	Wrong intervention;
Zhang, X., Feng, T., Yang, J., Hao, Y., Li, S., Zhang, Y. and Qian, Y. A flexible short protocol in women with poor ovarian response over 40 years old. J Ovarian Res. 2021; 14 (1): 3.	Wrong intervention;
Zhang, Y., Wang, H., Zhang, X., Hao, Y., Yang, J., Li, Y., Feng, T., Chen, Y. and Qian, Y. The effects of flexible short protocol with gonadotropin-releasing hormone antagonist on preventing premature ovulation in poor responders. Arch Gynecol Obstet. 2024; 309 (2): 689-697.	Wrong outcomes;
Zhao, S. and Wang, C. Efficacy of progestin-primed ovarian stimulation (PPOS) versus minimal stimulation in women of advanced maternal age with poor ovarian response under the Patient-Oriented Strategies Encompassing Individualized Oocyte Number (POSEIDON) criteria. Ann Palliat Med. 2023; 12 (1): 133-140.	Wrong intervention;
Zhou, R., Dong, M., Huang, L., Wang, S., Fan, L., Liang, X., Zhang, X. and Liu, F. Comparison of cumulative live birth rates between progestin-primed ovarian stimulation protocol and gonadotropin-releasing hormone antagonist protocol in different populations. Front Endocrinol (Lausanne). 2023; 14 1117513.	Wrong intervention;

5. WHICH PITUITARY SUPPRESSION PROTOCOL IS PREFERABLE?

Flowchart



List of excluded papers

	Exclusion criterion
Abbas, H. H., Abbas, H. H., Chiad, Z. J. and Al-Jarah, D. M. Short agonist and antagonist protocols in normoresponding patients undergoing ICSI, a comparative study. Pakistan journal of medical and health sciences. 2020; 14 (4): 1655-1663.	Wrong study design;
Al-Hussaini, T. K., Mohamed, A. A., Askar, A., Abden, A. A., Othman, Y. M. and Hussein, R. S. Ovarian Stimulation in Patient-oriented Strategies Encompassing Individualised Oocyte Number-4 Category; Antagonist versus Short-agonist Protocols. J Hum Reprod Sci. 2023; 16 (3): 212-217.	Wrong study design;
Al-Jeborry, M. M. Comparison of sandwich, conventional antagonist and microdose protocols in poor responders. Annals of tropical medicine and public health. 2019; 22 (10):	Wrong study design;
Al-Jeborry, M. M., Alizzi, F. J. and Al-Anbari, L. A. Acomparison of 3 different controlled ovarian stimulation protocols in poor women responders chosen according to poseidon criteria: micro-dose, standard flare-up, and antagonist protocol. International Journal of Women's Health and Reproduction Sciences. 2020; 8 (2): 147-152.	Wrong outcomes;
Alexandru, P., Cekic, S. G., Yildiz, S., Turkgeldi, E. and Ata, B. Progestins versus GnRH analogues for pituitary suppression during ovarian stimulation for assisted reproductive technology: a systematic review and meta-analysis. Reprod Biomed Online. 2020; 40 (6): 894-903.	More recent systematic review available;
Ata, B., Capuzzo, M., Turkgeldi, E., Yildiz, S. and La Marca, A. Progestins for pituitary suppression during ovarian stimulation for ART: a comprehensive and systematic review including meta-analyses. Hum Reprod Update. 2021; 27 (1): 48-66.	More recent systematic review available;
Bavarsadkarimi, M., Omidi, S., Shahmoradi, F., Heidar, Z. and Mirzaei, S. Comparison of two ovarian stimulation protocols among women with poor response: Arandomized clinical trial. Eur J Transl Myol. 2022; 32 (3):	Wrong outcomes;
Caetano, J. P. J., Calazans, L. C., Amorim, L. V. C., Pereira, L. M. R., Xavier, E. B. S., Campos, A. L. M., Coimbra, B. B. and Marinho, R. M. Progestin-Primed Ovarian Stimulation is a non-inferior alternative to the GnRH Antagonist Protocol in patients undergoing assisted reproductive techniques: a retrospective study. JBRA Assist Reprod. 2022; 26 (1): 38-43.	Wrong study design;
Cai, R., Zheng, B., Lin, Q., Deng, J., Zeng, X., Lin, W. and Shi, D. Ameta-analysis of the efficacy of progestin-primed ovarian stimulation with medroxyprogesterone acetate in ovulation induction in poor ovarian responders. J Gynecol Obstet Hum Reprod. 2021; 50 (7): 102049.	More recent systematic review available;
Cao, M., Hu, Y., Xiao, J., Li, S., Lin, Y., Liu, J. and Liu, H. Effectiveness and safety of GnRH antagonist originator and generic in real-world clinical practice: a retrospective cohort study. Front Endocrinol (Lausanne). 2024; 15 1358278.	Not comaprting different protocols;
Chaitanya, K. M., Rao, D. G. and Gambhir, I. Progesterone Primed Ovarian Stimulation (PPOS) vs. clomiphene Primed Ovarian Stimulation (CPOS) in high responder (HR) patients undergoing controlled ovarian stimulation. ARandomised Control trial. JBRA Assist Reprod. 2024;	Wrong comparator;
Chen, C., Yu, S., Yu, W., Yan, Z., Jin, W., Si, J., Li, M., Cai, R., Li, D., Wang, L., Chen, Q., Kuang, Y., Lyu, Q. and Long, H. Luteinizing Hormone Suppression by Progestin-Primed Ovarian Stimulation Is Associated With Higher Implantation Rate for Patients With Polycystic Ovary Syndrome Who Underwent in vitro Fertilization/Intracytoplasmic Sperm Injection Cycles: Comparing With Short Protocol. Front Physiol. 2021; 12 744968.	Wrong study design;
Chen, H., Teng, X. M., Sun, Z. L., Yao, D., Wang, Z. and Chen, Z. Q. Comparison of the cumulative live birth rates after 1 in vitro fertilization cycle in women using gonadotropin-releasing hormone antagonist protocol vs. progestin-primed ovarian stimulation: a propensity score-matched study. Fertil Steril. 2022; 118 (4): 701-712.	Cohort study in the presence of higher quality evidence
Chen, Q., Chai, W., Wang, Y., Cai, R., Zhang, S., Lu, X., Zeng, X., Sun, L. and Kuang, Y. Progestin vs. Gonadotropin-Releasing Hormone Antagonist for the Prevention of Premature Luteinizing Hormone Surges in Poor Responders Undergoing in vitro Fertilization Treatment: ARandomized Controlled Trial. Front Endocrinol (Lausanne). 2019; 10 796.	Included in systematic review;
Chen, Y., Chu, Y., Yao, W., Wang, L., Zeng, W. and Yue, J. Comparison of Cumulative Live Birth Rates between Flexible and Conventional Progestin-Primed Ovarian Stimulation Protocol in Poor Ovarian Response Patients According to POSEIDON Criteria: ACohort Study. J Clin Med. 2023; 12 (18):	Cohort study in the presence of higher quality evidence
Cui, L., Lin, Y., Wang, F. and Chen, C. Effectiveness of progesterone-primed ovarian stimulation in assisted reproductive technology: a systematic review and meta-analysis. Arch Gynecol Obstet. 2021; 303 (3): 615-630.	More recent systematic review available;
Deng, R., Wang, J., He, J., Lei, X., Zi, D., Nong, W. and Lei, X. GnRH antagonist protocol versus progestin-primed ovarian stimulation in patients with polycystic ovary syndrome: a systematic review and meta-analysis. Arch Gynecol Obstet. 2023;	More detailed systematic review available;

Deng, R., Wang, J., He, J., Lei, X., Zi, D., Nong, W. and Lei, X. Correction: GnRH antagonist protocol versus progestin-primed ovarian stimulation in patients with polycystic ovary syndrome: a systematic review and meta-analysis. Arch Gynecol Obstet. 2024; 309 (6): 2965.	Wrong study design;
Dinç, C., Arıkan, S. B., Özer, M. and Olgan, Ş. In vitro fertilization results of GNRH antagonists and medroxyprogesterone acetate used to prevent premature LH surge during ovarian hyperstimulation. Sci Rep. 2024; 14 (1): 16137.	Cohort study in the presence of higher quality evidence
Doğan Durdağ, G., Bektaş, G., Türkyılmaz, E., Göktepe, H., Sönmezer, M., Şükür, Y. E., Özmen, B., Atabekoğlu, C., Berker, B., Aytaç, R. and Sönmezer, M. The efficacy of dydrogesterone use to suppress premature luteinizing hormone surge on cycle outcomes in controlled ovarian stimulation. J Turk Ger Gynecol Assoc. 2021; 22 (4): 293-299.	Wrong study design;
Dong, M., Sun, L., Huang, L., Wang, F., Zhang, X. and Liu, F. Fixed Gonadotropin-Releasing Hormone Antagonist Protocol Versus Flexible Progestin-Primed Ovarian Stimulation Protocol in Patients With Asynchronous Follicular Development During Controlled Ovulation Stimulation: A Retrospective Study. Front Endocrinol (Lausanne). 2021; 12 690575.	Wrong study design;
Du, L., Song, J., Fan, W., Ye, T. and Kong, H. Safety profiles of offspring born from early-follicular long-acting GnRH agonist protocol and daily mid-luteal GnRH agonist protocol: a retrospective study. BMC Pregnancy Childbirth. 2024; 24 (1): 393.	Wrong comparator;
Du, M., Zhang, J., Li, Z., Liu, X., Li, J., Liu, W. and Guan, Y. Comparison of the Cumulative Live Birth Rates of Progestin-Primed Ovarian Stimulation and Flexible GnRH Antagonist Protocols in Patients With Low Prognosis. Front Endocrinol (Lausanne). 2021; 12 705264.	Wrong study design;
Duan, X., Li, Z., Li, M. and Ma, X. Analysis of controlled ovarian hyperstimulation protocols in women over 35 years old with poor ovarian response: a real-world study. BMC Pregnancy Childbirth. 2023; 23 (1): 813.	Wrong study design;
Duan, X. Y., Li, Z., Li, M. M. and Ma, X. Efficacies of different ovarian hyperstimulation protocols in elderly patients with poor ovarian response. Eur Rev Med Pharmacol Sci. 2023; 27 (23): 11606-11613.	Wrong study design;
Duc Thang, L., Bao Long, H., Thi Thu Trang, D., Ngoc Quy, P., Thi Mai Phuong, G., Thi Hanh, B., Trong Thach, T., Thi Lien Huong, N., Hoang, L. and Hugues, J. N. Non-inferiority of progestin-primed ovarian stimulation versus GnRH antagonist protocol: A propensity score-weighted analysis. J Formos Med Assoc. 2023;	Wrong study design;
Duc Thang, L., Bao Long, H., Thi Thu Trang, D., Ngoc Quy, P., Thi Mai Phuong, G., Thi Hanh, B., Trong Thach, T., Thi Lien Huong, N., Hoang, L. and Hugues, J. N. Non-inferiority of progestin-primed ovarian stimulation versus GnRH antagonist protocol: A propensity score-weighted analysis. J Formos Med Assoc. 2024; 123 (4): 523-529.	Cohort study in the presence of higher quality evidence
Eftekhar, M., Hoseini, M. and Saeed, L. Progesterone-primed ovarian stimulation in polycystic ovarian syndrome: An RCT. Int J Reprod Biomed. 2019; 17 (9): 671-676.	Wrong study design;
Errázuriz, J., Drakopoulos, P., Pening, D., Racca, A., Romito, A., De Munck, N., Tournaye, H., De Vos, M. and Blockeel, C. Pituitary suppression protocol among Bologna poor responders undergoing ovarian stimulation using corifollitropin alfa: does it play any role? Reprod Biomed Online. 2019; 38 (6): 1010-1017.	Cohort study in the presence of higher quality evidence
Fatehi, H., Davar, R., Nikfarjam, E. and Bayati, F. Fixed versus flexible gonadotropin releasing hormone antagonist protocol in women with polycystic ovary syndrome undergoing in vitro fertilization: An RCT. Int J Reprod Biomed. 2024; 22 (8): 617-626.	No pregnancy rates reported;
Feng, L., Fan, R., Jiang, A., Jiang, J., Wang, Q., Sun, Y., Qiao, P., Ren, C. and Yang, T. The effect of flexible low-dose GnRH antagonist on pregnancy outcome in the fresh embryo transfer cycle of IVF-ET: a randomized controlled trial. Reprod Biol Endocrinol. 2022; 20 (1): 55.	Wrong study design;
Geng, Y., Xun, Y., Hu, S., Lai, Q. and Jin, L. GnRH antagonist versus follicular-phase single-dose GnRH agonist protocol in patients of normal ovarian responses during controlled ovarian stimulation. Gynecol Endocrinol. 2019; 35 (4): 309-313.	Wrong study design;
Ghaebi, N. K., Amirian, M., Vahed, S. H. M., Arian, Y., Vakili, V., Yousefi, Y. and Hashemi, S. A. T. Pregnancy outcomes in PCOS patients undergoing IVF with long GnRH agonist protocol versus flexible GnRH antagonist. Iranian journal of obstetrics, gynecology and infertility. 2018; 21 (9): 1-9.	non-English;
Ghaffari, F., Jahangiri, N., Madani, T., Khodabakhshi, S. and Chehrazi, M. Randomized controlled trial of gonadotropin-releasing hormone agonist microdose flare-up versus flare-up among poor responders undergoing intracytoplasmic sperm injection. Int J Gynaecol Obstet. 2020; 148 (1): 59-64.	Low sample sizes;
Guan, S., Feng, Y., Huang, Y. and Huang, J. Progestin-Primed Ovarian Stimulation Protocol for Patients in Assisted Reproductive Technology: A Meta-Analysis of Randomized Controlled Trials. Front Endocrinol (Lausanne). 2021; 12 702558.	More recent systematic review available;
Gui, J., Ni, Y., Liu, Q., Wang, X. and Xie, Q. Comparison of clinical effects between early follicular prolonged GnRH agonist protocol and GnRH antagonist protocol in 3310 cycles: a retrospective study. BMC Pregnancy Childbirth. 2022; 22 (1): 942.	Wrong study design;

Guo, Y. C., Chen, P. Y., Li, T. T., Jia, L., Sun, P., Zhu, W. S., Deng, C. C., Fang, C. and Liang, X. Y. Different progestin-primed ovarian stimulation protocols in infertile women undergoing in vitro fertilization/intracytoplasmic sperm injection: an analysis of 1188 cycles. Arch Gynecol Obstet. 2019; 299 (4): 1201-1212.	Wrong study design;
Gurbuz, A. S. and Gode, F. Dydrogesterone-primed ovarian stimulation is an effective alternative to gonadotropin-releasing hormone antagonist protocol for freeze-all cycles in polycystic ovary syndrome. J Obstet Gynaecol Res. 2020; 46 (8): 1403-1411.	Wrong study design;
Hassabelnabi, E. A. F., Badreldin, M. A., Behery, M. A., Rageh, K. A. and Ali, E. A. Flexible Antagonist versus Agonist Flare Protocol in Women above 40 Undergoing IVF, A retrospective Cohort Study. JBRA Assist Reprod. 2023; 27 (3): 381-385.	Wrong study design;
Huang, C. Y., Chen, G. Y., Shieh, M. L. and Li, H. Y. Validating the Use of Corifollitropin Alfa in Progestin-Primed Ovarian Stimulation Protocol on Normal and High Responders by Comparing with Conventional Antagonist Protocol: A Retrospective Study. Life (Basel). 2020; 10 (6):	Wrong study design;
Huang, J., Xie, Q., Lin, J., Lu, X., Wang, N., Gao, H., Cai, R. and Kuang, Y. Neonatal outcomes and congenital malformations in children born after dydrogesterone application in progestin-primed ovarian stimulation protocol for IVF: a retrospective cohort study. Drug Des Devel Ther. 2019; 13 2553-2563.	Paediatric population;
Huang, J., Xie, Q., Lin, J., Lu, X., Zhu, J., Gao, H., Cai, R. and Kuang, Y. Progestin-Primed Ovarian Stimulation with Dydrogesterone versus Medroxyprogesterone Acetate in Women with Polycystic Ovarian Syndrome for in vitro Fertilization: A Retrospective Cohort Study. Drug Des Devel Ther. 2019; 13 4461-4470.	Wrong study design;
Huang, P., Tang, M. and Qin, A. Progestin-primed ovarian stimulation is a feasible method for poor ovarian responders undergoing in IVF/ICSI compared to a GnRH antagonist protocol: A retrospective study. J Gynecol Obstet Hum Reprod. 2019; 48 (2): 99-102.	Wrong study design;
Huong, N. T. L., Hanh, B. T., Van, N. T. B., Anh, P. T. T., Long, H. B., Thang, L. D., Thuy, T. T., Minh Thu, N. T., Anh, D. T., Quy, P. N., Do, L. Q., Thach, T. T., Hugues, J. N., Tien, D. V. and Hoang, L. Fewer good-quality cleavage embryos in dydrogesterone-primed ovarian stimulation compared to GnRH antagonist protocol in POSEIDON group 4 patients. J Formos Med Assoc. 2025;	Cohort study in the presence of higher quality evidence
Iwami, N., Kawamata, M., Ozawa, N., Yamamoto, T., Watanabe, E., Moriwaka, O. and Kamiya, H. New trial of progestin-primed ovarian stimulation using dydrogesterone versus a typical GnRH antagonist regimen in assisted reproductive technology. Arch Gynecol Obstet. 2018; 298 (3): 663-671.	Cohort study in the presence of higher quality evidence
Jwa, S. C., Nakashima, A., Kuwahara, A., Saito, K., Irahara, M., Sakumoto, T., Ishihara, O. and Saito, H. Neonatal outcomes following different ovarian stimulation protocols in fresh single embryo transfer. Sci Rep. 2019; 9 (1): 3076.	Paediatric population;
Kadoura, S., Alhalabi, M. and Nattouf, A. H. Conventional GnRH antagonist protocols versus long GnRH agonist protocol in IVF/ICSI cycles of polycystic ovary syndrome women: a systematic review and meta-analysis. Sci Rep. 2022; 12 (1): 4456.	More recent systematic review available;
Kalafat, E., Turkgeldi, E., Yildız, S., Dizdar, M., Keles, I. and Ata, B. Outcomes of a GnRH Agonist Trigger Following a GnRH Antagonist or Flexible Progestin-Primed Ovarian Stimulation Cycle. Front Endocrinol (Lausanne). 2022; 13 837880.	Cohort study in the presence of higher quality evidence
Khezri, A., Kashani, L., Moini, A., Mojtahedi, M. F., Yamini, N. and Ataee, M. nRH agonists stop antagonist protocol versus GnRH antagonist protocol in poor ovarian responders undergoing IVF. Revista latinoamericana de hipertension. 2022; 17 (5): 365-370.	Wrong outcomes;
Khezri, A., Kashani, L., Moini, A., Mojtahedi, M. F., Yamini, N. and Ataee, M. GnRH agonist STOP-antagonist protocol versus the GnRH antagonist protocol in patients with poor ovarian response undergoing IVF. Revista latinoamericana de hipertension. 2022; 17 (1): 46-52.	Wrong outcomes;
Li, H. L., Shen, B. B., He, Z. L., Wang, H. L. and Sun, Z. F. Progestin-primed ovarian stimulation with letrozole using different doses of medroxyprogesterone acetate per day: a retrospective cohort study. Front Endocrinol (Lausanne). 2024; 15 1429338.	Poor methodology;
Li, X., Cao, Y., Lin, J., Cai, R., Zhang, L. and Liu, Y. Effects of gonadotropin-releasing hormone antagonist (GnRH-ant) cessation on trigger day in a GnRH-ant protocol: a meta-analysis. J Obstet Gynaecol. 2025; 45 (1): 2444496.	Wrong intervention;
Li, Y., Luo, D., Li, T., Ding, H. and Liu, Y. The cumulative live birth rate and cost-effectiveness of the clomiphene and gonadotropin cotreatment protocol versus the mid-luteal GnRH agonist protocol in women over 35 years old. Sci Rep. 2024; 14 (1): 12894.	Wrong comparator;
Liu, L., Xu, Y., Huang, J. and Zhou, C. Patients with higher anti-Müllerian hormone levels from POSEIDON group 4 benefit from GnRH-agonist long protocol: A retrospective study. Eur J Obstet Gynecol Reprod Biol. 2021; 257 88-94.	Wrong study design;
Luo, X., Pei, L., Li, F., Li, C., Huang, G. and Ye, H. Fixed versus flexible antagonist protocol in women with predicted high ovarian response except PCOS: a randomized controlled trial. BMC Pregnancy Childbirth. 2021; 21 (1): 348.	Wrong study design;

Lv, M., Yu, J., Chen, P., Xiao, Q., Lou, L., Luo, Y., Yuan, M., Xu, Y., Feng, Y., Bai, M., Zhang, Z. and Li, L. Ovarian stimulation in IVF couples with severe male factor infertility: GnRH antagonist versus long GnRH agonist. Front Endocrinol (Lausanne). 2022; 13 1037220.	Wrong study design;
Mahmood, A. and Tan, L. Gonadotropin-Releasing Hormone (GnRH) Agonist Protocol Improves Pregnancy Outcomes During In Vitro Fertilization (IVF) and Intracytoplasmic Sperm Injection (ICSI) Treatment in Young Infertile Women: A Retrospective Study. Cureus. 2024; 16 (6): e61554.	Cohort study in the presence of higher quality evidence
Matsuda, Y., Takebayashi, A., Tsuji, S., Hanada, T., Kasei, R., Hirata, K. and Murakami, T. Comparison of fixed and flexible progestin-primed ovarian stimulation in women classified in patient-oriented strategies encompassing individualized oocyte number (POSEIDON) group 4. Arch Gynecol Obstet. 2024; 310 (4): 2203-2209.	Low sample sizes;
Mauries, C., Ranisavljevic, N., Mollevi, C., Brunet, C., Hamamah, S., Brouillet, S. and Anahory, T. "Short agonist stop" protocol, an ovarian stimulation for poor responders in in vitro fertilization (IVF): A pilot study. Front Endocrinol (Lausanne). 2022; 13 1056520.	Wrong study design;
Mouanness, M. and Merhi, Z. Elagolix Represents a Less Invasive and Cheaper Option Than Injectable GnRH Antagonist for Ovulation Suppression in IVF. J Clin Endocrinol Metab. 2025; 110 (2): e456-e460.	Wrong outcomes;
Mu, X., Cai, H. and Shi, J. Z. Comparison of two gonadotropin-releasing hormone agonist suppression protocols for in vitro fertilization in young patients with low body mass index. Int J Gynaecol Obstet. 2023; 160 (3): 850-855.	Wrong study design;
Mu, Z., Sa, Y., Sun, Z. and Yi, Y. Ovulation induction with high progesterone levels may be more suitable for elderly patients with low ovarian response. J Gynecol Obstet Hum Reprod. 2021; 50 (2): 101661.	Wrong study design;
Murillo, F., Fanton, M., Baker, V. L. and Loewke, K. Causal inference indicates that poor responders have similar outcomes with the antagonist protocol compared with flare. Fertil Steril. 2023; 120 (2): 289-296.	Cohort study in the presence of higher quality evidence
Orvieto, R., Kirshenbaum, M., Galiano, V., Elkan-Miller, T., Zilberberg, E., Haas, J. and Nahum, R. Stop GnRH-Agonist Combined With Multiple-Dose GnRH-Antagonist Protocol for Patients With "Genuine" Poor Response Undergoing Controlled Ovarian Hyperstimulation for IVF. Front Endocrinol (Lausanne). 2020; 11 182.	Wrong study design;
Orvieto, R., Kirshenbaum, M., Galiano, V., Zilberberg, E., Haas, J. and Nahum, R. Stop GnRH-Agonist Combined with Multiple-Dose GnRH-Antagonist for Patients with Elevated Peak Serum Progesterone Levels Undergoing Ovarian Stimulation for IVF: A Proof of Concept. Gynecol Obstet Invest. 2020; 85 (4): 357-361.	Wrong study design;
Orvieto, R., Nahum, R., Aizer, A., Haas, J. and Kirshenbaum, M. A Novel Stimulation Protocol for Poor-Responder Patients: Combining the Stop GnRH-ag Protocol with Letrozole Priming and Multiple-Dose GnRH-ant: A Proof of Concept. Gynecol Obstet Invest. 2021; 86 (1-2): 149-154.	Low sample sizes;
Ozgur, K., Berkkanoglu, M., Bulut, H., Donmez, L. and Coetzee, K. Medroxyprogesterone acetate used in ovarian stimulation is associated with reduced mature oocyte retrieval and blastocyst development: a matched cohort study of 825 freeze-all IVF cycles. J Assist Reprod Genet. 2020; 37 (9): 2337-2345.	Wrong study design;
Ozgur, K., Berkkanoglu, M., Bulut, H., Tore, H., Donmez, L. and Coetzee, K. Dydrogesterone versus medroxyprogesterone acetate co-treatment ovarian stimulation for IVF: a matched cohort study of 236 freeze-all-IVF cycles. J Obstet Gynaecol. 2022; 42 (2): 268-275.	Wrong study design;
Pai, A. H., Sung, Y. J., Li, C. J., Lin, C. Y. and Chang, C. L. Progestin Primed Ovarian Stimulation (PPOS) protocol yields lower euploidy rate in older patients undergoing IVF. Reprod Biol Endocrinol. 2023; 21 (1): 72.	Wrong study design;
Pal, A., Mani, T., Chinta, P., Karthikeyan, M., Kunjummen, A. T. and Kamath, M. S. Effectiveness of GnRH Agonist Short Protocol Versus GnRH Antagonist Protocol in POSEIDON Groups 3 and 4: a Retrospective Cohort Study. Reprod Sci. 2023; 30 (8): 2481-2488.	Wrong study design;
Papamentzelopoulou, M., Stavros, S., Mavrogianni, D., Kalantzis, C., Loutradis, D. and Drakakis, P. Meta-analysis of GnRH-antagonists versus GnRH-agonists in poor responder protocols. Arch Gynecol Obstet. 2021; 304 (2): 547-557.	More recent systematic review available;
Qin, X., Fan, L., Luo, Y., Deng, Z., Zeng, Z., Jiang, X. and Yang, Y. Progestin-primed ovarian stimulation (PPOS) in preimplantation genetic testing for aneuploidy: a retrospective study and meta-analysis. Arch Gynecol Obstet. 2025;	pooled results from RCTs and cohort studies;
Shi, Z., Zhao, W., Wu, X. and Bi, X. Comparison of the pregnancy outcomes of progestin-primed vs. antagonist ovarian stimulation in patients with poor ovarian response: a retrospective study. Gynecol Endocrinol. 2024; 40 (1): 2352133.	Cohort study in the presence of higher quality evidence
Singh, E., Blockeel, C., Singh, M., Gupta, R. and Kamdi, S. Evaluation of pregnancy outcomes using medroxyprogesterone acetate versus gonadotropin-releasing hormone antagonist in ovarian stimulation: A retrospective cohort study. Int J Reprod Biomed. 2022; 20 (6): 491-500.	Wrong study design;

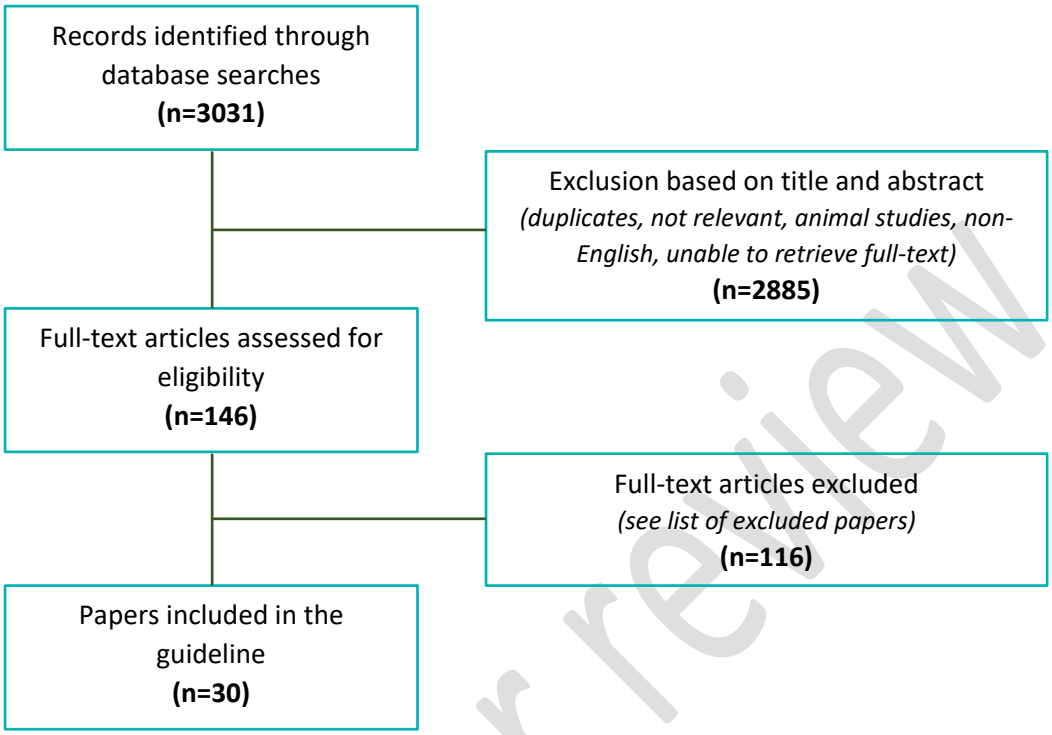
Song, J., Duan, C., Cai, W., Wu, W., Lv, H. and Xu, J. Comparison of GnRH-a Prolonged Protocol and Short GnRH-a Long Protocol in Patients with Thin Endometrium for Assisted Reproduction: A Retrospective Cohort Study. Drug Des Devel Ther. 2020; 14 3673-3682.	Wrong study design;
Souza, Mdcb, Antunes, R. A., Souza, M. M., Mancebo, A. C. A., Barbeitas, A. L., Raupp, V. A. and Rebello, D. M. Vaginal micronized progesterone on preventing luteinizing hormone untimely surge in ART cycles: A prospective proof-of-concept study. JBRA Assist Reprod. 2024; 28 (4): 565-566.	Wrong patient population;
Tehraninejad, E. S., Nekoo, Z. A., Nekoo, E. A., Kalantari, V. and Tarafdari, A. Comparison of assisted reproductive technology cycle outcomes among daily buserelin, daily, and every other day triptorelin in infertile patients referring to imam khomeini hospital complex: a randomized controlled trial. International Journal of Women's Health and Reproduction Sciences. 2021; 9 (1): 49-54.	Low sample sizes;
Tian, L., Xia, L. and Wu, Q. Retrospective analysis of GnRH-a prolonged protocol for in vitro fertilization in 18,272 cycles in China. J Ovarian Res. 2022; 15 (1): 110.	Wrong study design;
Umemmuo, M. U., Efetie, E. R., Agboghoroma, C. O., Momoh, J. A. and Ikechebelu, J. I. Comparison of clinical efficacy of long- versus short-acting gonadotrophin-releasing hormone agonists for pituitary down regulation in In vitro fertilisation cycles. Niger Postgrad Med J. 2020; 27 (3): 171-176.	Wrong study design;
Vaiarelli, A., Cimadomo, D., Ruffa, A., Rania, E., Pittana, E., Gallo, C., Fiorenza, A., Alviggi, E., Alfano, S., Carmelo, R., Trabucco, E., Alviggi, C., Rosaria Campitiello, M., Rienzi, L., Maria Ubaldi, F. and Venturella, R. Oocyte competence is comparable between progestin primed ovarian stimulation with Norethisterone acetate (NETA-PPOS) and GnRH-antagonist protocols: A matched case-control study in PGT-A cycles. Eur J Obstet Gynecol Reprod Biol. 2023; 294 4-10.	Cohort study in the presence of higher quality evidence
Vaiarelli, A., Cimadomo, D., Ruffa, A., Rania, E., Pittana, E., Gallo, C., Fiorenza, A., Alviggi, E., Alfano, S., Carmelo, R., Trabucco, E., Alviggi, C., Rosaria Campitiello, M., Rienzi, L., Maria Ubaldi, F. and Venturella, R. Oocyte competence is comparable between progestin primed ovarian stimulation with Norethisterone acetate (NETA-PPOS) and GnRH-antagonist protocols: A matched case-control study in PGT-A cycles. Eur J Obstet Gynecol Reprod Biol. 2024; 294 4-10.	Cohort study in the presence of higher quality evidence
Walker, Z. W., Lanes, A., Srouji, S. S., Hornstein, M. D. and Ginsburg, E. S. Ultra-low-dose and very-low-dose Lupron downregulation protocols for poor responders based on POSEIDON group 3 and 4 classifications. J Assist Reprod Genet. 2023; 40 (8): 1881-1895.	Wrong study design;
Wan, L., Chen, F., Xiong, D., Chen, S., Chen, J., Qin, J., Li-Ling, J., Zhong, T., Wang, X. and Gong, Y. Comparison of aneuploidy for patients of different ages treated with progestin-primed ovarian stimulation or GnRH antagonist protocols. Reprod Biomed Online. 2024; 49 (5): 104349.	Cohort study in the presence of higher quality evidence
Wang, D., Chu, T., Yu, T. and Zhai, J. Is early-follicular long-acting GnRH agonist protocol an alternative for patients with polycystic ovary syndrome undergoing in vitro fertilization? Reprod Biol Endocrinol. 2022; 20 (1): 137.	Wrong study design;
Wang, M., Li, L., Zhu, H., Wang, R., Liu, R. and Zhang, H. Comparison of progestin-primed ovarian stimulation regimen and antagonist regimen in women aged 35 years or older with diminished ovarian reserve: A propensity score-matched study. Int J Gynaecol Obstet. 2024; 167 (1): 162-168.	Wrong patient population;
Wang, X., Zhang, Y., Diao, H., Jiang, S. and Zhang, C. Letrozole cotreatment progestin-primed ovarian stimulation in women undergoing controlled ovarian stimulation for in vitro fertilization. J Obstet Gynaecol Res. 2024; 50 (5): 890-898.	Wrong intervention;
Welp, A. M., Williams, C. D., Smith, L. P., Purcell, S. and Goodman, L. R. Oral medroxyprogesterone acetate for the use of ovulation suppression in in-vitro fertilization: A cohort trial. Fertil Steril. 2024; 121 (1):	Wrong study design;
Wu, L., Ren, X. L., Chen, W., Huang, B., Zhou, Y. F. and Jin, L. Influence of Different Gonadotropin-releasing Hormone Agonist Administration Methods on Pregnancy Outcomes of Patients Undergoing In-vitro Fertilization-embryo Transfer. Curr Med Sci. 2019; 39 (3): 437-441.	Wrong study design;
Xia, M. and Zheng, J. Comparison of clinical outcomes between the depot gonadotrophin-releasing hormone agonist protocol and gonadotrophin-releasing hormone antagonist protocol in normal ovarian responders. BMC Pregnancy Childbirth. 2021; 21 (1): 372.	Wrong study design;
Xiao, Z. N., Peng, J. L., Yang, J. and Xu, W. M. Flexible GnRH Antagonist Protocol versus Progestin-primed Ovarian Stimulation (PPOS) Protocol in Patients with Polycystic Ovary Syndrome: Comparison of Clinical Outcomes and Ovarian Response. Curr Med Sci. 2019; 39 (3): 431-436.	Cohort study in the presence of higher quality evidence
Xu, B., Geerts, D., Hu, S., Yue, J., Li, Z., Zhu, G. and Jin, L. The depot GnRH agonist protocol improves the live birth rate per fresh embryo transfer cycle, but not the cumulative live birth rate in normal responders: a randomized controlled trial and molecular mechanism study. Hum Reprod. 2020; 35 (6): 1306-1318.	Included in systematic review;
Xu, Y., Zhang, Y. S., Zhu, D. Y., Zhai, X. H., Wu, F. X. and Wang, A. C. Influence of GnRH antagonist in reproductive women on in vitro fertilization and embryo transfer in fresh cycles. Biomed Rep. 2019; 10 (2): 113-118.	Wrong study design;

Yang, J., Zhang, X., Ding, X., Wang, Y., Huang, G. and Ye, H. Cumulative live birth rates between GnRH-agonist long and GnRH-antagonist protocol in one ART cycle when all embryos transferred: real-word data of 18,853 women from China. Reprod Biol Endocrinol. 2021; 19 (1): 124.	Cohort study in the presence of higher quality evidence
Yildiz, S., Turkgeldi, E., Angun, B., Eraslan, A., Urman, B. and Ata, B. Comparison of a novel flexible progestin primed ovarian stimulation protocol and the flexible gonadotropin-releasing hormone antagonist protocol for assisted reproductive technology. Fertil Steril. 2019; 112 (4): 677-683.	Cohort study in the presence of higher quality evidence
Yildiz, S., Turkgeldi, E. and Ata, B. Role and effectiveness of progestins in pituitary suppression during ovarian stimulation for assisted reproductive technology: a systematic review and a meta-analysis. Minerva Obstet Gynecol. 2022;	No fulltext;
Yu, S., Long, H., Chang, H. Y., Liu, Y., Gao, H., Zhu, J., Quan, X., Lyu, Q., Kuang, Y. and Ai, A. New application of dydrogesterone as a part of a progestin-primed ovarian stimulation protocol for IVF: a randomized controlled trial including 516 first IVF/ICSI cycles. Hum Reprod. 2018; 33 (2): 229-237.	Included in systematic review;
Yu, T. N., Liu, Y. L., Wang, P. H., Chen, C. H., Chen, C. H. and Tzeng, C. R. A novel strategy of using corifollitropin alfa in the ultrashort gonadotropin-releasing hormone agonist (GnRHa) protocol in unselected patients: A patient-friendly alternative. Taiwan J Obstet Gynecol. 2019; 58 (5): 656-661.	Wrong outcomes;
Zhai, J., Zhang, J., He, J., Lv, M., Zhang, B., Li, G., Du, Y. and Hao, G. Live Birth Outcomes for PCOS Patients Under the Follicular-Phase Long-Acting GnRH Agonist Protocol or Antagonist Protocol - A Retrospective Chinese Cohort. J Multidiscip Healthc. 2023; 16 2781-2792.	Wrong study design;
Zhang, J., Du, M., Li, Z., Liu, W., Ren, B., Zhang, Y. and Guan, Y. Comparison of Dydrogesterone and Medroxyprogesterone in the Progestin-Primed Ovarian Stimulation Protocol for Patients With Poor Ovarian Response. Front Endocrinol (Lausanne). 2021; 12 708704.	Wrong study design;
Zhang, Q., He, S., Meng, Y., Yin, T., Ming, L., Yang, J. and Li, S. Effect of medroxyprogesterone acetate dose in progestin-primed ovarian stimulation on pregnancy outcomes in poor ovarian response patients with different body mass index levels. Front Endocrinol (Lausanne). 2024; 15 1352522.	Not comaprting different protocols;
Zhang, S., Yin, Y., Li, Q. and Zhang, C. Comparison of Cumulative Live Birth Rates Between GnRH-A and PPOS in Low-Prognosis Patients According to POSEIDON Criteria: A Cohort Study. Front Endocrinol (Lausanne). 2021; 12 644456.	Wrong study design;
Zhang, W., Xie, D., Zhang, H., Huang, J., Xiao, X., Wang, B., Tong, Y., Miao, Y. and Wang, X. Cumulative Live Birth Rates After the First ART Cycle Using Flexible GnRH Antagonist Protocol vs. Standard Long GnRH Agonist Protocol: A Retrospective Cohort Study in Women of Different Ages and Various Ovarian Reserve. Front Endocrinol (Lausanne). 2020; 11 287.	Wrong study design;
Zhang, X. Q., Zhang, L. J., Zhu, X. L., Xu, H., Luo, Y. Q., Yao, L., Huang, Q. W., Nong, Y. Q., Liu, W. J. and Liu, F. H. The Clinical Efficacy of Three Different Follicle-Stimulating Hormones for Follicle Growth and Development in Long-Protocol Controlled Ovarian Hyperstimulation Treatment. Drug Des Devel Ther. 2021; 15 3573-3580.	Wrong study design;
Zhang, Y., Li, H., Zhu, S., Jiang, S., Zhao, W., Wang, X., Tian, L., Zhao, G., He, N., Diao, H., Cao, H. and Zhang, C. The comparison between fixed versus degressive doses of medroxyprogesterone acetate combined with letrozole in patients of progestin-primed ovarian stimulation protocol: a propensity score-matched study. Front Endocrinol (Lausanne). 2023; 14 1295787.	Wrong outcomes;
Zhang, Y., Wang, H., Zhang, X., Hao, Y., Yang, J., Li, Y., Feng, T., Chen, Y. and Qian, Y. The effects of flexible short protocol with gonadotropin-releasing hormone antagonist on preventing premature ovulation in poor responders. Arch Gynecol Obstet. 2024; 309 (2): 689-697.	Wrong study design;
Zhang, Y., Zhao, W., Han, Y., Chen, X., Xu, S., Hu, Y., Diao, H. and Zhang, C. The follicular-phase depot GnRH agonist protocol results in a higher live birth rate without discernible differences in luteal function and child health versus the daily mid-luteal GnRH agonist protocol: a single-centre, retrospective, propensity score matched cohort study. Reprod Biol Endocrinol. 2022; 20 (1): 140.	Wrong study design;
Zhao, Y., Lian, F., Xiang, S., Yu, Y., Pang, C. and Qiu, Y. Effects of half-dose and full-dose GnRH antagonists on IVF-ET outcomes: a retrospective study. BMC Pregnancy Childbirth. 2021; 21 (1): 727.	Wrong study design;
Zhou, R., Dong, M., Huang, L., Wang, S., Fan, L., Liang, X., Zhang, X. and Liu, F. Comparison of cumulative live birth rates between progestin-primed ovarian stimulation protocol and gonadotropin-releasing hormone antagonist protocol in different populations. Front Endocrinol (Lausanne). 2023; 14 1117513.	Wrong study design;
Zhou, R., Dong, M., Huang, L., Wang, S., Wang, Z., Xu, L., Zhang, X. and Liu, F. Comparison of Cumulative Live Birth Rates Between Progestin and GnRH Analogues in Preimplantation Genetic Testing Cycles. J Clin Endocrinol Metab. 2025; 110 (3): 611-623.	Wrong study design;
Zhu, J., Xing, W., Li, T., Lin, H. and Ou, J. GnRH Antagonist Protocol Versus GnRH Agonist Long Protocol: A Retrospective Cohort Study on Clinical Outcomes and Maternal-Neonatal Safety. Front Endocrinol (Lausanne). 2022; 13 875779.	Wrong study design;

Zhu, J., Zhang, J., Yang, J., Li, D., Wang, C., Elizur, S. E., Zhao, K, Kuang, Y. and Wang, Y. A comprehensive evaluation of progestin-primed ovarian stimulation protocol in patients with or without PCOS undergoing in vitro fertilization. Reprod Biol. 2021; 21 (4): 100540.	Wrong study design;

6. Is the type of stimulation drug associated with efficacy and safety?

Flowchart



List of excluded papers

	Exclusion criterion
Abramova, N., Hubbard, J., Schertz, J. and Richter, E. Safety of Follitropin Alfa/Lutropin Alfa for Stimulation of Follicular Development. Drug Saf. 2019; 42 (3): 453-461.	Wrong study design;
Alwan, N. S., Al-Obaidi, M. T. and Al-Anbari, L. Comparison between Soft and Conventional Flexible Antagonist Protocols Regarding ICSI Outcome and Pregnancy Rate in Women with Poor Ovarian Response. HIVnursing. 2023; 23 (1): 196-204.	Irrelevant research question;
Andrisani, A., Marin, L., Ragazzi, E., Donà, G., Bordin, L., Dessole, F., Armanini, D., Esposito, F., Vitagliano, A., Sabbadin, C. and Ambrosini, G. Is corifollitropin alfa effective in controlled ovarian stimulation among all poor ovarian responders? A retrospective comparative study. Gynecol Endocrinol. 2019; 35 (10): 894-898.	Wrong study design;
Arvis, P., Massin, N. and Lehert, P. Effect of recombinant LH supplementation on cumulative live birth rate compared with FSH alone in poor ovarian responders: a large, real-world study. Reprod Biomed Online. 2021; 42 (3): 546-554.	Wrong study design;
Ashrafi, M., Kiani, K., Ghasemi, A., Rastegar, F. and Nabavi, M. The effect of low dose human chorionic gonadotropin on follicular response and oocyte maturation in PCOS patients undergoing IVF cycles: a randomized clinical trial of efficacy and safety. Arch Gynecol Obstet. 2011; 284 (6): 1431-8.	Irrelevant research question;
Barakhoeva, Z., Vovk, L., Fetisova, Y., Marilova, N., Ovchinnikova, M., Tischenko, M., Scherbatyuk, Y., Kolotovkina, A., Miskun, A., Kasyanova, G., Teterina, T., Zorina, I., Belousova, N., Morozova, E., Yakovenko, S., Apryshko, V., Sichinava, L., Shalina, R. and Polzikov, M. A multicenter, randomized, phase III study comparing the efficacy and safety of follitropin alpha biosimilar and the original follitropin alpha. Eur J Obstet Gynecol Reprod Biol. 2019; 241 6-12.	Included in a systematic review;
Barrière, P., Hamamah, S., Arbo, E., Avril, C., Salle, B., Pouly, J. L. and Jenkins, J. A real-world study of ART in France (REOLA) comparing a biosimilar rFSH against the originator according to rFSH starting dose. J Gynecol Obstet Hum Reprod. 2023; 52 (1): 102510.	Wrong study design;
Berker, B., Şükür, Y. E., Özdemir, EÜ, Özmen, B., Sönmezer, M., Atabekoğlu, C. S. and Aytaç, R. Human Menopausal Gonadotropin Commenced on Early Follicular Period Increases Live Birth Rates in POSEIDON Group 3 and 4 Poor Responders. Reprod Sci. 2021; 28 (2): 488-494.	Wrong study design;
Bielfeld, A. P., Schwarze, J. E., Verpillat, P., Lispi, M., Fischer, R., Hayward, B., Chuderland, D., D'Hooghe, T. and Krussel, J. S. Effectiveness of recombinant human follicle-stimulating hormone (r-hFSH): recombinant human luteinizing hormone versus r-hFSH alone in assisted reproductive technology treatment cycles among women aged 35-40 years: A German database study. Best Pract Res Clin Obstet Gynaecol. 2023; 89 102350.	Wrong study design;
Bielfeld, A. P., Schwarze, J. E., Verpillat, P., Lispi, M., Fischer, R., Hayward, B., Chuderland, D., D'Hooghe, T. and Krussel, J. S. Effectiveness of recombinant human FSH: recombinant human LH combination treatment versus recombinant human FSH alone for assisted reproductive technology in women aged 35-40 years. Reprod Biomed Online. 2024; 48 (6): 103725.	Cohort study in the presence of higher quality evidence
Blockeel, C., De Vos, M., Verpoest, W., Stoop, D., Haentjens, P. and Devroey, P. Can 200 IU of hCG replace recombinant FSH in the late follicular phase in a GnRH-antagonist cycle? A pilot study. Hum Reprod. 2009; 24 (11): 2910-6.	Irrelevant research question;
Blockeel, C., Griesinger, G., Rago, R., Larsson, P., Sonderegger, Y. L. Y., Rivière, S. and Laven, J. S. E. Prospective multicenter non-interventional real-world study to assess the patterns of use, effectiveness and safety of follitropin delta in routine clinical practice (the PROFILE study). Front Endocrinol (Lausanne). 2022; 13 992677.	Irrelevant research question;
Budani, M. C., Fensore, S., Di Marzio, M. and Tiboni, G. M. Efficacy and safety of follitropin alpha biosimilars compared to their reference product: a Meta-analysis. Gynecol Endocrinol. 2021; 37 (5): 406-414.	More comprehensive systematic review available;
Budani, M. C., Fensore, S., M, D. I. Marzio and Tiboni, G. M. An updated meta-analysis comparing the efficacy and safety of biosimilar medicinal products to the original follitropin alfa. Minerva Obstet Gynecol. 2024; 76 (1): 70-79.	Replaced by a more recent systematic review;
Bühler, K., Roeder, C., Schwarze, J. E., Lispi, M., Allignol, A., Falla, E., Lukyanov, V., T, D. Hooghe and Fischer, R. Cost-effectiveness analysis of recombinant human follicle-stimulating hormone alfa (r-hFSH) and urinary highly purified menopausal gonadotropin (hMG) based on data from a large German registry. Best Pract Res Clin Obstet Gynaecol. 2022; 85 (Pt B): 188-202.	Irrelevant research question;
Bülow, N. S., Dreyer Holt, M., Skouby, S. O., Birch Petersen, K., Englund, A. L. M., Pinborg, A. and Macklon, N. S. Co-treatment with letrozole during ovarian stimulation for IVF/ICSI: a systematic review and meta-analysis. Reprod Biomed Online. 2022; 44 (4): 717-736.	Pooled data from cohort studies and RCTs;
Canosa, S., Carosso, A. R., Mercaldo, N., Ruffa, A., Evangelista, F., Bongioanni, F., Benedetto, C., Revelli, A. and Gennarelli, G. Effect of rLH Supplementation during Controlled Ovarian Stimulation	Wrong study design;

for IVF: Evidence from a Retrospective Analysis of 1470 Poor/Suboptimal/Normal Responders Receiving Either rFSH plus rLH or rFSH Alone. J Clin Med. 2022; 11 (6):	
Cao, J. X. and Song, J. Y. Follitropin Alpha versus Follitropin Beta in IVF/ICSI Cycle: A Retrospective Cohort Study. Drug Des Devel Ther. 2024; 18 4359-4369.	Wrong study design;
Celiksoy, H. Y., Bastu, E., Balci, B. K., Yasa, C., Dural, O. and Buyru, F. Low Dose of Gonadotropin with Letrozole Versus High Dose of Gonadotropin in Patients with Poor Ovarian Response Undergoing Ivf: a Randomised, Single-Blind, Prospective Trial. Zeynep kamil tip bulteni. 2022; 51 (4): 221-225.	Irrelevant research question;
Chen, L. H., Chin, T. H., Huang, S. Y., Yu, H. T., Chang, C. L., Huang, H. Y., Wang, H. S., Soong, Y. K. and Wu, H. M. Supplementation with human menopausal gonadotropin in the gonadotropin-releasing hormone antagonist cycles of women with high AMH: Pregnancy outcomes and serial hormone levels. Taiwan J Obstet Gynecol. 2021; 60 (4): 739-744.	Wrong study design;
Chen, M. J., Yi, Y. C., Guu, H. F., Chen, Y. F., Kung, H. F., Chang, J. C., Chuan, S. T. and Chen, L. Y. A retrospective, matched case-control study of recombinant LH versus hMG supplementation on FSH during controlled ovarian hyperstimulation in the GnRH-antagonist protocol. Front Endocrinol (Lausanne). 2022; 13 931756.	Wrong study design;
Chua, S. J., Mol, B. W., Longobardi, S., Orvieto, R., Venetis, C. A., Lispi, M., Storr, A. and D'Hooghe, T. Biosimilar recombinant follitropin alfa preparations versus the reference product (Gonal-F®) in couples undergoing assisted reproductive technology treatment: a systematic review and meta-analysis. Reprod Biol Endocrinol. 2021; 19 (1): 51.	Replaced by a more recent systematic review;
Conforti, A., Esteves, S. C., Di Rella, F., Strina, I., De Rosa, P., Fiorenza, A., Zullo, F., De Placido, G. and Alviggi, C. The role of recombinant LH in women with hypo-response to controlled ovarian stimulation: a systematic review and meta-analysis. Reprod Biol Endocrinol. 2019; 17 (1): 18.	Includes 5 RCTs all with a different definition of 'hyporesponse';
D'Amato, G., Caringella, A. M., Stanziano, A., Cantatore, C., D'Amato, A., Cicinelli, E. and Vitagliano, A. Corifolitropin-Alfa plus Five Days Letrozole Versus Daily Recombinant-FSH in Expected Normo-Responder Patients: A Retrospective Comparative Study. Diagnostics (Basel). 2023; 13 (7):	Wrong study design;
Davar, R., Oskouian, H., Ahmadi, S. and Firouzabadi, R. D. GnRH antagonist/letrozole versus microdose GnRH agonist flare protocol in poor responders undergoing in vitro fertilization. Taiwan J Obstet Gynecol. 2010; 49 (3): 297-301.	Irrelevant research question;
De Mesmaeker, G., Calles, B. and Smith, J. A. Analysis of Nurse and Patient Preferences for Pre-Filled Pen Devices for Self-Injection of Highly Purified Human Menopausal Gonadotropin (HP-hMG, MENOPUR(®)). Patient Prefer Adherence. 2023; 17 1281-1292.	Wrong study design;
Duarte-Filho, O. B., Miyadahira, E. H., Matsumoto, L., Yamakami, L. Y. S., Tomioka, R. B. and Podgaec, S. Follitropin delta combined with menotropin in patients at risk for poor ovarian response during in vitro fertilization cycles: a prospective controlled clinical study. Reprod Biol Endocrinol. 2024; 22 (1): 7.	Wrong study design;
Errázuriz, J., Romito, A., Drakopoulos, P., Frederix, B., Racca, A., De Munck, N., Tournaye, H., De Vos, M. and Blockeel, C. Cumulative Live Birth Rates Following Stimulation With Corifollitropin Alfa Compared With hp-hMG in a GnRH Antagonist Protocol in Poor Ovarian Responders. Front Endocrinol (Lausanne). 2019; 10 175.	Wrong study design;
Ferreira, A. F., Pais, A. S., Sousa, A. P., Cortesão, P. and Almeida-Santos, T. Low responders may benefit from undergoing ovarian stimulation with a long GnRH agonist protocol with corifollitropin alfa followed by hMG. JBRA Assist Reprod. 2023;	Wrong study design;
Filicori, M., Cognigni, G. E., Gamberini, E., Parmegiani, L., Troilo, E. and Roset, B. Efficacy of low-dose human chorionic gonadotropin alone to complete controlled ovarian stimulation. Fertil Steril. 2005; 84 (2): 394-401.	Wrong study design;
Fischer, L., Chung, R. K., Kim, S. T., Flyckt, R. and Weinerman, R. Luteinizing hormone supplementation with human menopausal gonadotropin versus low dose human chorionic gonadotropin during ovarian stimulation does not affect live birth rates after fresh and frozen embryo transfer. J Obstet Gynaecol Res. 2024; 50 (10): 1935-1944.	Cohort study in the presence of higher quality evidence
Fusi, F. M., Zanga, L., Arnoldi, M., Melis, S., Cappato, M., Candeloro, I. and Di Pasqua, A. Corifollitropin alfa for poor responders patients, a prospective randomized study. Reprod Biol Endocrinol. 2020; 18 (1): 67.	Wrong study design;
Garcia-Velasco, J. A., Moreno, L., Pacheco, A., Guillén, A., Duque, L., Requena, A. and Pellicer, A. The aromatase inhibitor letrozole increases the concentration of intraovarian androgens and improves in vitro fertilization outcome in low responder patients: a pilot study. Fertil Steril. 2005; 84 (1): 82-7.	Included in a systematic review;
Gomaa, H., Casper, R. F., Esfandiari, N., Chang, P. and Bentov, Y. Addition of low dose hCG to rFSh benefits older women during ovarian stimulation for IVF. Reprod Biol Endocrinol. 2012; 10 55.	Wrong study design;

Gomes, M. K., Vieira, C. S., Moura, M. D., Manetta, L. A., Leite, S. P., Reis, R. M. and Ferriani, R. A. Controlled ovarian stimulation with exclusive FSH followed by stimulation with hCG alone, FSH alone or hMG. Eur J Obstet Gynecol Reprod Biol. 2007; 130 (1): 99-106.	Wrong comparator;
Grädel, F., von Wolff, M., Kohl Schwartz, A. S. and Mitter, V. R. Low-dose clomiphene citrate does not reduce implantation and live birth rates in otherwise unstimulated modified natural cycle IVF-retrospective cohort study. Arch Gynecol Obstet. 2023; 307 (4): 1073-1081.	Irrelevant research question;
Grynberg, M., Cedrin-Durnerin, I., Raguideau, F., Herquelot, E., Luciani, L., Porte, F., Verpillat, P., Helwig, C., Schwarze, J. E., Paillet, S., Castello-Bridoux, C., D'Hooghe, T. and Benchaïb, M. Comparative effectiveness of gonadotropins used for ovarian stimulation during assisted reproductive technologies (ART) in France: Areal-world observational study from the French nationwide claims database (SNDS). Best Pract Res Clin Obstet Gynaecol. 2023; 88 102308.	Wrong study design;
Hossein Rashidi, B., Sayyari, K., Heshmat, R., Amanpour, S., Shahrokh Tehraninejad, E., Masoumi, M. and Rezaei, F. Comparing a biosimilar follitropin alfa (Cinnal-f®) with Gonal-f® in women undergoing ovarian stimulation: An RCT. Int J Reprod Biomed. 2021; 19 (11): 1015-1024.	Included in a systematic review;
Hossein Rashidi, B., Shahrokh Tehraninejad, E., Amanpour, S., Bandarian, F. and Bandarian, M. The impact of letrozole on oocyte quality in assisted reproductive technology (ART); a randomized double-blind clinical trial. Gynecol Endocrinol. 2022; 38 (12): 1087-1092.	Retracted article;
Hu, L., Zhang, S., Quan, S., Lv, J., Qian, W., Huang, Y., Lu, W. and Sun, Y. Efficacy and safety of recombinant human follicle-stimulating hormone in patients undergoing in vitro fertilization-embryo transfer. Aging (Albany NY). 2020; 12 (6): 4918-4930.	Included in a systematic review;
Hu, Z., Zeng, R., Gao, R., Chen, M., Liu, X., Zhang, Q., Qin, L. and Zeng, X. Effects of different gonadotropin preparations in GnRH antagonist protocol for patients with polycystic ovary syndrome during IVF/ICSI: a retrospective cohort study. Front Endocrinol (Lausanne). 2024; 15 1309993.	Wrong study design;
Hua, L. and Wang, C. Recombinant-luteinzing hormone supplementation in women during IVF/ICSI cycles with GNRH-antagonist protocol: Asystematic review and meta-analysis. Eur J Obstet Gynecol Reprod Biol. 2023; 283 43-48.	Studies used in the meta-analysis are not cited;
Huang, C., Shen, X., Mei, J., Sun, Y., Sun, H. and Xing, J. Effect of recombinant LH supplementation timing on clinical pregnancy outcome in long-acting GnRHa downregulated cycles. BMC Pregnancy Childbirth. 2022; 22 (1): 632.	Wrong study design;
Iaconelli, C. A. R., Setti, A. S., Braga, Dpaf, Maldonado, L. G. L., Iaconelli, A., Jr., Borges, E., Jr. and Aoki, T. Concomitant use of FSH and low-dose recombinant hCG during the late follicular phase versus conventional controlled ovarian stimulation for intracytoplasmic sperm injection cycles. Hum Fertil (Camb). 2017; 20 (4): 285-292.	Wrong study design;
Ishihara, O., Klein, B. M. and Arce, J. C. Randomized, assessor-blind, antimüllerian hormone-stratified, dose-response trial in Japanese in vitro fertilization/intracytoplasmic sperm injection patients undergoing controlled ovarian stimulation with follitropin delta. Fertil Steril. 2021; 115 (6): 1478-1486.	More relevant for another question;
Ishihara, O., Nelson, S. M. and Arce, J. C. Comparison of ovarian response to follitropin delta in Japanese and White IVF/ICSI patients. Reprod Biomed Online. 2022; 44 (1): 177-184.	Irrelevant research question;
Ji, Z., Quan, X., Lan, Y., Zhao, M., Tian, X. and Yang, X. Gonadotropin versus Follicle-Stimulating Hormone for Ovarian Response in Patients Undergoing in vitro Fertilization: ARetrospective Cohort Comparison. Curr Ther Res Clin Exp. 2020; 92 100572.	Wrong study design;
Jiang, X., Jiang, S., Diao, H., Deng, K. and Zhang, C. Progestin-primed ovarian stimulation protocol with or without letrozole for patients with normal ovarian reserve: a retrospective cohort study. J Clin Pharm Ther. 2022; 47 (4): 469-476.	Wrong study design;
Kaçar, M. T., Biler, A., Köse, C., Şahin Güleç, E. and Demir, A. Letrozole as an adjunct treatment in antagonist cycles that previously failed in poor responders. Ginekol Pol. 2022; 93 (4): 267-272.	Wrong study design;
Kahraman, A. and Tulek, F. Effects of letrozole co-treatment on outcomes of gonadotropin-releasing hormone antagonist cycles in POSEIDON groups 3 and 4 expected poor responders. Arch Gynecol Obstet. 2022; 306 (4): 1313-1319.	Wrong study design;
Kan, O., Simsir, C., Atabekoglu, C. S. and Sonmezer, M. The impact of adding hp-hMG in r-FSH started GnRH antagonist cycles on ARToutcome. Gynecol Endocrinol. 2019; 35 (10): 869-872.	Wrong study design;
Kaplan, S., Levy-Toledano, R., Davies, M., Roy, D., Howles, C. M. and Lass, A. Safety of Ovaleap® (Follitropin Alfa) in Infertile Women Undergoing Superovulation for Assisted Reproductive Technologies: AMultinational Comparative, Prospective Cohort Study. Front Endocrinol (Lausanne). 2021; 12 632674.	Wrong study design;
Khojah, M., Khayat, S. and Dahan, M. H. Comparison of in vitro fertilization cycles stimulated with 20 mg letrozole daily versus high-dose gonadotropins in Rotterdam Consensus ultra-poor responders: Aproof of concept. Int J Gynaecol Obstet. 2022; 156 (1): 102-106.	Irrelevant research question;

Kiose, K. I., Storr, A., Kolibianakis, E. M., Mol, B. W. and Venetis, C. A. Biosimilars versus the originator of follitropin alfa for ovarian stimulation in ART: a systematic review and meta-analysis. Hum Reprod. 2025; 40 (2): 343-359.	Wrong comparator;
Kirshenbaum, M., Gil, O., Haas, J., Nahum, R., Zilberberg, E., Lebovitz, O. and Orvieto, R. Recombinant follicular stimulating hormone plus recombinant luteinizing hormone versus human menopausal gonadotropins- does the source of LH bioactivity affect ovarian stimulation outcome? Reprod Biol Endocrinol. 2021; 19 (1): 182.	Wrong study design;
Koloda, Y., Korsak, V., Rozenson, O., Anshina, M., Sagamonova, K., Baranov, I., Yakovenko, S., D'Hooghe, T., Ershova, A. and Lispi, M. Use of a recombinant human follicle-stimulating hormone:recombinant human luteinizing hormone (r-hFSH:r-hLH) 2:1 combination for controlled ovarian stimulation during assisted reproductive technology treatment: Areal-world study of routine practice in the Russian Federation. Best Pract Res Clin Obstet Gynaecol. 2022; 85 (Pt B): 134-148.	Wrong study design;
Komiya, S., Watanabe, J., Terayama, T., Kamijo, K. and Okada, H. Efficacy and safety of follitropin delta versus follitropin alpha/beta in infertility treatment: Asystematic review and meta-analysis. Reprod Med Biol. 2024; 23 (1): e12573.	More comprehensive systematic review available;
Kovacs, P., Jayakumaran, J., Lu, Y. and Lindheim, S. R. Comparing pregnancy rates following ovarian stimulation with follitropin-Δ to follitropin -α in routine IVF: Aretrospective analysis. Eur J Obstet Gynecol Reprod Biol. 2023; 280 22-27.	Wrong study design;
Kurji, H. A., Al Khames Aga, Q. A., Al-Taie, M. J. M., Bataineh, Y. A., Hasan, M. K., Abdulkareem, A. H. and Ismael, N. S. Efficacy of follitropin-a (Gonal-f) versus follitropin-b (puregon) for controlled ovarian stimulation in women undergoing in vitro fertilization (ivf). International journal of pharmaceutical quality assurance. 2019; 10 (4): 681-685.	Wrong study design;
Lehmann, M., Arbo, E., Pouly, J. L., Barrière, P., Boland, L. A., Bean, S. G. and Jenkins, J. Determining the cost-effectiveness of follitropin alfa biosimilar compared to follitropin alfa originator in women undergoing fertility treatment in France. Eur J Obstet Gynecol Reprod Biol X. 2024; 22 100311.	Cohort study in the presence of higher quality evidence
Levi-Setti, P. E., Zerbetto, I., Baggiani, A., Zannoni, E., Sacchi, L., Smeraldi, A., Morenghi, E., De Cesare, R., Drovanti, A. and Santi, D. An Observational Retrospective Cohort Trial on 4,828 IVF Cycles Evaluating Different Low Prognosis Patients Following the POSEIDON Criteria. Front Endocrinol (Lausanne). 2019; 10 282.	Wrong study design;
Liang, Y., Guo, Q., Wu, X. H., Zhang, L. N., Ge, J., Xu, M. L., Feng, Z. L. and Wu, X. Q. Does the additional use of clomiphene citrate or letrozole for in vitro fertilization deserve more attention? BMC Pregnancy Childbirth. 2021; 21 (1): 275.	Irrelevant research question;
Liang, Y., Hou, X., Chen, H., Yang, R., Wang, R., Mao, R., Zhao, J., Chen, H. and Cheng, J. Assisted Reproductive Technology Outcomes in Women with Normal Ovarian Response Receiving Recombinant Luteinizing Hormone/Human Menopausal Gonadotropin: An Observational Study. Int J Womens Health. 2024; 16 1103-1111.	Cohort study in the presence of higher quality evidence
Lim, L. J., Kit, A. M. F. and Wong, P. S. Clinical outcomes of ovarian stimulation with follitropin delta in a mixed regimen with HP-hMG: a real-world retrospective analysise. Med J Malaysia. 2024; 79 (3): 275-280.	Cohort study in the presence of higher quality evidence
Lin, J., Wu, F., Wang, B., Zhu, Q. and Lin, J. Impact of letrozole co-treatment in an antagonist protocol for IVF/ICSI: a retrospective study. Reprod Biol Endocrinol. 2024; 22 (1): 126.	Cohort study in the presence of higher quality evidence
Lin, J., Wu, F., Zhu, Y., Wang, B., Cao, Z. and Lin, J. Letrozole co-treatment in an antagonist protocol for overweight women undergoing IVF treatment: a retrospective study. BMC Pregnancy Childbirth. 2024; 24 (1): 592.	Wrong study design;
Lin, J., Wu, F., Zhu, Y., Zhu, Q., Du, T. and Lin, J. The Efficacy of Letrozole Co-Treatment in an Antagonist Protocol for Women with Polycystic Ovary Syndrome Undergoing IVF: ARetrospective Study. Drug Des Devel Ther. 2024; 18 2823-2835.	Cohort study in the presence of higher quality evidence
Liu, A., Li, J., Shen, H., Zhang, L., Li, Q. and Zhang, X. Progestin-primed ovarian stimulation protocol with or without clomiphene citrate for poor ovarian responders: a retrospective cohort study. BMC Womens Health. 2022; 22 (1): 527.	Wrong study design;
Liu, S., Liu, X., Li, H., Liu, M., Lv, Y. and Li, Y. Clomiphene citrate priming increases sensitivity during ovarian stimulation in poor ovarian responders undergoing in vitro fertilization treatment: a retrospective cohort study. Hum Fertil (Camb). 2023; 26 (5): 1080-1086.	Wrong study design;
Liu, Y., Lin, J., Chen, L., Mao, X., Wang, L., Chen, Q., Yu, S. and Kuang, Y. Letrozole cotreatment with progestin-primed ovarian stimulation in women with polycystic ovary syndrome undergoing IVF treatment. Front Physiol. 2022; 13 965210.	Wrong study design;
Ma, J., Wang, M., Zuo, Q., Ma, H. and Wu, S. Analysis of use of different rFSHs during IVF/ICSI-assisted conception in elderly population and effect of double trigger on clinical outcomes. J Matern Fetal Neonatal Med. 2024; 37 (1): 2352790.	Cohort study in the presence of higher quality evidence

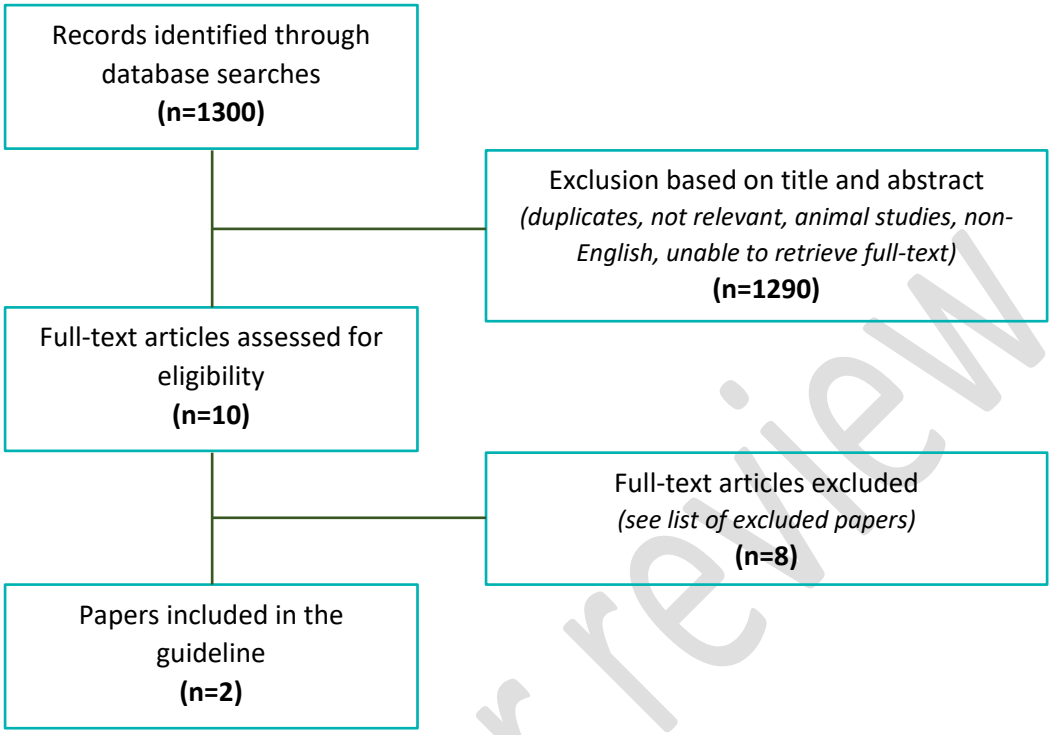
Maghraby, H. A., Agameya, A. F. M., Swelam, M. S., El Dabah, N. A. and Ahmed, O. Y. Consecutive versus concomitant follicle-stimulating hormone and highly purified human menopausal gonadotropin: A milder response but better quality. Clin Exp Reprod Med. 2022; 49 (2): 135-141.	Wrong study design;
Martins, Cmrb, Ruivo, Pcpfgc, Vaz-Oliani, D. C. M., Martins, R. A. S. and Oliani, A. H. Evaluation of Protocols of Controlled Ovarian Stimulation in Obtaining Mature Oocytes (MII): Retrospective Study on Assisted Reproductive Technology Procedures. JBRA Assist Reprod. 2022; 26 (3): 387-397.	Wrong study design;
Matorras, R., Aspichueta, F., Prieto, B., Mendoza, R., Malaina, I., Corral, B., Crisol, L., Vendrell, A. and Exposito, A. Comparison of the Administration of 150 or 75 IU of Recombinant LH in Agonist ICSI Cycles Stimulated with Recombinant FSH in Women Aged 35-39: a Comparative Study. Journal of Reproduction and Infertility. 2023; 24 (4): 269-278.	Wrong study design;
Mehrabian, F., Ataie-Khorasgani, M., Ghadimi, K., Naghshineh, E. and Mohammadi, S. The effects of letrozole+gnrh antagonist versus mere gnrh antagonist during ivf in patients with poor ovarian response. Int J Clin Exp Med. 2021; 14 (6): 2010-2015.	Wrong outcomes;
Mendret-Pellerin, S., Leperlier, F., Reignier, A., Lefebvre, T., Barrière, P. and Fréour, T. A pilot study comparing corifollitropin alfa associated with hp-HMG versus high dose rFSH antagonist protocols for ovarian stimulation in poor responders. Hum Fertil (Camb). 2020; 23 (2): 93-100.	Wrong study design;
Moffat, R., Hansali, C., Schoetzau, A., Ahler, A., Gobrecht, U., Beutler, S., Raggi, A., Sartorius, G. and De Geyter, C. Randomised controlled trial on the effect of clomiphene citrate and gonadotropin dose on ovarian response markers and IVF outcomes in poor responders. Hum Reprod. 2021; 36 (4): 987-997.	Irrelevant research question;
Moini, A., Lavasani, Z., Kashani, L., Mojtahedi, M. F. and Yamini, N. Letrozole as co-treatment agent in ovarian stimulation antagonist protocol in poor responders: A double-blind randomized clinical trial. Int J Reprod Biomed. 2019; 17 (9): 653-660.	Included in a systematic review;
Motta, E. L., Smith, G. D., Serafini, P. C., Coslovsky, M., Hassun, P., Rocha, A. M. and Yadid, I. Human choriogonadotropin prior to controlled ovarian stimulation and in vitro fertilization improves implantation, and pregnancy rates. J Assist Reprod Genet. 2009; 26 (6): 305-11.	Wrong study design;
Ob'edkova, K. V., Kogan, I. Y., Muller, V. C., Tapilskaya, N. I., Krikhely, I. O., Dzhemlikhanova, L. K., Abdulkadirova, Z. K., Mekina, I. D., Lesik, E. A., Komarova, E. A., Ishchuk, M. A. and Gzgzian, A. M. IVF protocol efficacy in women with expected suboptimal response depending on ovary stimulation mode. Gynecol Endocrinol. 2021; 37 (sup1): 44-48.	Wrong study design;
Orvieto, R. HMG versus recombinant FSH plus recombinant LH in ovarian stimulation for IVF: does the source of LH preparation matter? Reprod Biomed Online. 2019; 39 (6): 1001-1006.	Narrative review;
Ozmen, B., Sönmezer, M., Atabekoglu, C. S. and Olmus, H. Use of aromatase inhibitors in poor-responder patients receiving GnRH antagonist protocols. Reprod Biomed Online. 2009; 19 (4): 478-85.	Included in a systematic review;
Palomba, S., Caserta, D., Levi-Setti, P. E. and Busnelli, A. Efficacy and safety of follitropin delta for ovarian stimulation in vitro fertilization/ intracytoplasmic sperm injection cycles: a systematic review with meta-analysis. J Ovarian Res. 2024; 17 (1): 60.	Wrong comparator;
Pan, W., Tu, H., Jin, L., Hu, C., Xiong, J., Pan, W., Yu, D., Wang, R., Li, Y., Huang, W. and Liao, S. Comparison of recombinant and urinary follicle-stimulating hormones over 2000 gonadotropin-releasing hormone antagonist cycles: a retrospective study. Sci Rep. 2019; 9 (1): 5329.	Wrong study design;
Partsinevelos, G. A., Antonakopoulos, N., Kallianidis, K., Drakakis, P., Anagnostou, E., Bletsa, R. and Loutradis, D. Addition of low-dose hCG to rFSH during ovarian stimulation for IVF/ICSI: is it beneficial? Clin Exp Obstet Gynecol. 2016; 43 (6): 818-825.	Wrong study design;
Pasqualini, A., Ruhlmann, C., Botti, G. A., Estofán, D. E., Pasqualini, S., Inciarte, F., Ruhlmann, F., Lopez, C., Palena, C., Klimovsky, E., Federico, A., Gonzalez, E., Cordeiro, L. and Lago, N. Efficacy, safety, and immunogenicity of a biosimilar recombinant human follicle-stimulating hormone (Folitime®) vs. Gonal-f® in women undergoing ovarian stimulation for IVF: A randomized, multicenter, evaluator-blinded, non-inferiority study. JBRA Assist Reprod. 2021; 25 (4): 524-532.	Included in a systematic review;
Porcu-Buisson, G., Maignien, C., Swierkowski-Blanchard, N., Rongières, C., Ranisavljevic, N., Oger, P., Decanter, C., Hocké, C., Bry-Gauillard, H., Grynberg, M., Barrière, P., Bernot, M. and Guivarc'h-Levêque, A. Prospective multicenter observational real-world study to assess the use, efficacy and safety profile of follitropin delta during IVF/ICSI procedures (DELTA Study). Eur J Obstet Gynecol Reprod Biol. 2024; 293 21-26.	Wrong study design;
Propst, A. M., Hill, M. J., Bates, G. W., Palumbo, M., Van Horne, A. K. and Retzloff, M. G. Low-dose human chorionic gonadotropin may improve in vitro fertilization cycle outcomes in patients with low luteinizing hormone levels after gonadotropin-releasing hormone antagonist administration. Fertil Steril. 2011; 96 (4): 898-904.	Wrong study design;
Pundir, J., Achilli, C., Bhide, P., Sabatini, L., Legro, R. S., Rombauts, L., Teede, H., Coomarasamy, A., Zamora, J. and Thangaratinam, S. Risk of foetal harm with letrozole use in fertility treatment: a systematic review and meta-analysis. Hum Reprod Update. 2021; 27 (3): 474-485.	Irrelevant research question;

Rettenbacher, M., Andersen, A. N. and Garcia-Velasco, J. A. Amulti-centre phase 3 study comparing efficacy and safety of Bemfola®versus gonal-F®in women undergoing ovarian stimulation for IVF. Reproductive endocrinology. 2021; (58): 118-124.	non-English;
Robins, J. C., Khair, A. F., Widra, E. A., Alper, M. M., Nelson, W. W., Foster, E. D., Sinha, A., Ando, M., Heiser, P. W. and Daftary, G. S. Economic evaluation of highly purified human menotropin or recombinant follicle-stimulating hormone for controlled ovarian stimulation in high-responder patients: analysis of the Menopur in Gonadotropin-releasing Hormone Antagonist Single Embryo Transfer-High Responder (MEGASET-HR) trial. F S Rep. 2020; 1 (3): 257-263.	Irrelevant research question;
Schwarze, J. E., Venetis, C., Iniesta, S., Falla, E., Lukyanov, V., de Agustin Calvo, E., T, D. Hooghe, Roeder, C. and Matorras, R. Originator recombinant human follitropin alfa versus recombinant human follitropin alfa biosimilars in Spain: Acost-effectiveness analysis of assisted reproductive technology related to fresh embryo transfers. Best Pract Res Clin Obstet Gynaecol. 2022; 85 (Pt B): 203-216.	Irrelevant research question;
Setti, A., Braga, D., Iaconelli, A., Jr. and Borges, E., Jr. Ovarian stimulation with luteinizing hormone supplementation: the impact of timing on ovarian response and ICSI outcomes. JBRA Assist Reprod. 2023; 27 (2): 215-221.	Wrong study design;
Shapira, M., Orvieto, R., Lebovitz, O., Nahum, R., Aizer, A., Segev-Zahav, A. and Haas, J. Does daily co administration of gonadotropins and letrozole during the ovarian stimulation improve IVF outcome for poor and sub optimal responders? J Ovarian Res. 2020; 13 (1): 66.	Wrong study design;
Šprem Goldštajn, M., Dumančić, S. and Mikuš, M. Retrospective analysis of the use of two recombinant follitropin alfa injections in patients undergoing in vitro fertilization treatment with the gonadotropin-releasing hormone antagonist protocol. J Obstet Gynaecol Res. 2021; 47 (3): 992-1001.	Wrong study design;
Stoev, S., Getov, I., Timeva, T., Naseva, E. K., Lebanova, H. and Petkova, B. Study of clinical experience with different approaches to controlled ovarian hyperstimulation: a focus on safety and efficacy. Eur J Hosp Pharm. 2021; 28 (1): 33-37.	Wrong study design;
Sun, N., Sun, P. P., Bian, J., Zhang, Y. M. and Ma, H. G. Effectiveness of letrozole in pituitary downregulated normogonadotrophic young women with an initial poor response. Medicine (Baltimore). 2023; 102 (15): e33510.	Wrong study design;
Sydow, P., Gmeinwieser, N., Pribbernow, K., Keck, C. and Wiegratz, I. Effectiveness and safety of follitropin alfa (Ovaleap®) for ovarian stimulation using a GnRH antagonist protocol in real-world clinical practice: a multicenter, prospective, open, non-interventional assisted reproductive technology study. Reprod Biol Endocrinol. 2020; 18 (1): 54.	Wrong study design;
Theofanakis, C., Athanasiou, V., Liokari, E., Stavrou, S., Sakellariou, M., Athanassiou, A. I., Athanassiou, A., Drakakis, P. and Loutradis, D. The impact of HCG in IVF Treatment: Does it depend on age or on protocol? J Gynecol Obstet Hum Reprod. 2019; 48 (5): 341-345.	Wrong study design;
Triantafyllidou, O., Sigalos, G., Gkoles, L., Kastora, S., Vakas, P., Batsiou, E. and Vlahos, N. The addition of clomiphene citrate to ovarian stimulation protocols for poor responders. Eur J Obstet Gynecol Reprod Biol. 2020; 251 136-140.	Wrong study design;
Van den Haute, L., Drakopoulos, P., Verheyen, G., De Vos, M., Tournaye, H. and Blockeel, C. Follitropin alpha versus beta in a first GnRH antagonist ICSI cycle: a retrospective cohort study. Reprod Biomed Online. 2021; 43 (4): 655-662.	Wrong study design;
Van Horne, A. K., Bates, G. W., Jr., Robinson, R. D., Arthur, N. J. and Propst, A. M. Recombinant follicle-stimulating hormone (rFSH) supplemented with low-dose human chorionic gonadotropin compared with rFSH alone for ovarian stimulation for in vitro fertilization. Fertil Steril. 2007; 88 (4): 1010-3.	Wrong study design;
Varlı, B., Şükür, Y. E., Özdemir, EÜ, Özmen, B., Sönmezer, M., Berker, B., Atabekoğlu, C. and Aytaç, R. Evaluation of the Impact of Letrozole in Combination with the GnRH Antagonist Ovarian Stimulation Protocol in Patients Expected to Have a Poor Ovarian Response (POSEIDON Groups 3 and 4). Medicina (Kaunas). 2024; 60 (3):	Cohort study in the presence of higher quality evidence
Wang, M., Huang, R., Liang, X., Mao, Y., Shi, W. and Li, Q. Recombinant LH supplementation improves cumulative live birth rates in the GnRH antagonist protocol: a multicenter retrospective study using a propensity score-matching analysis. Reprod Biol Endocrinol. 2022; 20 (1): 114.	Wrong study design;
Wang, Y., Li, L., Deng, K., Liu, J., Liu, Y., Zou, K., Hao, G. and Sun, X. Comparison of the combination of recombinant follicle-stimulating hormone and recombinant luteinizing hormone protocol versus human menopausal gonadotropin protocol in controlled ovarian stimulation: A systematic review and meta-analysis. J Evid Based Med. 2020; 13 (3): 215-226.	Only 1 relevant RCT included ;
Xia, X., Shi, Y., Geng, L., Liu, D., Hou, Z., Lin, H., Li, R., Wang, H., Tao, L., Meng, F., Da, J., Chen, Y., Qiao, J., Qian, W. and Li, H. Acohort study of both human menopausal gonadotropin (HMG) and recombinant luteinizing hormone addition at early follicular stage in in vitro fertilization outcome: A STROBE-compliant study. Medicine (Baltimore). 2019; 98 (19): e15512.	Wrong study design;

Xu, H., Chen, Q., Tian, J., Chen, X, Zhang, X, Li, X, Wu, Y., Zhang, C. and Zhang, Y. Effect of the degree of follicular diameter ≥18mm differentiation on the day of hCG administration to the outcome of controlled ovarian hyperstimulation (COH). Front Endocrinol (Lausanne). 2024; 15 1414213.	Wrong intervention;
Xue, W., Lloyd, A., Falla, E., Roeder, C., Papsch, R. and Bühler, K. Acost-effectiveness evaluation of the originator follitropin alpha compared to the biosimilars for assisted reproduction in Germany. Int J Womens Health. 2019; 11 319-331.	Irrelevant research question;
Yang, C., Dong, N., Li, F., Ji, Y., Pan, Y. and She, H. The cumulative live birth rate of recombinant follicle-stimulating hormone alfa verse urinary human follicle-stimulating hormone for ovarian stimulation in assisted reproductive technology cycles. J Ovarian Res. 2022; 15 (1): 74.	Wrong study design;
Yetkinel, S., Aytaç, PÇ, Durdağ, G. D., Yağınç, D. A., Kılıçdağ, E. B. and Şimşek, E. Comparison of highly purified human menopausal gonadotropin and recombinant follicle stimulating hormone use in patients undergoing in vitro fertilization with progestin-primed ovarian stimulation protocol: a single center retrospective analysis. Arch Gynecol Obstet. 2024; 310 (5): 2657-2662.	Wrong study design;
Yu, Y., Zhang, Q., Sun, K., Xiu, Y., Wang, X, Wang, K and Yan, L. The therapeutic effects of rFSH versus uFSH/uHMG on ovarian stimulation in women undergoing assisted reproductive technology: a meta-analysis of randomized controlled trials. Arch Gynecol Obstet. 2023;	Wrong comparator;
Yu, Y., Zhang, Q., Sun, K., Xiu, Y., Wang, X, Wang, K and Yan, L. The therapeutic effects of rFSH versus uFSH/uHMG on ovarian stimulation in women undergoing assisted reproductive technology: a meta-analysis of randomized controlled trials. Arch Gynecol Obstet. 2024; 309 (6): 2529-2555.	Wrong comparator;
Zahiri Sorouri, Z., Pourmarzi, D. and Safar Khah, N. Corifollitropin- α compared to daily r-FSH in for patients undergoing intracytoplasmic sperm injection: Clinical trial study. Int J Reprod Biomed. 2019; 17 (1): 23-32.	Wrong study design;
Zhang, C., Wu, F., Wu, Z., Sun, B., Chen, C. and Qian, W. Early Follicular Phase Human Chorionic Gonadotropin Addition May Improve the Outcomes of In Vitro Fertilization/Intracytoplasmic Sperm Injection in Patients With "Unpredictable" Poor Response to Gonadotropin-Releasing Hormone Antagonist Protocol. Front Endocrinol (Lausanne). 2021; 12 739773.	Wrong study design;
Zhang, S., Gao, F., Fu, M., Shen, H., Wang, Y. and Han, H. Effects of letrozole co-treatment on the cumulative live-birth rate among normal responders in gonadotropin-releasing hormone antagonist cycles. Front Med (Lausanne). 2022; 9 1070583.	Wrong study design;
Zhang, X. Q., Zhang, L. J., Zhu, X. L., Xu, H., Luo, Y. Q., Yao, L., Huang, Q. W., Nong, Y. Q., Liu, W. J. and Liu, F. H. The Clinical Efficacy of Three Different Follicle-Stimulating Hormones for Follicle Growth and Development in Long-Protocol Controlled Ovarian Hyperstimulation Treatment. Drug Des Devel Ther. 2021; 15 3573-3580.	Wrong study design;

7. Is adjustment of the gonadotropin dosage during the stimulation phase meaningful in terms of efficacy and safety?

Flowchart

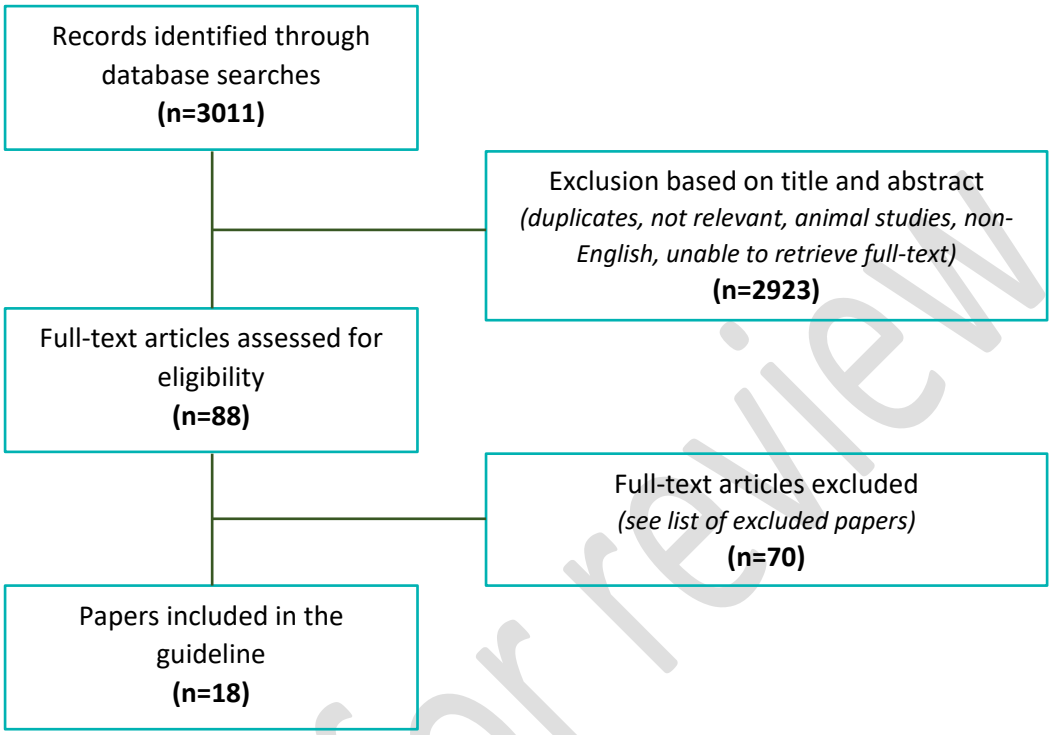


List of excluded papers

	Exclusion criterion
Bissonnette, F., Minano Masip, J., Kadoch, I. J., Librach, C., Sampalis, J. and Yuzpe, A. Individualized ovarian stimulation for in vitro fertilization: a multicenter, open label, exploratory study with a mixed protocol of follitropin delta and highly purified human menopausal gonadotropin. Fertil Steril. 2021; 115 (4): 991-1000.	Wrong comparator;
Choi, B. C., Zhou, C., Ye, H., Sun, Y., Zhong, Y., Gong, F., Sini, I., Abramova, N., Longobardi, S., Hickey, M. and D'Hooghe, T. A comparative, observational study evaluating dosing characteristics and ovarian response using the recombinant human follicle-stimulating hormone pen injector with small-dose dial in assisted reproductive technologies treatment in Asia: IMPROVE study. Reprod Biol Endocrinol. 2022; 20 (1): 15.	Wrong comparator;
Fatemi, H., Bilger, W., Denis, D., Griesinger, G., La Marca, A., Longobardi, S., Mahony, M., Yin, X. and D'Hooghe, T. Dose adjustment of follicle-stimulating hormone (FSH) during ovarian stimulation as part of medically-assisted reproduction in clinical studies: a systematic review covering 10 years (2007-2017). Reprod Biol Endocrinol. 2021; 19 (1): 68.	Systematic review without meta-analysis;
Hu, L., Sun, B., Ma, Y., Li, L., Wang, F., Shi, H. and Sun, Y. The Relationship Between Serum Delta FSH Level and Ovarian Response in IVF/ICSI Cycles. Front Endocrinol (Lausanne). 2020; 11 536100.	Wrong comparator;
Ishihara, O. and Arce, J. C. Individualized follitropin delta dosing reduces OHSS risk in Japanese IVF/ICSI patients: a randomized controlled trial. Reprod Biomed Online. 2021; 42 (5): 909-918.	Wrong comparator;
Mahony, M. C., Hayward, B., Mottla, G. L., Richter, K. S., Beall, S., Ball, G. D. and D'Hooghe, T. Recombinant Human Follicle-Stimulating Hormone Alfa Dose Adjustment in US Clinical Practice: An Observational, Retrospective Analysis of a Real-World Electronic Medical Records Database. Front Endocrinol (Lausanne). 2021; 12 742089.	Wrong outcomes;
Ou, Z., Du, J., Liu, N., Li, J. and Lin, X. Effects of reduced follicle-stimulating hormone dosage before human chorionic gonadotropin trigger on in vitro fertilization outcomes. BMC Pregnancy Childbirth. 2023; 23 (1): 612.	CS in the presence of higher quality evidence;
Qiao, J., Zhang, Y., Liang, X., Ho, T., Huang, H. Y., Kim, S. H., Goethberg, M., Mannaerts, B. and Arce, J. C. A randomised controlled trial to clinically validate follitropin delta in its individualised dosing regimen for ovarian stimulation in Asian IVF/ICSI patients. Hum Reprod. 2021; 36 (9): 2452-2462.	Wrong comparator;

8. Is the addition of adjuncts in ovarian stimulation meaningful in terms of efficacy and safety?

Flowchart



List of excluded papers

	Exclusion criterion
Aflatoonain, A., Saeed, L. and Hosseinisadat, R. The effect of androgen administration on in vitro fertilization outcome in poor responders undergoing ovarian stimulation with microdose protocol: Arandomized clinical trial. Eur J Obstet Gynecol Reprod Biol. 2022; 279 72-76.	Wrong comparator;
Akbari Sene, A., Tabatabaie, A., Nikniaz, H., Alizadeh, A., Sheibani, K., Mortezapour Alisaraie, M., Tabatabaie, M., Ashrafi, M. and Amjadi, F. The myo-inositol effect on the oocyte quality and fertilization rate among women with polycystic ovary syndrome undergoing assisted reproductive technology cycles: a randomized clinical trial. Arch Gynecol Obstet. 2019; 299 (6): 1701-1707.	Wrong outcomes;
Al-Jeborry, M. M. Efficacy of transdermal testosterone in assisted reproduction outcome of poor responders. Annals of tropical medicine and public health. 2019; 22 (9):	Included in systematic review
Arhin, S. K., Zhao, Y., Lu, X., Chetry, M. and Lu, J. Effect of micronutrient supplementation on IVF outcomes: a systematic review of the literature. Reprod Biomed Online. 2017; 35 (6): 715-722.	Wrong intervention;
Artini, P. G., Obino, M. E. R., Micelli, E., Malacarne, E., Vacca, C., Papini, F. and Cela, V. Effect of d-chiro-inositol and alpha-lipoic acid combination on COH outcomes in overweight/obese PCOS women. Gynecol Endocrinol. 2020; 36 (9): 755-759.	Wrong study design;
Batıoğlu, A. S., Sahin, U., Gürlek, B., Oztürk, N. and Unsal, E. The efficacy of melatonin administration on oocyte quality. Gynecol Endocrinol. 2012; 28 (2): 91-3.	Wrong intervention;
Cai, M. H., Liang, X. Y., Wu, Y. Q., Huang, R. and Yang, X. Six-week pretreatment with growth hormone improves clinical outcomes of poor ovarian responders undergoing in vitro fertilization treatment: Aself-controlled clinical study. J Obstet Gynaecol Res. 2019; 45 (2): 376-381.	Wrong study design;
Caprio, F., D'Eufemia, M. D., Trotta, C., Campitiello, M. R., Ianniello, R., Mele, D. and Colacurci, N. Myo-inositol therapy for poor-responders during IVF: a prospective controlled observational trial. J Ovarian Res. 2015; 8 37.	Wrong study design;
Choe, S. A., Kim, M. J., Lee, H. J., Kim, J., Chang, E. M., Kim, J. W., Park, H. M., Lyu, S. W., Lee, W. S., Yoon, T. K. and et al. Increased proportion of mature oocytes with sustained-release growth hormone treatment in poor responders: a prospective randomized controlled study. Arch Gynecol Obstet. 2018; 297 (3): 791-796.	Included in systematic review;
Cozzolino, M., Cecchino, G. N., Troiano, G. and Romanelli, C. Growth hormone cotreatment for poor responders undergoing in vitro fertilization cycles: a systematic review and meta-analysis. Fertil Steril. 2020; 114 (1): 97-109.	Replaced by a more recent systematic review;
Dakhly, D. M. R., Bassiouny, Y. A., Bayoumi, Y. A., Hassan, M. A., Gouda, H. M. and Hassan, A. A. The addition of growth hormone adjuvant therapy to the long down regulation protocol in poor responders undergoing in vitro fertilization: randomized control trial. Eur J Obstet Gynecol Reprod Biol. 2018; 228 161-165.	Included in systematic review;
Elgindy, E. A., El-Huseiny, A. M., Mostafa, M. I., Gaballah, A. M. and Ahmed, T. A. N-acetyl cysteine: could it be an effective adjuvant therapy in ICSI cycles? Apreliminary study. Reprod Biomed Online. 2010; 20 (6): 789-96.	Wrong intervention;
Elprince, M., Kishk, E. A., Metawie, O. M. and Albiely, M. M. Ovarian stimulation after dehydroepiandrosterone supplementation in poor ovarian reserve: a randomized clinical trial. Arch Gynecol Obstet. 2020; 302 (2): 529-534.	Included in systematic review;
Fatemi, F., Mohammadzadeh, A., Sadeghi, M. R., Akhondi, M. M., Mohammadmoradi, S., Kamali, K., Lackpour, N., Jouhari, S., Zafadoust, S., Mokhtar, S. and Giahi, L. Role of vitamin E and D(3) supplementation in Intra-Cytoplasmic Sperm Injection outcomes of women with polycystic ovarian syndrome: Adouble blinded randomized placebo-controlled trial. Clin Nutr ESPEN. 2017; 18 23-30.	Wrong intervention;
Feng, Q., Wang, Y., Han, H. and Shen, H. Effect of growth hormone administration on ameliorating pregnancy outcome in women with advanced maternal age and exploration of its optimized utilization. Front Endocrinol (Lausanne). 2023; 14 1270897.	Wrong study design;
Gerli, S., Della Morte, C., Ceccobelli, M., Mariani, M., Favilli, A., Leonardi, L., Lanti, A., Iannitti, R. G. and Fioretti, B. Biological and clinical effects of a resveratrol-based multivitamin supplement on intracytoplasmic sperm injection cycles: a single-center, randomized controlled trial. J Matern Fetal Neonatal Med. 2022; 35 (25): 7640-7648.	Wrong intervention;
Gopinath, M., Khadijah, I. S., Ruhaima, R., Nuguelis, R. and Mukhri, H. The impact of oral multinutrient supplementation on in vitro fertilisation or intracytoplasmic sperm injection outcomes: Aprospective controlled study. Med J Malaysia. 2024; 79 (6): 715-720.	Wrong study design;
Hoang, Q. H., Ho, H. S., Do, H. T., Nguyen, T. V., Nguyen, H. P. and Le, M. T. Therapeutic effect of prolonged testosterone pretreatment in women with poor ovarian response: Arandomized control trial. Reprod Med Biol. 2021; 20 (3): 305-312.	Included in systematic review;

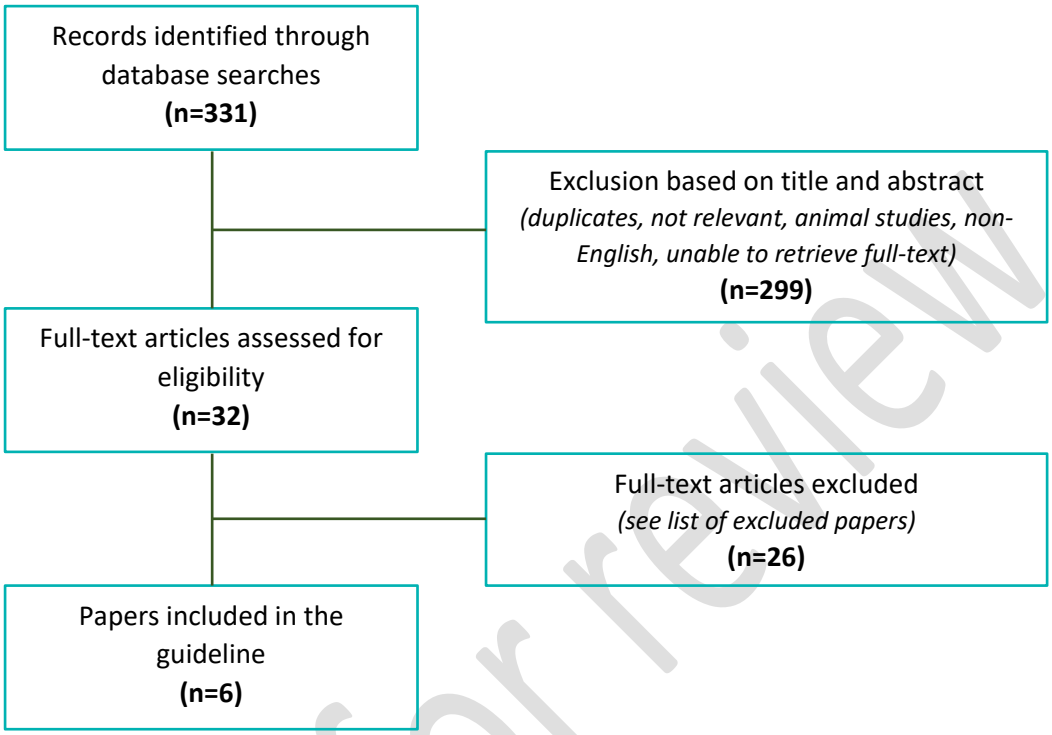
Katsika, E. T., Bosdou, J. K., Goulis, D. G., Grimbizis, G. F. and Kolibianakis, E. M. Higher live birth rate following transdermal testosterone pretreatment in poor responders: a systematic review and meta-analysis. Reprod Biomed Online. 2023; 46 (1): 81-91.	Replaced by a more recent systematic review;
Katyal, G., Kaur, G., Ashraf, H., Bodapati, A., Hanif, A., Okafor, D. K. and Khan, S. Systematic Review of the roles of Inositol and Vitamin D in improving fertility among patients with Polycystic Ovary Syndrome. Clin Exp Reprod Med. 2024; 51 (3): 181-191.	Systematic review without meta-analysis;
Keane, K. N., Ye, Y., Hinchliffe, P. M., Regan, S. L., Dhaliwal, S. S. and Yovich, J. L. Live birth outcomes of vitrified embryos generated under growth hormone stimulation are improved for women categorized as poor-prognosis. Clin Exp Reprod Med. 2019; 46 (4): 178-188.	Wrong study design;
Lee, Y. X., Shen, M. S. and Tzeng, C. R. Low Dose Growth Hormone Adjuvant Treatment With Ultra-Long Ovarian Stimulation Protocol in Poor Responders Showed Non-inferior Pregnancy Outcome Compared With Normal Responders. Front Endocrinol (Lausanne). 2019; 10 892.	Included in systematic review;
Li, X., Celotto, S., Pizzol, D., Gasevic, D., Ji, M. M., Barnini, T., Solmi, M., Stubbs, B., Smith, L., López Sánchez, G. F., Pesolillo, G., Yu, Z., Tzoulaki, I., Theodoratou, E., Ioannidis, J. P. A., Veronese, N. and Demurtas, J. Metformin and health outcomes: An umbrella review of systematic reviews with meta-analyses. Eur J Clin Invest. 2021; 51 (7): e13536.	Wrong outcomes;
Li, X., Wang, Z., Wang, H., Xu, H., Sheng, Y. and Lian, F. Role of N-acetylcysteine treatment in women with advanced age undergoing IVF/ICSI cycles: A prospective study. Front Med (Lausanne). 2022; 9 917146.	Wrong intervention;
Lin, L., Chen, G., Qiao, X., Chen, Y., Deng, H. and Xu, L. Comparative efficacy and safety of metformin, anti-obesity agents, and myoinositol in improving IVF/ICSI outcomes and reducing ovarian hyperstimulation syndrome in women with polycystic ovary syndrome: a systematic review and network meta-analysis. J Ovarian Res. 2024; 17 (1): 249.	Wrong study design;
Liu, F. T., Hu, K. L. and Li, R. Effects of Growth Hormone Supplementation on Poor Ovarian Responders in Assisted Reproductive Technology: a Systematic Review and Meta-analysis. Reprod Sci. 2021; 28 (4): 936-948.	Replaced by a more recent systematic review;
Liu, X., Bai, H., Xie, J. and Shi, J. Growth hormone co-treatment on controlled ovarian stimulation in normal ovarian response women can improve embryo quality. Gynecol Endocrinol. 2019; 35 (9): 787-791.	Wrong study design;
Liu, X., Li, N., Wang, D., Wen, W., Tian, L., Zhou, H., Mol, B. W., Shi, J. and Wang, T. Does growth hormone supplementation of in vitro fertilization/intracytoplasmic sperm injection improve cumulative live birth rates in women with poor embryonic development in the previous cycle? Reprod Biol Endocrinol. 2024; 22 (1): 53.	Wrong study design;
Liu, X., Xu, J., Bi, L., Liu, P. and Jiao, X. Growth Hormone Cotreatment for Low-Prognosis Patients According to the POSEIDON Criteria. Front Endocrinol (Lausanne). 2021; 12 790160.	Wrong study design;
Macedo, J. F., Oliveira, M. R., Gomes, L. M. O., Macedo, G. C., Macedo, G. C., Gomes, D. O., Martins, O. G., Ambrogi, B. O. and Santos, Sisd. Evaluation of growth hormone co-treatment in in vitro fertilization in patients responding better to the GnRH antagonist short protocol. JBRA Assist Reprod. 2020; 24 (2): 147-151.	Wrong study design;
Magzoub, R., Kheirelseid, E. A. H., Perks, C. and Lewis, S. Does metformin improve reproduction outcomes for non-obese, infertile women with polycystic ovary syndrome? Meta-analysis and systematic review. Eur J Obstet Gynecol Reprod Biol. 2022; 271 38-62.	Wrong patient population;
Malini, M. N. and Zain, M. M. Does Dehydroepiandrosterone (DHEA) improve in vitro fertilisation (IVF) outcomes in poor responders? Med J Malaysia. 2020; 75 (1): 24-28.	Wrong study design;
Marin, L., Andrisani, A., Bordin, L., Dessole, F., Noventa, M., Vitagliano, A., Capobianco, G. and Ambrosini, G. Sildenafil Supplementation for Women Undergoing Infertility Treatments: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. J Clin Med. 2021; 10 (19):	Wrong intervention;
Mejlhede, M. A. B., Jepsen, J. B. and Knudsen, U. B. Oral melatonin supplementation during in vitro fertilization treatment: a systematic PRISMA review and meta-analysis of randomized controlled trials. Gynecol Endocrinol. 2021; 37 (12): 1079-1085.	Wrong intervention;
Mohammad, E. H., Abou El Serour, A. G., Mohamed, E. A. H., Abbasy, A. H., Zaatar, M., Rageh, K. A., Shafeek, M. M. and Issak, E. R. Efficacy of growth hormone supplementation with ultrashort GnRH antagonist in IVF/ICSI for poor responders; randomized controlled trial. Taiwan J Obstet Gynecol. 2021; 60 (1): 51-55.	Included in systematic review;
Morgante, G., Orvieto, R., Di Sabatino, A., Musacchio, M. C. and De Leo, V. The role of inositol supplementation in patients with polycystic ovary syndrome, with insulin resistance, undergoing the low-dose gonadotropin ovulation induction regimen. Fertil Steril. 2011; 95 (8): 2642-4.	Wrong patient population;
Mostajeran, F., Tehrani, H. and Ghoreishi, E. Effects of dehydroepiandrosterone on in vitro fertilization among women aging over 35 years and normal ovarian reserve. Journal of family and reproductive health. 2018; 12 (3): 129-133.	Included in systematic review;

Muhammed, E. M., Al Khafajy, Z. H. and Rasool, H. A. The Effect of Testosterone Gel for Patients with Poor Ovarian Response Prior to IVF Cycles: is It really Effective? International journal of drug delivery technology. 2023; 13 (1): 285-289.	Included in systematic review;
Norman, R. J., Alvino, H., Hull, L. M., Mol, B. W., Hart, R. J., Kelly, T. L. and Rombauts, L. Human growth hormone for poor responders: a randomized placebo-controlled trial provides no evidence for improved live birth rate. Reprod Biomed Online. 2019; 38 (6): 908-915.	Included in systematic review;
Nouri, K., Walch, K., Weghofer, A., Imhof, M., Egarter, C. and Ott, J. The Impact of a Standardized Oral Multinutrient Supplementation on Embryo Quality in in vitro Fertilization/Intracytoplasmic Sperm Injection: a Prospective Randomized Trial. Gynecol Obstet Invest. 2017; 82 (1): 8-14.	Wrong intervention;
Noventa, M., Vitagliano, A., Andrisani, A., Blaganje, M., Viganò, P., Papaelo, E., Scioscia, M., Cavallin, F., Ambrosini, G. and Cozzolino, M. Testosterone therapy for women with poor ovarian response undergoing IVF: a meta-analysis of randomized controlled trials. J Assist Reprod Genet. 2019; 36 (4): 673-683.	Replaced by a more recent systematic review;
Nyachieo, A., Siristatidis, C. S. and Vaidakis, D. Nonsteroidal anti-inflammatory drugs for assisted reproductive technology. Cochrane Database Syst Rev. 2019; 10 (10): Cd007618.	Wrong indication;
Ochiai, A., Kuroda, K., Ikemoto, Y., Ozaki, R., Nakagawa, K., Nojiri, S., Takeda, S. and Sugiyama, R. Influence of resveratrol supplementation on IVF-embryo transfer cycle outcomes. Reprod Biomed Online. 2019; 39 (2): 205-210.	Wrong study design;
Pacchiarotti, A., Carlomagno, G., Antonini, G. and Pacchiarotti, A. Effect of myo-inositol and melatonin versus myo-inositol, in a randomized controlled trial, for improving in vitro fertilization of patients with polycystic ovarian syndrome. Gynecol Endocrinol. 2016; 32 (1): 69-73.	Included in systematic review;
Pandey, C., Maunder, A., Liu, J., Vaddiparthi, V., Costello, M. F., Bahri-Khomami, M., Mousa, A. and Ee, C. The Role of Nutrient Supplements in Female Infertility: An Umbrella Review and Hierarchical Evidence Synthesis. Nutrients. 2024; 17 (1):	Wrong patient population;
Papaleo, E., Unfer, V., Baillargeon, J. P., Fusi, F., Occhi, F. and De Santis, L. Myo-inositol may improve oocyte quality in intracytoplasmic sperm injection cycles. A prospective, controlled, randomized trial. Fertil Steril. 2009; 91 (5): 1750-4.	Included in systematic review;
Piao, C., Li, J., Liang, C., Zhang, J., Li, X., Zhao, Z. and Wang, K. Effect of vitamin D on pregnancy in women with polycystic ovary syndrome: retrospective and prospective studies. Reprod Biomed Online. 2024; 49 (2): 103909.	Wrong study design;
Richardson, A. and Jayaprakasan, K. The Use of Androgen Priming in Women with Reduced Ovarian Reserve Undergoing Assisted Reproductive Technology. Semin Reprod Med. 2021; 39 (5-06): 207-219.	Replaced by a more recent systematic review;
Safdarian, L., Aghahosseini, M., Alyasin, A., Samaei Nouroozi, A., Rashidi, S., Shabani Nashtaei, M., Najafian, A. and Lak, P. Growth Hormone (GH) Improvement of Ovarian Responses and Pregnancy Outcome in Poor Ovarian Responders: A Randomized Study. Asian Pac J Cancer Prev. 2019; 20 (7): 2033-2037.	Included in systematic review;
Seko, L. M., Moroni, R. M., Leitao, V. M., Teixeira, D. M., Nastri, C. O. and Martins, W. P. Melatonin supplementation during controlled ovarian stimulation for women undergoing assisted reproductive technology: systematic review and meta-analysis of randomized controlled trials. Fertil Steril. 2014; 101 (1): 154-161.e4.	Wrong intervention;
Shang, Y., Wu, M., He, R., Ye, Y. and Sun, X. Administration of growth hormone improves endometrial function in women undergoing in vitro fertilization: a systematic review and meta-analysis. Hum Reprod Update. 2022; 28 (6): 838-857.	Replaced by a more recent systematic review;
Showell, M. G., Mackenzie-Proctor, R., Jordan, V. and Hart, R. J. Antioxidants for female subfertility. Cochrane Database Syst Rev. 2020; 8 (8): Cd007807.	Wrong intervention;
Skillern, A., Leonard, W., Pike, J. and Mak, W. Growth hormone supplementation during ovarian stimulation improves oocyte and embryo outcomes in IVF/PGT-A cycles of women who are not poor responders. J Assist Reprod Genet. 2021; 38 (5): 1055-1060.	Wrong study design;
Solernou, R., Peralta, S., Casals, G., Guimera, M., Solsona, M., Borras, A., Manau, D. and Fàbregues, F. The Follicular Output Rate (FORT) as a method to evaluate transdermal testosterone efficacy in poor responders. JBRA Assist Reprod. 2021; 25 (2): 229-234.	Wrong study design;
Subirá, J., Algaba, A., Vázquez, S., Taroncher Dasí, R., Mollá Robles, G., Monzó Fabuel, S., Baydal, V., Ruiz Herreros, A., García Camuñas, N. and Rubio Rubio, J. M. Testosterone does not improve ovarian response in Bologna poor responders: a randomized controlled trial (TESTOPRIM). Reprod Biomed Online. 2021; 43 (3): 466-474.	Included in systematic review;
Sui, Y., Xiao, M., Fu, J., Li, L., Xu, Y., Lei, C. and Sun, X. Growth hormone supplementation during ovarian stimulation in women with advanced maternal age undergoing preimplantation genetic testing for Aneuploidy. J Ovarian Res. 2023; 16 (1): 204.	Wrong study design;
Tülek, F. and Kahraman, A. Effects of growth hormone co-treatment on in vitro fertilization outcomes in women with expected normal ovarian response. Turk J Obstet Gynecol. 2021; 18 (4): 285-290.	Wrong study design;

Unanyan, A., Pivazyan, L., Krylova, E., Eskin, A., Zakaryan, A., Sarkisova, A. and Ishchenko, A. Effectiveness of inositol, metformin and their combination in women with PCOS undergoing assisted reproduction: systematic review and meta-analysis. Gynecol Endocrinol. 2022; 38 (12): 1035-1046.	combines studies with IUI and IVF in the meta-analysis;
Vartanyan, E. V., Tsaturova, K. A., Devyatova, E. A., Mikhaylyukova, A. S., Levin, V. A., Petuhova, N. L., Markin, A. V. and Steptsova, E. M. Improvement in quality of oocytes in polycystic ovarian syndrome in programs of in vitro fertilization. Gynecol Endocrinol. 2017; 33 (sup1): 8-11.	Wrong study design;
Wang, Z., Yang, A., Bao, H., Wang, A., Deng, X., Xue, D., Tan, H., Zhou, Y., Wu, C., Chen, Z. J. and Shi, Y. Effect of dehydroepiandrosterone administration before in vitro fertilization on the live birth rate in poor ovarian responders according to the Bologna criteria: A randomised controlled trial. Bjog. 2022; 129 (7): 1030-1038.	Included in systematic review;
Wdowiak, A. and Filip, M. The effect of myo-inositol, vitamin D3 and melatonin on the oocyte quality and pregnancy in in vitro fertilization: a randomized prospective controlled trial. Eur Rev Med Pharmacol Sci. 2020; 24 (16): 8529-8536.	Wrong intervention;
Wu, D., Shi, H., Yu, Y., Yu, T. and Zhai, J. Comparison of the Effectiveness of Various Medicines in the Prevention of Ovarian Hyperstimulation Syndrome: A Network Meta-Analysis of Randomized Controlled Trials. Front Endocrinol (Lausanne). 2022; 13 808517.	Replaced by a more recent systematic review;
Xu, Z., Tong, W., Yang, Z., Zhang, H. and Chen, X. Comparative efficacy of different growth hormone supplementation protocols in improving clinical outcomes in women with poor ovarian response undergoing assisted reproductive therapy: a network meta-analysis. Sci Rep. 2024; 14 (1): 3377.	Wrong study design;
Yang, P., Wu, R. and Zhang, H. The effect of growth hormone supplementation in poor ovarian responders undergoing IVF or ICSI: a meta-analysis of randomized controlled trials. Reprod Biol Endocrinol. 2020; 18 (1): 76.	Replaced by a more recent systematic review;
Zakerinasab, F., Behfar, Q., Parsaee, R., Mojeni, F. A., Ansari, A., Deravi, N. and Khademi, R. The effects of growth hormone supplementation in poor ovarian responders undergoing In vitro fertilization or Intracytoplasmic sperm injection: A systematic review and meta-analysis of randomized controlled trials. Turk J Obstet Gynecol. 2024; 21 (3): 208-218.	Replaced by a more recent systematic review;
Zhang, J., Jia, H., Diao, F., Ma, X., Liu, J. and Cui, Y. Efficacy of dehydroepiandrosterone priming in women with poor ovarian response undergoing IVF/ICSI: a meta-analysis. Front Endocrinol (Lausanne). 2023; 14 1156280.	Replaced by a more recent systematic review;
Zhang, Y., Zhang, C., Shu, J., Guo, J., Chang, H. M., Leung, P. C. K., Sheng, J. Z. and Huang, H. Adjuvant treatment strategies in ovarian stimulation for poor responders undergoing IVF: a systematic review and network meta-analysis. Hum Reprod Update. 2020; 26 (2): 247-263.	Replaced by a more recent systematic review;
Zheng, X., Lin, D., Zhang, Y., Lin, Y., Song, J., Li, S. and Sun, Y. Inositol supplement improves clinical pregnancy rate in infertile women undergoing ovulation induction for ICSI or IVF-ET. Medicine (Baltimore). 2017; 96 (49): e8842.	combines studies with IUI and IVF in the meta-analysis;
Zhu, F., Yin, S., Yang, B., Li, S., Feng, X., Wang, T. and Che, D. TEAS, DHEA, CoQ10, and GH for poor ovarian response undergoing IVF-ET: a systematic review and network meta-analysis. Reprod Biol Endocrinol. 2023; 21 (1): 64.	Replaced by a more recent systematic review;
Zhu, J., Wang, Y., Chen, L., Liu, P., Li, R. and Qiao, J. Growth Hormone Supplementation May Not Improve Live Birth Rate in Poor Responders. Front Endocrinol (Lausanne). 2020; 11 1.	Wrong study design;

9. WHAT IS THE SAFETY AND EFFICACY OF NON-CONVENTIONAL START STIMULATION COMPARED TO STANDARD EARLY FOLLICULAR PHASE STIMULATION?

Flowchart



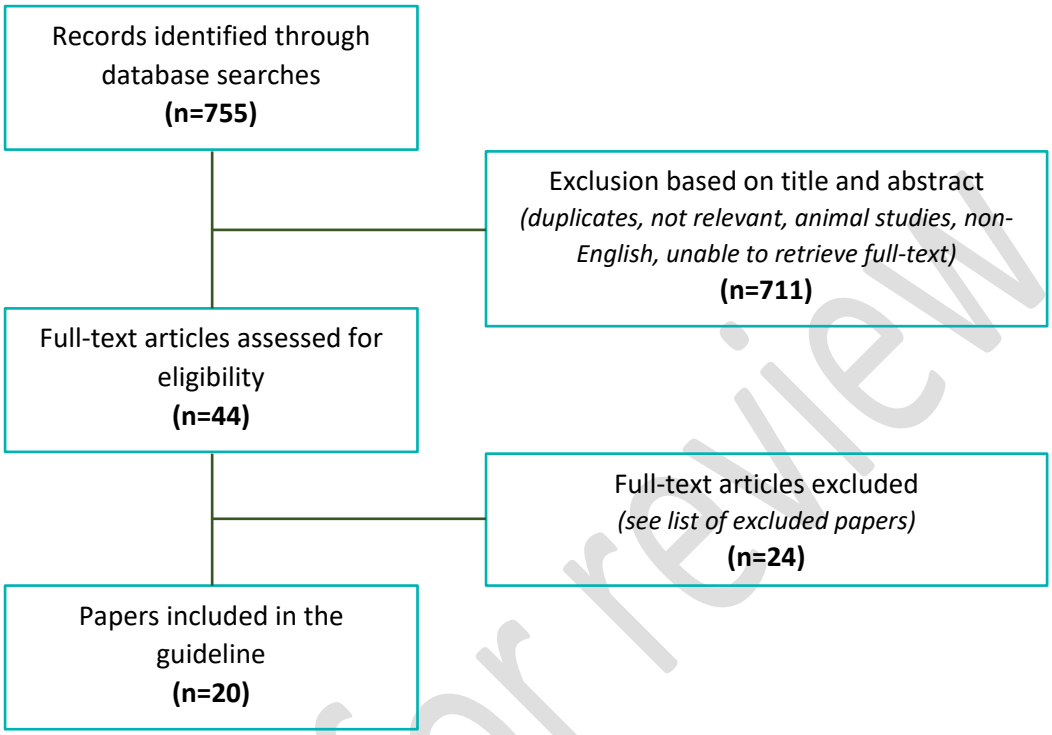
List of excluded papers

	Exclusion criterion
Alsbjerg, B., Haahr, T., Elbaek, H. O., Laursen, R., Povlsen, B. B. and Humaidan, P. Dual stimulation using corifollitropin alfa in 54 Bologna criteria poor ovarian responders - a case series. Reprod Biomed Online. 2019; 38 (5): 677-682.	Cohort study in the presence of higher quality evidence;
Bourdon, M., Santulli, P., Maignien, C., Pocate-Cheriet, K., Marcellin, L., Chen, Y. and Chapron, C. The Ovarian Response After Follicular Versus Luteal Phase Stimulation with a Double Stimulation Strategy. Reprod Sci. 2020; 27 (1): 204-210.	Cohort study in the presence of higher quality evidence;
Castillo, J. C., Fuentes, A., Ortiz, J. A., Abellán, E., Bernabeu, A. and Bernabeu, R. Continuous ovarian stimulation: a proof-of-concept study exploring the uninterrupted use of corifollitropin α in DuoStim cycles for enhanced efficiency and patient convenience (Alicante protocol). F S Rep. 2024; 5 (2): 176-182.	Cohort study in the presence of higher quality evidence;
Cecchino, G. N., Roque, M., Cerrillo, M., Filho, R. D. R., Chiamba, F. D. S., Hatty, J. H. and García-Velasco, J. A. DuoStim cycles potentially boost reproductive outcomes in poor prognosis patients. Gynecol Endocrinol. 2021; 37 (6): 519-522.	Cohort study in the presence of higher quality evidence;
Eftekhar, M., Mohammadi, B., Khani, P. and Lahijani, M. M. Dual stimulation in unexpected poor responder POSEIDON classification group 1, sub-group 2a: Across-sectional study. Int J Reprod Biomed. 2020; 18 (6): 465-470.	Cohort study in the presence of higher quality evidence;
Glujovsky, D., Pesce, R., Miguens, M., Sueldo, C. E., Lattes, K. and Ciapponi, A. How effective are the non-conventional ovarian stimulation protocols in ART? A systematic review and meta-analysis. J Assist Reprod Genet. 2020; 37 (12): 2913-2928.	Replaced by another systematic review;
Huang, J., Liu, L., Wu, Y., Miao, B., Li, Y., Zhou, C. and Xu, Y. The earlier the initiation of gonadotropin in poor responders in luteal phase stimulation protocols, the better. Front Endocrinol (Lausanne). 2022; 13 979934.	Wrong comparator;
Kahyaoglu, I., Dogru, H. Y., Kaplanoglu, I., Ozgu-Erdinc, A. S., Dilbaz, S. and Mollamahmutoglu, L. Effect of Antagonist Start Day on Cycle Outcomes in Poor Responders. J Hum Reprod Sci. 2021; 14 (4): 400-405.	Wrong study design;
Li, D., Liu, Q., Chen, X., Zhou, H., Chen, L. and Guo, Y. Analysis of embryo quality with luteal phase ovarian stimulation after failed in vitro fertilization-embryo transfer with long or ultra-long protocol. J Gynecol Obstet Hum Reprod. 2019; 48 (7): 527-529.	Wrong comparator;
Li, J., Lyu, S., Lyu, S. and Gao, M. Pregnancy Outcomes in Double Stimulation versus Two Consecutive Mild Stimulations for IVF in Poor Ovarian Responders. J Clin Med. 2022; 11 (22):	Cohort study in the presence of higher quality evidence;
Llácer, J., Moliner, B., Luque, L., Bernabéu, A., Lledó, B., Castillo, J. C., Guerrero, J., Ten, J. and Bernabéu, R. Luteal phase stimulation versus follicular phase stimulation in poor ovarian responders: results of a randomized controlled trial. Reprod Biol Endocrinol. 2020; 18 (1): 9.	Included in a systematic review;
Lu, B. J., Lin, C. J., Lin, B. Z., Huang, L., Chien, L. T. and Chen, C. H. ARToutcomes following ovarian stimulation in the luteal phase:a systematic review and meta-analysis. J Assist Reprod Genet. 2021; 38 (8): 1927-1938.	Systematic review of cohort studies in the presence of higher quality evidence;
Luo, Y., Sun, L., Dong, M., Zhang, X., Huang, L., Zhu, X., Nong, Y. and Liu, F. The best execution of the DuoStim strategy (double stimulation in the follicular and luteal phase of the same ovarian cycle) in patients who are poor ovarian responders. Reprod Biol Endocrinol. 2020; 18 (1): 102.	Cohort study in the presence of higher quality evidence;
Madani, T., Hemat, M., Arabipoor, A., Khodabakhshi, S. H. and Zolfaghari, Z. Double mild stimulation and egg collection in the same cycle for management of poor ovarian responders. J Gynecol Obstet Hum Reprod. 2019; 48 (5): 329-333.	Included in a systematic review;
Oral, S., Karacan, M., Akpak, Y. K., Şişmanoğlu, A. and Sancaklı Usta, C. Live birth rate with double ovarian stimulation is superior to follicular phase ovarian stimulation per started cycle in poor ovarian responders. J Obstet Gynaecol Res. 2021; 47 (8): 2705-2712.	Wrong comparator;
Racca, A., Rodriguez, I., Garcia, S., Arroyo, G. and Polyzos, N. P. Double versus single stimulation in young low prognosis patients followed by a fresh embryo transfer: a randomized controlled trial (DUOSTIM-fresh). Hum Reprod. 2024;	Wrong comparator;
Sfakianoudis, K., Pantos, K., Grigoriadis, S., Rapani, A., Maziotis, E., Tsioulou, P., Giannelou, P., Kontogeorgi, A., Pantou, A., Vlahos, N., Koutsilieris, M. and Simopoulou, M. What is the true place of a double stimulation and double oocyte retrieval in the same cycle for patients diagnosed with poor ovarian reserve? A systematic review including a meta-analytical approach. J Assist Reprod Genet. 2020; 37 (1): 181-204.	Systematic review of cohort studies in the presence of higher quality evidence;
Sfakianoudis, K., Simopoulou, M., Maziotis, E., Giannelou, P., Tsioulou, P., Rapani, A., Pantou, A., Petroutsou, K., Angeli, I., Deligeoroglou, E., Koutsilieris, M. and Pantos, K. Evaluation of the	Wrong intervention;

Second Follicular Wave Phenomenon in Natural Cycle Assisted Reproduction: AKey Option for Poor Responders through Luteal Phase Oocyte Retrieval. Medicina (Kaunas). 2019; 55 (3):	
Shaikh, R., More, A., Dutta, S., Choudhary, N., Shrivastava, J., Ansari, A. H. and Gajabe, G. Optimizing In Vitro Fertilization (IVF) Success in Hypergonadotropic Hypogonadism: ACase Study on the Impact of the Shanghai Protocol. Cureus. 2024; 16 (2): e54529.	Wrong study design;
Vaiarelli, A., Cimadomo, D., Blancafort, C., Trabucco, E., Alviggi, E., Vallefuoco, R., Livi, C., Benini, F., Canosa, S., Llácer, J., Ruffa, A., Borini, A., Capalbo, A., Rienzi, L., Gennarelli, G. and Maria Ubaldi, F. Amulti-cycle approach via DuoStim is beneficial to treat couples indicated to PGT-M plus PGT-A. Apropensity score matching-based case series. Eur J Obstet Gynecol Reprod Biol. 2024; 303 272-278.	Cohort study in the presence of higher quality evidence;
Vaiarelli, A., Cimadomo, D., Conforti, A., Schimberni, M., Giuliani, M., D'Alessandro, P., Colamaria, S., Alviggi, C., Rienzi, L. and Ubaldi, F. M. Luteal phase after conventional stimulation in the same ovarian cycle might improve the management of poor responder patients fulfilling the Bologna criteria: a case series. Fertil Steril. 2020; 113 (1): 121-130.	Wrong comparator;
Vaiarelli, A., Cimadomo, D., Gennarelli, G., Guido, M., Alviggi, C., Conforti, A., Livi, C., Revelli, A., Colamaria, S., Argento, C., Giuliani, M., De Angelis, C., Matteo, M., Canosa, S., D'Alfonso, A., Cimadomo, V., Rienzi, L. and Ubaldi, F. M. Second stimulation in the same ovarian cycle: an option to fully-personalize the treatment in poor prognosis patients undergoing PGT-A. J Assist Reprod Genet. 2022; 39 (3): 663-673.	Cohort study in the presence of higher quality evidence;
Vaiarelli, A., Cimadomo, D., Petriglia, C., Conforti, A., Alviggi, C., Ubaldi, N., Ledda, S., Ferrero, S., Rienzi, L. and Ubaldi, F. M. DuoStim - a reproducible strategy to obtain more oocytes and competent embryos in a short time-frame aimed at fertility preservation and IVF purposes. A systematic review. Ups J Med Sci. 2020; 125 (2): 121-130.	Systematic review without meta-analysis;
Vaiarelli, A., Pittana, E., Cimadomo, D., Ruffa, A., Colamaria, S., Argento, C., Giuliani, M., Petrone, P., Fabozzi, G., Innocenti, F., Taggi, M., Ata, B., Rienzi, L. and Ubaldi, F. M. Amulticycle approach through DuoStim with a progestin-primed ovarian stimulation (PPOS) protocol: a valuable option in poor prognosis patients undergoing PGT-A. J Assist Reprod Genet. 2025; 42 (1): 255-264.	Cohort study in the presence of higher quality evidence;
Wang, T., Sun, Z., Lim, J. P. and Yu, Y. Comparison of luteal phase ovulation induction and ultra-short gonadotropin-releasing hormone agonist protocols in older patients undergoing in vitro fertilization. Libyan J Med. 2019; 14 (1): 1597327.	Wrong comparator;
Zeng, Y., Liu, W., Luo, Y., Luo, B., Zhu, L., Yang, Z., Feng, K., Li, D., Chen, S. A. and Li, X. The impact of Duostim protocol on pregnancy outcomes in infertile patients: Ameta-analysis comparing single and double conventional stimulation cycles. J Assist Reprod Genet. 2024; 41 (12): 3455-3466.	Wrong outcomes;

10A. WHAT IS THE PREFERRED STIMULATION PROTOCOL FOR FERTILITY PRESERVATION IN PATIENTS FACING GONADOTOXIC TREATMENT?

Flowchart



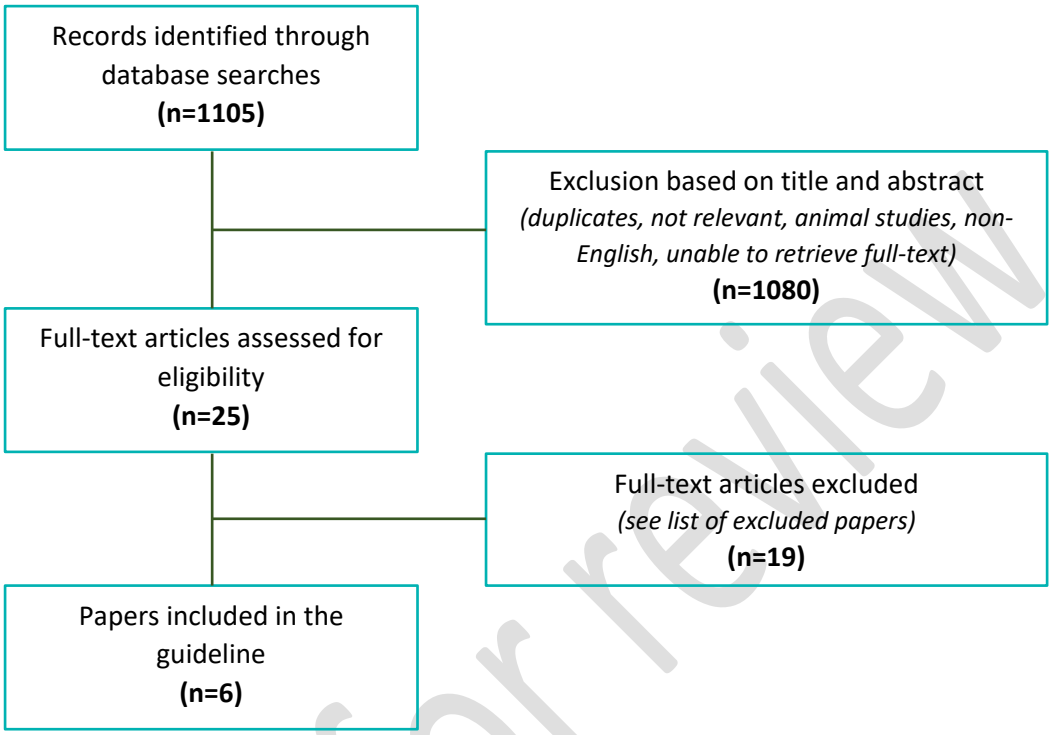
List of excluded papers

	Exclusion criterion
Alexander, V. M., Martin, C. E., Schelble, A. P., Laufer, A. B., Hardi, A., McKenzie, L. J., Hipp, H. S., Kawwass, J. F., Spencer, J. B. and Jungheim, E. S. Ovarian stimulation for fertility preservation in women with cancer: A systematic review and meta-analysis comparing random and conventional starts. J Gynecol Obstet Hum Reprod. 2021; 50 (8): 102080.	Replaced by a more recent systematic review;
Balkenende, E. M. E., Dahhan, T., Beerendonk, C. C. M., Fleischer, K., Stoop, D., Bos, A. M. E., Lambalk, C. B., Schats, R., Smeenk, J. M. J., Louwé, L. A., Cantineau, A. E. P., de Bruin, J. P., Linn, S. C., van der Veen, F., van Wely, M. and Goddijn, M. Fertility preservation for women with breast cancer: a multicentre randomized controlled trial on various ovarian stimulation protocols. Hum Reprod. 2022; 37 (8): 1786-1794.	Included in systematic review;
Ben-Haroush, A., Wertheimer, A., Klochendler, E., Sapir, O., Shufaro, Y. and Oron, G. Effect of letrozole added to gonadotropins in controlled ovarian stimulation protocols on the yield and maturity of retrieved oocytes. Gynecol Endocrinol. 2019; 35 (4): 324-327.	Wrong comparator;
Bercaire, L. M. N., Cavagna, M., Donadio, N. F., Rocha, A. R., Portela, R., Alves, V. R., Santos, T. B. B., Cavagna, F., Dzik, A., Gebrim, L. H. and Nahas, E. A. P. The impact of letrozole administration on oocyte morphology in breast cancer patients undergoing fertility preservation. JBRA Assist Reprod. 2020; 24 (3): 257-264.	Wrong comparator;
Bonardi, B., Massarotti, C., Bruzzone, M., Goldrat, O., Mangili, G., Anserini, P., Spinaci, S., Arecco, L., Del Mastro, L., Ceppi, M., Demeestere, I. and Lambertini, M. Efficacy and Safety of Controlled Ovarian Stimulation With or Without Letrozole Co-administration for Fertility Preservation: A Systematic Review and Meta-Analysis. Front Oncol. 2020; 10 574669.	Replaced by a more recent systematic review;
Campos, A. P. C., Geber, G. P., Hurtado, R., Sampaio, M. and Geber, S. Ovarian response after random-start controlled ovarian stimulation to cryopreserve oocytes in cancer patients. JBRA Assist Reprod. 2018; 22 (4): 352-354.	Included in systematic review;
Cobo, A., García-Velasco, J., Domingo, J., Pellicer, A. and Remohí, J. Elective and Onco-fertility preservation: factors related to IVF outcomes. Hum Reprod. 2018; 33 (12): 2222-2231.	Wrong patient population;
Gallo, A., Di Spiezio Sardo, A., Conforti, A., Iorio, G. G., Zizolfi, B., Buonfantino, C., De Angelis, M. C., Strina, I., Marrone, V., Bifulco, G. and Alviggi, C. Assessing ovarian stimulation with letrozole and levonorgestrel intrauterine system after combined fertility-sparing approach for atypical endometrial lesions: a retrospective case-control study. Reprod Biomed Online. 2024; 48 (5): 103750.	Wrong intervention;
Goldrat, O., De Cooman, M., Mailliez, A., Delbaere, A., D'Orazio, E., Demeestere, I. and Decanter, C. Efficacy and safety of controlled ovarian hyperstimulation with or without letrozole for fertility preservation in breast cancer patients: A multicenter retrospective study. Eur J Cancer. 2022; 174 134-141.	More than one intervention;
Huang, H., Itaya, Y., Samejima, K., Ichinose, S., Narita, T., Matsunaga, S., Saitoh, M. and Takai, Y. Usefulness of random-start progestin-primed ovarian stimulation for fertility preservation. J Ovarian Res. 2022; 15 (1): 2.	Wrong patient population;
İsrafilova, G., Şükür, Y. E., Özkavukcu, S., Sönmezer, M. A., Atabekoğlu, C. S., Özmen, B., Berker, B., Aytaç, R., Koç, A. and Sönmezer, M. Comparison of Oocyte and Embryo Quality Between Random Start and Controlled Ovarian Stimulation Cycles in Cancer Patients Undergoing Fertility Preservation. Reprod Sci. 2021; 28 (8): 2200-2207.	Included in systematic review;
Katzir, T., Shrem, G., Meirow, D., Berkowitz, E., Elizur, S., Cohen, S., Burke, Y., Retchkiman, M., Or, Y. and Volodarsky-Perel, A. Fertility preservation parameters in patients with haematologic malignancy: a systematic review and meta-analysis. Reprod Biomed Online. 2024; 49 (2): 103978.	Wrong outcomes;
Legrand, C., Keller, L., Collinet, P., Barbotin, A. L., Béhal, H., Rubod, C. and Decanter, C. Oocyte accumulation for fertility preservation in women with benign ovarian tumours with a history of previous surgery, multiple or large cysts. Reprod Biomed Online. 2021; 43 (2): 205-214.	Wrong patient population;
Letourneau, J., Juarez-Hernandez, F., Wald, K., Ribeiro, S., Wang, A., McCulloch, C. E., Mok-Lin, E., Dolezal, M., Chien, A. J., Cedars, M. I. and Rosen, M. Concomitant tamoxifen or letrozole for optimal oocyte yield during fertility preservation for breast cancer: the TAmoxifen or Letrozole in Estrogen Sensitive tumors (TALES) randomized clinical trial. J Assist Reprod Genet. 2021; 38 (9): 2455-2463.	Included in systematic review;
Marklund, A., Eloranta, S., Wikander, I., Kitlinski, M. L., Lood, M., Nedstrand, E., Thurin-Kjellberg, A., Zhang, P., Bergh, J. and Rodriguez-Wallberg, K. A. Efficacy and safety of controlled ovarian stimulation using GnRH antagonist protocols for emergency fertility preservation in young women with breast cancer-a prospective nationwide Swedish multicenter study. Hum Reprod. 2020; 35 (4): 929-938.	Included in systematic review;

Moravek, M. B., Confino, R., Lawson, A. K., Smith, K. N., Kazer, R. R., Klock, S. C., Gradishar, W. J., Jeruss, J. S. and Pavone, M. E. Predictors and outcomes in breast cancer patients who did or did not pursue fertility preservation. Breast Cancer Res Treat. 2021; 186 (2): 429-437.	Wrong intervention;
Muteshi, C., Child, T., Ohuma, E. and Fatum, M. Ovarian response and follow-up outcomes in women diagnosed with cancer having fertility preservation: Comparison of random start and early follicular phase stimulation - cohort study. Eur J Obstet Gynecol Reprod Biol. 2018; 230 10-14.	Included in systematic review;
Sekiguchi, M., Ito, A., Fukuda, Y., Yoneyama, M., Furui, M., Nakaoka, K., Umemura, N., Hayashi, Y., Tamaki, Y., Katagiri, Y. and Nakata, M. Optimal timing to retrieve oocytes for fertility preservation in patients with acute myeloid leukemia: two cases of controlled ovarian stimulation using DuoStim with a literature review. Gynecol Endocrinol. 2023; 39 (1): 2217262.	Wrong study design;
Shapira, M., Sella, T., Safrai, M., Villain, E., Lifshitz, D., Orvieto, R., Gal-Yam, E. and Meirow, D. Long-term safety of controlled ovarian stimulation for fertility preservation before chemotherapy treatment in patients with breast cancer. Fertil Steril. 2025; 123 (3): 477-487.	Wrong outcomes;
Ter Welle-Butalid, M. E., Derhaag, J. G., van Bree, B. E., Vriens, I. J. H., Goddijn, M., Balkenende, E. M. E., Beerendonk, C. C. M., Bos, A. M. E., Homminga, I., Benneheij, S. H., van Os, H. C., Smeenk, J. M. J., Verhoeven, M. O., van Bavel, Ccaw, Tjan-Heijnen, V. C. G. and van Golde, R. J. T. Outcomes of female fertility preservation with cryopreservation of oocytes or embryos in the Netherlands: a population-based study. Hum Reprod. 2024; 39 (12): 2693-2701.	Wrong outcomes;
Tsonis, O. and Kopeika, J. Fertility preservation in patients with gynaecologic malignancy: Response to ovarian stimulation and long-term outcomes. Eur J Obstet Gynecol Reprod Biol. 2023; 290 93-100.	Wrong study design;
Wald, K., Cakmak, H., Mok-Lin, E., Cedars, M., Rosen, M. and Letourneau, J. Back-to-back random-start ovarian stimulation prior to chemotherapy to maximize oocyte yield. J Assist Reprod Genet. 2019; 36 (6): 1161-1168.	Included in systematic review;
Young, S. R., Chang, Y. E., Yang, W. V., Lu, B. J., Chou, S. Y. and Chen, C. H. Maximize the safety and efficacy of fertility preservation by random start/dual ovarian stimulation for early breast cancer patients. Taiwan J Obstet Gynecol. 2023; 62 (2): 330-333.	Wrong study design;
Zhao, W., Sun, P., Li, T., Li, Y., Liang, X. and Li, J. Outcomes and cost-effectiveness comparisons of progestin-primed ovarian stimulation, GnRH antagonist protocol, and luteal phase stimulation for fertility preservation. Int J Gynaecol Obstet. 2023; 163 (2): 645-650.	Wrong patient population;

10B. WHAT IS THE PREFERRED STIMULATION PROTOCOL FOR ELECTIVE OOCYTE CRYOPRESERVATION?

Flowchart



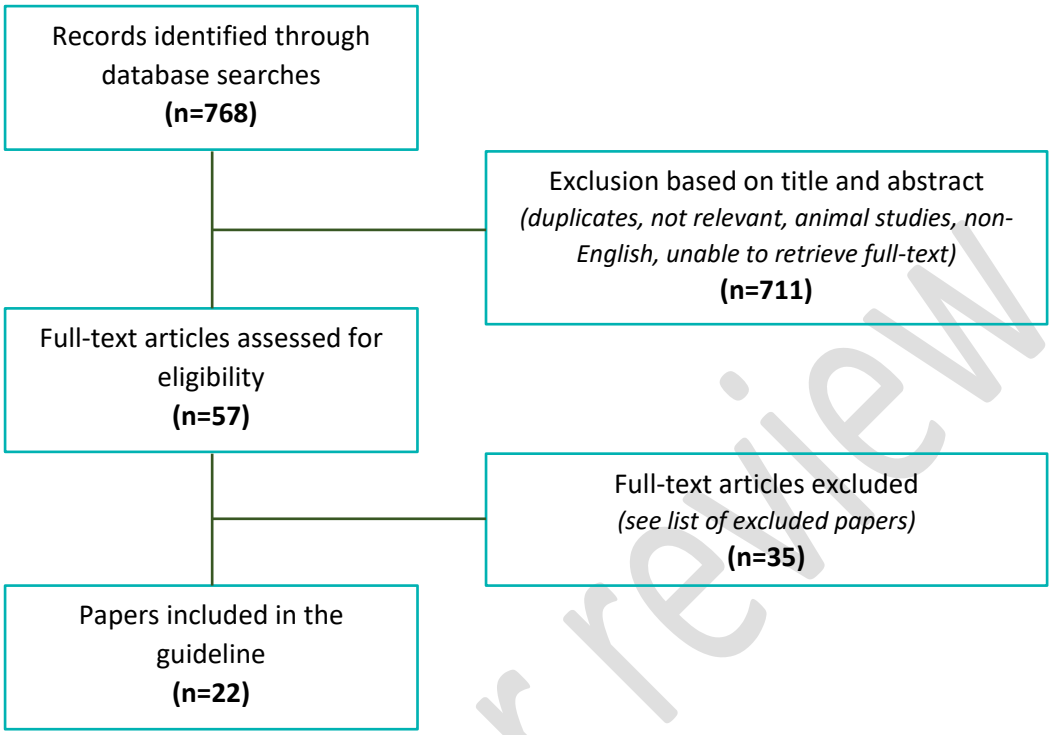
List of excluded papers

	Exclusion criterion
Adeleye, A. J., Cedars, M. I., Smith, J. and Mok-Lin, E. Ovarian stimulation for fertility preservation or family building in a cohort of transgender men. J Assist Reprod Genet. 2019; 36 (10): 2155-2161.	Wrong patient population;
Amir, H., Oren, A., Klochendler Frishman, E., Sapir, O., Shufaro, Y., Segev Becker, A., Azem, F. and Ben-Haroush, A. Oocyte retrieval outcomes among adolescent transgender males. J Assist Reprod Genet. 2020; 37 (7): 1737-1744.	Wrong patient population;
Amir, H., Yaish, I., Samara, N., Hasson, J., Groutz, A. and Azem, F. Ovarian stimulation outcomes among transgender men compared with fertile cisgender women. J Assist Reprod Genet. 2020; 37 (10): 2463-2472.	Wrong setting;
Asseler, J. D., Knieriem, J., Huirne, J. A., Goddijn, M., Verhoeven, M. O. and van Mello, N. M. Outcomes of oocyte vitrification in trans masculine individuals. Reprod Biomed Online. 2023; 47 (1): 94-101.	Wrong patient population;
Boedeker, D., Brolinson, M., Campedelli, A. C., Yu, R., Raiciulescu, S., Devine, K., Hill, M., DeCherney, A. and Spitzer, T. Initiation and outcomes of women pursuing planned fertility preservation. Fertil Steril. 2025; 123 (1): 148-155.	Wrong intervention;
Cascante, S. D., Grifo, J. A., Licciardi, F., Parra, C. M., Kelly, A. and Berkeley, A. S. The effects of age, mature oocyte number, and cycle number on cumulative live birth rates after planned oocyte cryopreservation. J Assist Reprod Genet. 2024; 41 (11): 2979-2985.	Wrong intervention;
Devesa, M., Racca, A., Clúa, E., Casato, C., García, S., Polyzos, N. P. and Martínez, F. Progesterone-primed ovarian stimulation in oocyte donation: a model for elective fertility preservation? Reprod Biomed Online. 2022; 44 (6): 1015-1022.	Wrong comparator;
Fouks, Y., Sakkas, D., Bortoletto, P. E., Penzias, A. S., Seidler, E. A. and Vaughan, D. A. Utilization of Cryopreserved Oocytes in Patients With Poor Ovarian Response After Planned Oocyte Cryopreservation. JAMA Netw Open. 2024; 7 (1): e2349722.	Wrong outcomes;
Goldman, R. H., Racowsky, C., Farland, L. V., Munné, S., Ribustello, L. and Fox, J. H. Predicting the likelihood of live birth for elective oocyte cryopreservation: a counseling tool for physicians and patients. Hum Reprod. 2017; 32 (4): 853-859.	Wrong intervention;
Hernandez-Nieto, C., Siddiqui, S., Mejia-Fernandez, L., Alkon-Meadows, T., Lee, J., Slifkin, R., Mukherjee, T. and Copperman, A. B. Effect of various contraceptives on oocyte yield and maturation in patients undergoing planned oocyte cryopreservation. Reprod Biomed Online. 2024; 49 (3): 104105.	Wrong intervention;
Herzberger, E. H., Semo, M., Soifer, K., Miller, N., Gepstein, N. G., Rahav, R., Levi, M. and Wiser, A. Oocyte retrieval in social fertility preservation: challenging traditional beliefs on gonadotropin dosing and follicular size. J Assist Reprod Genet. 2024; 41 (7): 1863-1870.	Wrong comparator;
Israeli, T., Samara, N., Barda, S., Groutz, A., Azem, F. and Amir, H. Highly purified-hMG versus rFSH in ovarian hyperstimulation in women undergoing elective fertility preservation: a retrospective cohort study. JBRA Assist Reprod. 2025;	mixed several interventions;
Kalafat, E., Dizdar, M., Turkgeldi, E., Yildiz, S., Keles, I. and Ata, B. The Comparison of Fixed and Flexible Progestin Primed Ovarian Stimulation on Mature Oocyte Yield in Women at Risk of Premature Ovarian Insufficiency. Front Endocrinol (Lausanne). 2021; 12 797227.	Wrong patient population;
Kira, A. T. F., Hentschke, M. R., Vasconcelos, N. F., Colombo, T., Trindade, V. D., Petracco, A., Costa, Bepd and Badalotti, M. Patients undergoing elective and oncofertility preservation respond similarly to controlled ovarian stimulation for fertility preservation. JBRA Assist Reprod. 2022; 26 (3): 407-411.	Wrong comparator;
Leung, A., Sakkas, D., Pang, S., Thornton, K. and Resetkova, N. Assisted reproductive technology outcomes in female-to-male transgender patients compared with cisgender patients: a new frontier in reproductive medicine. Fertil Steril. 2019; 112 (5): 858-865.	Wrong setting;
Loreti, S., Darici, E., Nekkebroeck, J., Drakopoulos, P., Van Landuyt, L., De Munck, N., Tournaye, H. and De Vos, M. A 10-year follow-up of reproductive outcomes in women attempting motherhood after elective oocyte cryopreservation. Hum Reprod. 2024; 39 (2): 355-363.	Wrong study design;
Orvieto, R., Kadmon, A. S., Morag, N., Segev-Zahav, A. and Nahum, R. Determining the optimal daily gonadotropin dose to maximize the oocyte yield in elective egg freezing cycles. Reprod Biol Endocrinol. 2024; 22 (1): 64.	Wrong study design;
Seyhan, A., Akin, O. D., Ertaş, S., Ata, B., Yakin, K. and Urman, B. A Survey of Women Who Cryopreserved Oocytes for Non-medical Indications (Social Fertility Preservation). Reprod Sci. 2021; 28 (8): 2216-2222.	Wrong setting;
Tsafrir, A., Haimov-Kochman, R., Margalioth, E. J., Eldar-Geva, T., Gal, M., Bdolah, Y., Imbar, T., Hurwitz, A., Ben-Chetrit, A. and Goldberg, D. Ovarian stimulation for oocyte cryopreservation for	Wrong comparator;

prevention of age-related fertility loss: one in five is a low responder. Gynecol Endocrinol. 2015; 31 (10): 779-82.	

11. WHAT IS THE PREFERRED STIMULATION PROTOCOL FOR OOCYTE DONATION?

Flowchart



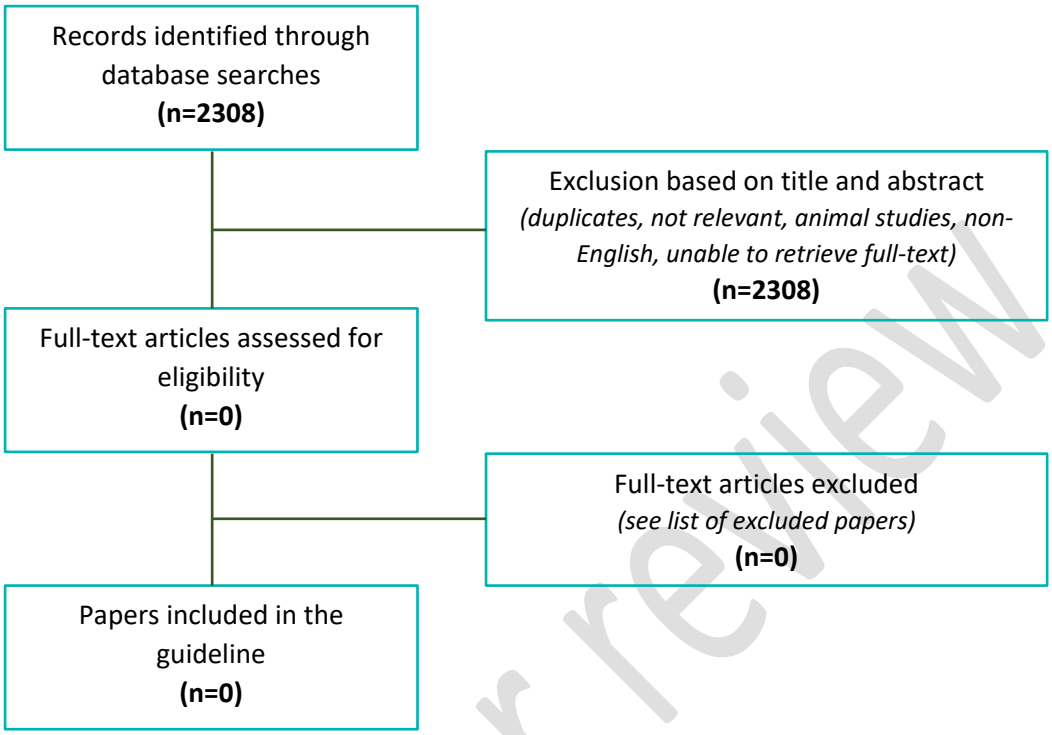
List of excluded papers

	Exclusion criterion
Adeleye, A. J., Aghajanova, L., Kao, C. N., Cedars, M. I. and Sauer, M. V. Impact of the levonorgestrel-releasing intrauterine device on controlled ovarian stimulation outcomes. Fertil Steril. 2018; 110 (1): 83-88.	Wrong comparator;
Barker, M. A., Christianson, M. S., Schouweiler, C. M. and Lindheim, S. R. Clinical outcomes using a flexible regimen of GnRH-antagonists and a 'step-up' of additional gonadotropins in donor oocyte cycles. Curr Med Res Opin. 2007; 23 (9): 2297-302.	Wrong comparator;
Barri, P. N., Coroleu, B., Martinez, F., Parera, N., Boada, M. and Veiga, A. Controversies in assisted reproduction: oocyte donation. Protocols for egg donation. J Assist Reprod Genet. 1994; 11 (10): 489-91.	Wrong study design;
Beguería, R., García, D., Vassena, R. and Rodríguez, A. Medroxyprogesterone acetate versus ganirelix in oocyte donation: a randomized controlled trial. Hum Reprod. 2019; 34 (5): 872-880.	Included in systematic review;
Bodri, D., Guillén, J. J., Galindo, A., Mataró, D., Pujol, A. and Coll, O. Triggering with human chorionic gonadotropin or a gonadotropin-releasing hormone agonist in gonadotropin-releasing hormone antagonist-treated oocyte donor cycles: findings of a large retrospective cohort study. Fertil Steril. 2009; 91 (2): 365-71.	Cohort study in the presence of higher quality evidence;
Bodri, D., Guillén, J. J., Polo, A., Trullenque, M., Esteve, C. and Coll, O. Complications related to ovarian stimulation and oocyte retrieval in 4052 oocyte donor cycles. Reprod Biomed Online. 2008; 17 (2): 237-43.	Included in systematic review;
Bodri, D., Guillén, J. J., Trullenque, M., Schwenn, K., Esteve, C. and Coll, O. Early ovarian hyperstimulation syndrome is completely prevented by gonadotropin releasing-hormone agonist triggering in high-risk oocyte donor cycles: a prospective, luteal-phase follow-up study. Fertil Steril. 2010; 93 (7): 2418-20.	Included in systematic review;
Bodri, D., Vernaeve, V., Guillén, J. J., Vidal, R., Figueras, F. and Coll, O. Comparison between a GnRH antagonist and a GnRH agonist flare-up protocol in oocyte donors: a randomized clinical trial. Hum Reprod. 2006; 21 (9): 2246-51.	Included in systematic review;
Castillo, J. C., Dolz, M., Moreno, J., Gijón, L., Ferrer, R., Ferrero, E. and Bonilla-Musoles, F. Triggering with GnRH agonist in oocyte-donation cycles: oestradiol monitoring is not necessary during ovarian stimulation. Reprod Biomed Online. 2012; 24 (2): 247-50.	Wrong comparator;
Cruz, M. and Howles, C. M. Clinical outcomes of three follitropin alfa preparations for ovarian stimulation using an oral micronized progesterone-primed protocol in an oocyte donation program. Front Endocrinol (Lausanne). 2024; 15 1451668.	Wrong comparator;
Devesa, M., Racca, A., Clúa, E., Casato, C., García, S., Polyzos, N. P. and Martínez, F. Progesterone-primed ovarian stimulation in oocyte donation: a model for elective fertility preservation? Reprod Biomed Online. 2022; 44 (6): 1015-1022.	Cohort study in the presence of higher quality evidence;
Erb, T. M., Vitek, W. and Wakim, A. N. Gonadotropin-releasing hormone agonist or human chorionic gonadotropin for final oocyte maturation in an oocyte donor program. Fertil Steril. 2010; 93 (2): 374-8.	Cohort study in the presence of higher quality evidence;
Galindo, A., Bodri, D., Guillén, J. J., Colodrón, M., Vernaeve, V. and Coll, O. Triggering with HCG or GnRH agonist in GnRH antagonist treated oocyte donation cycles: a randomised clinical trial. Gynecol Endocrinol. 2009; 25 (1): 60-6.	Included in systematic review;
Hendrickx, S., De Vos, M., De Munck, N., Mackens, S., Ruttens, S., Tournaye, H. and Blockeel, C. Progestin primed ovarian stimulation using dydrogesterone from day 7 of the cycle onwards in oocyte donation cycles: a longitudinal study. Reprod Biomed Online. 2024; 48 (5): 103732.	Cohort study in the presence of higher quality evidence;
Khurana, R. K., Rao, V., Nayak, C., Pranesh, G. T. and Rao, K. A. Comparing Progesterone Primed Ovarian Stimulation (PPOS) to GnRH Antagonist Protocol in Oocyte Donation Cycles. J Hum Reprod Sci. 2022; 15 (3): 278-283.	Cohort study in the presence of higher quality evidence;
Lindheim, S. R. and Morales, A. J. GnRH antagonists followed by a decline in serum estradiol results in adverse outcomes in donor oocyte cycles. Hum Reprod. 2003; 18 (10): 2048-51.	Wrong study design;
Martínez, F., Boada, M., Coroleu, B., Clua, E., Parera, N., Rodríguez, I. and Barri, P. N. A prospective trial comparing oocyte donor ovarian response and recipient pregnancy rates between suppression with gonadotrophin-releasing hormone agonist (GnRHa) alone and dual suppression with a contraceptive vaginal ring and GnRH. Hum Reprod. 2006; 21 (8): 2121-5.	Wrong comparator;
Martínez, F., Clua, E., Devesa, M., Rodríguez, I., Arroyo, G., González, C., Solé, M., Tur, R., Coroleu, B. and Barri, P. N. Comparison of starting ovarian stimulation on day 2 versus day 15 of the menstrual cycle in the same oocyte donor and pregnancy rates among the corresponding recipients of vitrified oocytes. Fertil Steril. 2014; 102 (5): 1307-11.	Included in systematic review;

Martínez, F., Clúa, E., García, S., Coroleu, B., Polyzos, N. P. and Barri, P. N. Does LH suppression by progesterone-primed ovarian stimulation compared with GnRH antagonist affect live birth rate among oocyte recipients? Reprod Biomed Online. 2020; 40 (5): 661-667.	Included in systematic review;
Martínez, F., Clua, E., Santmartí, P., Boada, M., Rodriguez, I. and Coroleu, B. Randomized, comparative pilot study of pituitary suppression with depot leuprorelin versus cetrorelix acetate 3 mg in gonadotropin stimulation protocols for oocyte donors. Fertil Steril. 2010; 94 (6): 2433-6.	Included in systematic review;
Martínez, F., Rodriguez-Purata, J., Beatriz Rodríguez, D., Clua, E., Rodriguez, I. and Coroleu, B. Desogestrel versus antagonist injections for LH suppression in oocyte donation cycles: a crossover study. Gynecol Endocrinol. 2019; 35 (10): 878-883.	Included in systematic review;
Martínez, F., Rodriguez-Purata, J., Clua, E., Garcia, S., Coroleu, B. and Polyzos, N. Ovarian response in oocyte donation cycles under LH suppression with GnRH antagonist or desogestrel progestin: retrospective and comparative study. Gynecol Endocrinol. 2019; 35 (10): 884-889.	Included in systematic review;
Martinez, G., Sanguineti, F., Sepulveda, J., Dorey, J., Arici, A. and Patrizio, P. A comparison between follitropin α filled by mass and follitropin a filled by bioassay in the same egg donors. Reprod Biomed Online. 2011; 22 Suppl 1 S20-2.	Wrong intervention;
Melo, A. S., Paula, C. T. V., Santos, T. L. D., Faria, V. A. C., Rufato, M. A. F., Barboza, R. P. and Barreto, J. Corifollitropin alpha, clomiphene citrate and dydrogesterone without daily gonadotrophin: a new option of a friendly protocol for high-responder oocyte donors. JBRA Assist Reprod. 2022; 26 (2): 315-320.	Cohort study in the presence of higher quality evidence;
Melo, M., Busso, C. E., Bellver, J., Alama, P., Garrido, N., Meseguer, M., Pellicer, A. and Remohí, J. GnRH agonist versus recombinant HCG in an oocyte donation programme: a randomized, prospective, controlled, assessor-blind study. Reprod Biomed Online. 2009; 19 (4): 486-92.	Included in systematic review;
Prapas, N., Prapas, Y., Panagiotidis, Y., Prapa, S., Vanderzwalmen, P., Schoysman, R. and Makedos, G. GnRH agonist versus GnRH antagonist in oocyte donation cycles: a prospective randomized study. Hum Reprod. 2005; 20 (6): 1516-20.	Included in systematic review;
Prapas, Y., Panagiotidis, I., Kalogiannidis, I., Gjata, E., Papatheodorou, A., Prapa, S., Kasapi, L., Goudakou, M. and Prapas, N. Double GnRH-antagonist dose before HCG administration may prevent OHSS in oocyte-donor cycles: a pilot study. Reprod Biomed Online. 2010; 21 (2): 159-65.	Wrong comparator;
Sauer, M. V., Paulson, R. J. and Lobo, R. A. Comparing the clinical utility of GnRH antagonist to GnRH agonist in an oocyte donation program. Gynecol Obstet Invest. 1997; 43 (4): 215-8.	Wrong comparator;
Simon, C., Oberyé, J., Bellver, J., Vidal, C., Bosch, E., Horcajadas, J. A., Murphy, C., Adams, S., Riesewijk, A., Mannaerts, B. and Pellicer, A. Similar endometrial development in oocyte donors treated with either high- or standard-dose GnRH antagonist compared to treatment with a GnRH agonist or in natural cycles. Hum Reprod. 2005; 20 (12): 3318-27.	Wrong outcomes;
Sismanoglu, A., Tekin, H. I., Erden, H. F., Ciray, N. H., Ulug, U. and Bahceci, M. Ovulation triggering with GnRH agonist vs. hCG in the same egg donor population undergoing donor oocyte cycles with GnRH antagonist: a prospective randomized cross-over trial. J Assist Reprod Genet. 2009; 26 (5): 251-6.	Included in systematic review;
Souza, Mdcb, Antunes, R. A., Souza, M. M., Mancebo, A. C. A., Barbeitas, A. L., Raupp, V. A. and Rebello, D. M. Vaginal micronized progesterone on preventing luteinizing hormone untimely surge in ART cycles: A prospective proof-of-concept study. JBRA Assist Reprod. 2024; 28 (4): 565-566.	Small prospective study comparing 2 progestins;
Tsakiridis, I., Najdecki, R., Tatsi, P., Timotheou, E., Kalinderi, K., Michos, G., Virgiliou, A., Yarali, H., Athanasiadis, A. and Papanikolaou, E. G. Evaluation of the safety and efficacy of corifollitropin alfa combined with GnRH agonist triggering in oocyte donation cycles. A prospective longitudinal study. JBRA Assist Reprod. 2020; 24 (4): 436-441.	Cohort study in the presence of higher quality evidence;
Vuong, T. N., Ho, M. T., Ha, T. D., Phung, H. T., Huynh, G. B. and Humaidan, P. Gonadotropin-releasing hormone agonist trigger in oocyte donors co-treated with a gonadotropin-releasing hormone antagonist: a dose-finding study. Fertil Steril. 2016; 105 (2): 356-63.	Included in systematic review;
Yarkiner, Z., Boynukalın, F. K. and Coban, Ö. Assessment of Repetitive Controlled Ovarian Stimulation (COS) Cycles on Oocyte Donors: Impact on Oocyte Quality and Viable Embryo Yield. Reprod Sci. 2024; 31 (9): 2615-2624.	Wrong study design;
Zarcos, S. M., Mejía, P. V., Stefani, C. D., Martin, P. S. and Martin, F. S. Comparison of two different dosage of GnRH agonist as ovulation trigger in oocyte donors: a randomized controled trial. JBRA Assist Reprod. 2017; 21 (3): 183-187.	Included in systematic review;

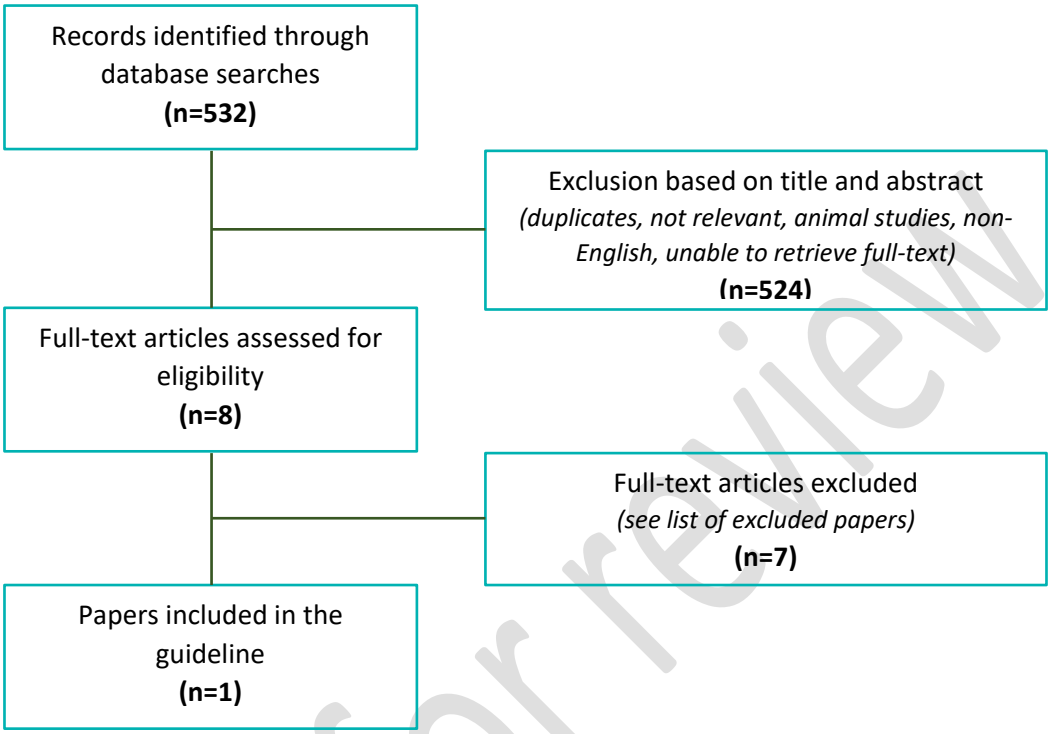
12A. When to start monitoring of follicular development?

Flowchart



12B. Is the addition of hormonal assessment (oestradiol/progesterone/LH to ultrasound monitoring improving efficacy and safety?

Flowchart

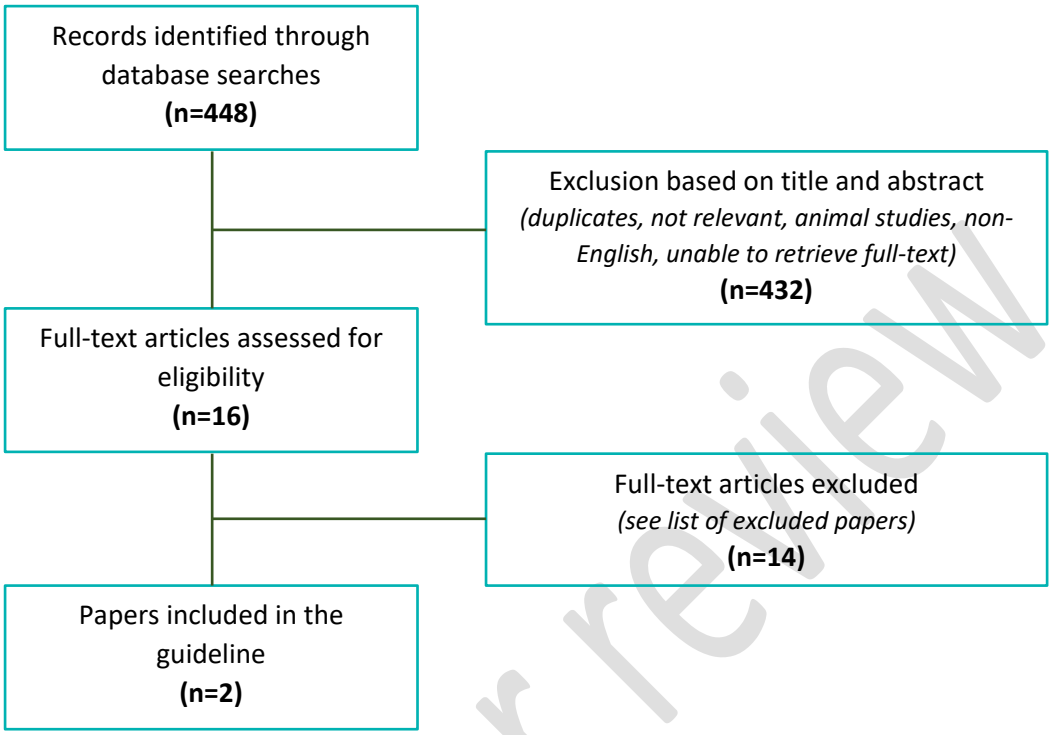


List of excluded papers

	Exclusion criterion
Bila, J., Makhadiyeva, D., Dotlic, J., Andjic, M., Aimagambetova, G., Terzic, S., Bapayeva, G., Laganà, A. S., Sarria-Santamera, A. and Terzic, M. Predictive Role of Progesterone Levels for IVF Outcome in Different Phases of Controlled Ovarian Stimulation for Patients With and Without Endometriosis: Expert View. Reprod Sci. 2024; 31 (7): 1819-1827.	irrelevant research question;
Homer, M. V., Toloubeydokhti, T., Lawson, M. A., Garzo, G., Duleba, A. J. and Chang, R. J. Individual 17-Hydroxyprogesterone Responses to hCG Are Not Correlated With Follicle Size in Polycystic Ovary Syndrome. J Endocr Soc. 2019; 3 (4): 687-698.	irrelevant research question;
Lahoud, R., Al-Jefout, M., Tyler, J., Ryan, J. and Driscoll, G. A relative reduction in mid-follicular LH concentrations during GnRH agonist IVF/ICSI cycles leads to lower live birth rates. Hum Reprod. 2006; 21 (10): 2645-9.	irrelevant research question;
Lawrenz, B., Melado, L., Digma, S., Sibal, J., Coughlan, C., Andersen, C. Y. and Fatemi, H. M. Reintroducing serum FSH measurement during ovarian stimulation for ART. Reprod Biomed Online. 2022; 44 (3): 548-556.	irrelevant research question;
Lim, Y. C., Hamdan, M., Maheshwari, A. and Cheong, Y. Progesterone level in assisted reproductive technology: a systematic review and meta-analysis. Sci Rep. 2024; 14 (1): 30826.	irrelevant research question;
Verschuere, H., Laenen, A., Debrock, S., Tomassetti, C. and Lie Fong, S. Luteinizing hormone profiles during ovarian stimulation in assisted reproductive treatment. Front Endocrinol (Lausanne). 2024; 15 1481546.	irrelevant research question;
Vuong, L. N., Pham, T. D., Dang, V. Q., Ho, T. M., Ho, V. N. A., Norman, R. J. and Mol, B. W. Live birth rates with a freeze-only strategy versus fresh embryo transfer: secondary analysis of a randomized clinical trial. Reprod Biomed Online. 2019; 38 (3): 387-396.	irrelevant research question;

13. DOES MONITORING OF ENDOMETRIAL THICKNESS AFFECT THE EFFICACY AND SAFETY?

Flowchart

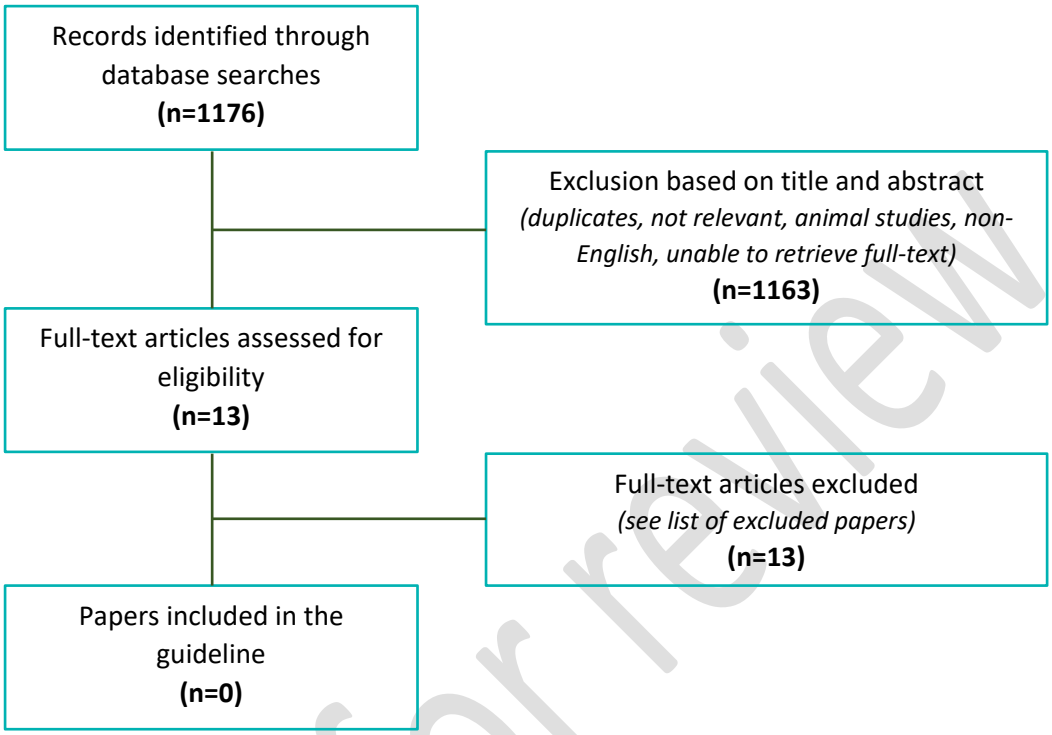


List of excluded papers

	Exclusion criterion
Alsadhan, H. F., Aljahdali, G. L., Alfaraj, S. S., Masud, N., Almutlaq, M., Alwasel, L., Alfaraj, L. H., Abualburak, S., Alrabieaa, H. and Alsalman, F. Endometrial thickness as a predictive value of ectopic pregnancy in in-vitro fertilization/intracytoplasmic sperm injection cycles: a case-control study. Ann Saudi Med. 2025; 45 (1): 33-39.	Wrong setting;
Brodeur, T. Y., Hanson, B., Maredia, N. N., Tessier, K. M., Esfandiari, N., Dahl, S. and Batcheller, A. Increasing Endometrial Thickness Beyond 8 mm Does Not Alter Clinical Pregnancy Rate After Single Euploid Embryo Transfer. Reprod Sci. 2023;	FET;
Brodeur, T. Y., Hanson, B., Maredia, N. N., Tessier, K. M., Esfandiari, N., Dahl, S. and Batcheller, A. Increasing Endometrial Thickness Beyond 8 mm Does Not Alter Clinical Pregnancy Rate After Single Euploid Embryo Transfer. Reprod Sci. 2024; 31 (4): 1045-1052.	Wrong patient population;
Gursu, T., Goksever Celik, H., Eraslan, A., Angun, B., Ozaltin, S., Yeh, J. and Bastu, E. Impact of endometrial thickness change in response to progesterone on live birth rates embryo transfers with fresh oocyte donation cycles. J Obstet Gynaecol. 2022; 42 (7): 3260-3267.	Wrong intervention;
Hussaini, S., Nayot, D., Hartman, M. and Dahan, M. H. Can endometrial thickness at baseline or maximum stimulated levels during IVF predict the presence of endometrial polyps in women with two failed embryo transfers? Arch Gynecol Obstet. 2023; 307 (5): 1645-1653.	Wrong setting;
Lai, S., Zhang, L., Luo, Y., Gu, Z., Yan, Z., Zhang, Y., Liang, Y., Huang, M., Liang, J., Gu, S., Chen, J., Li, L., Chen, D. and Du, L. Asonographic endometrial thickness <7 mm in women undergoing in vitro fertilization increases the risk of placenta accreta spectrum. Am J Obstet Gynecol. 2024; 231 (5): 557.e1-557.e18.	Wrong outcomes;
Lam, M. T., Li, H. W. R. and Ng, E. H. Y. Impact of Endometrial Thickness and Volume Compaction on the Live Birth Rate Following Fresh Embryo Transfer of In Vitro Fertilization. J Ultrasound Med. 2022; 41 (6): 1455-1463.	Wrong study design;
Maged, A. M., Kamel, A. M., Abu-Hamila, F., Elkomy, R. O., Ohida, O. A., Hassan, S. M., Fahmy, R. M. and Ramadan, W. The measurement of endometrial volume and sub-endometrial vascularity to replace the traditional endometrial thickness as predictors of in-vitro fertilization success. Gynecol Endocrinol. 2019; 35 (11): 949-954.	Wrong intervention;
Moshkalova, G., Karibayeva, I., Kurmanova, A., Mamedalieva, N., Aimbetova, A., Terlikbayeva, A., Mamutova, A., Yerzhan, Z., Yerkenova, S. and Zheksembay, B. Endometrial thickness and live birth rates after IVF: a systematic review. Acta Biomed. 2023; 94 (3): e2023152.	Wrong patient population;
Shakerian, B., Turkgeldi, E., Yildiz, S., Keles, I. and Ata, B. Endometrial thickness is not predictive for live birth after embryo transfer, even without a cutoff. Fertil Steril. 2021; 116 (1): 130-137.	Poor quality study;
Simeonov, M., Sapir, O., Lande, Y., Ben-Haroush, A., Oron, G., Shlush, E., Altman, E., Wertheimer, A., Shochat, T. and Shufaro, Y. The entire range of trigger-day endometrial thickness in fresh IVF cycles is independently correlated with live birth rate. Reprod Biomed Online. 2020; 41 (2): 239-247.	Wrong outcomes;
Tomic, V., Kasum, M. and Vucic, K. Impact of embryo quality and endometrial thickness on implantation in natural cycle IVF. Arch Gynecol Obstet. 2020; 301 (5): 1325-1330.	Wrong outcomes;
Wang, S., Qi, L., Liu, Y., Shi, H., Chen, X., Wang, N. and Su, Y. Suitable endometrial thickness on embryo transfer day may reduce ectopic pregnancy rate and improve clinical pregnancy rate. BMC Pregnancy Childbirth. 2023; 23 (1): 517.	Wrong outcomes;
Xu, J., Zhang, S., Jin, L., Mao, Y., Shi, J., Huang, R., Han, X., Liang, X. and Zhang, C. The Effects of Endometrial Thickness on Pregnancy Outcomes of Fresh IVF/ICSI Embryo Transfer Cycles: An Analysis of Over 40,000 Cycles Among Five Reproductive Centers in China. Front Endocrinol (Lausanne). 2021; 12 788706.	Wrong outcomes;

14. Is the outcome of ovarian stimulation dependent on the criteria for final oocyte maturation?

Flowchart

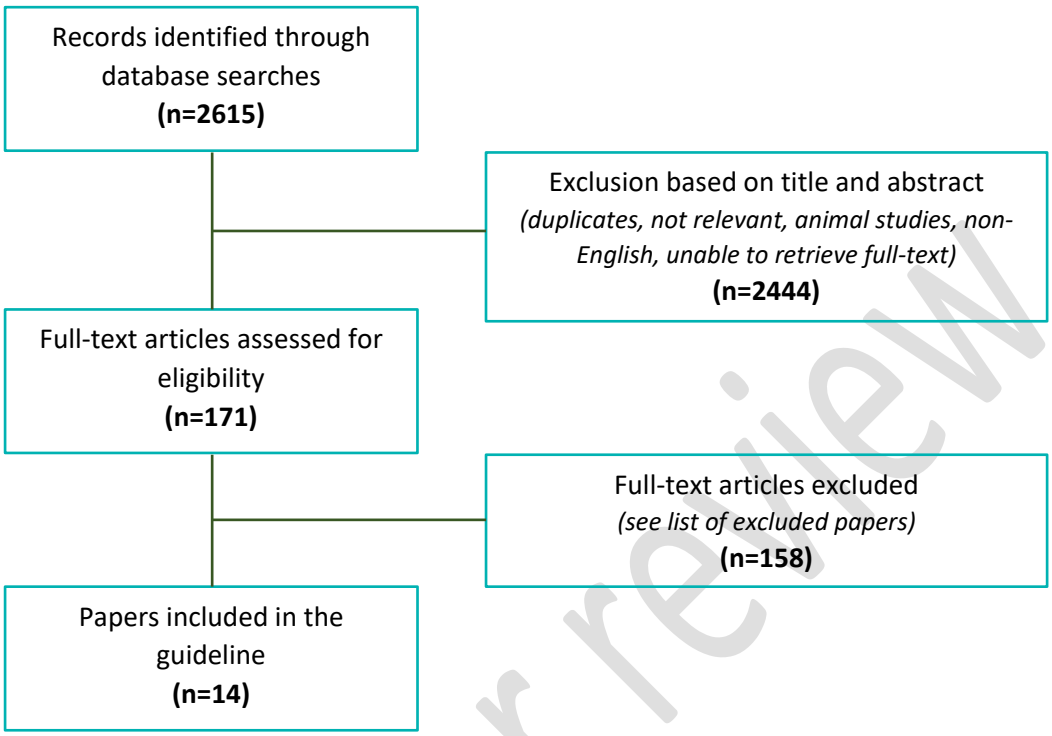


List of excluded papers

	Exclusion criterion
Ai, J., Jin, L., Zheng, Y., Gong, J., Chen, B. and Dong, X. The estradiol/oocyte ratio predicts the MII oocyte rate, but not live-birth rate in a depot gonadotropin-releasing hormone agonist long protocol. Int J Gynaecol Obstet. 2021; 153 (1): 100-105.	Wrong study design;
Ali, K. I. A., Lawrenz, B., Shanker, U., Ruiz, F., El-Damen, A., ElKhatib, I., Fatemi, H. and De Munck, N. The Ratio of Serum Progesterone (P4) to the Number of Follicles (P4/follicle) is a More Objective Parameter for Euploidy Rate as Compared to Systemic Progesterone Levels. Reprod Sci. 2023; 30 (10): 3046-3054.	Wrong study design;
Berger, M., Patel, H., Buyalos, R., Hubert, G., Wang, C., Shamonki, M. and Quinn, M. Estradiol to progesterone ratio is not a predictor of oocyte maturity at time of ovulation trigger. J Assist Reprod Genet. 2022; 39 (7): 1667-1672.	Wrong study design;
Charkviani, T., Kristasashvili, J., Barbakadze, T., Gabadze, M., Kbilashvili, T. and Makharadze, M. THE RELATIONSHIP BETWEEN FOLLICLE SIZE, OOCYTE MATURATION, BLASTOCYST FORMATION, BLASTOCYST PLOIDY, AND PREGNANCY OUTCOMES IN YOUNG WOMEN UNDERGOING IVF. Georgian Med News. 2024; (352-353): 196-203.	Wrong study design;
Fanton, M., Nutting, V., Solano, F., Maeder-York, P., Hariton, E., Barash, O., Weckstein, L., Sakkas, D., Copperman, A. B. and Loewke, K. An interpretable machine learning model for predicting the optimal day of trigger during ovarian stimulation. Fertil Steril. 2022; 118 (1): 101-108.	Wrong outcomes;
Helmer, A., Magaton, I., Stalder, O., Stute, P., Surbek, D. and von Wolff, M. Optimal Timing of Ovulation Triggering to Achieve Highest Success Rates in Natural Cycles-An Analysis Based on Follicle Size and Oestradiol Concentration in Natural Cycle IVF. Front Endocrinol (Lausanne). 2022; 13 855131.	Wrong patient population;
Mohr-Sasson, A., Orvieto, R., Blumenfeld, S., Axelrod, M., Mor-Hadar, D., Grin, L., Aizer, A. and Haas, J. The association between follicle size and oocyte development as a function of final follicular maturation triggering. Reprod Biomed Online. 2020; 40 (6): 887-893.	Wrong study design;
Morales, H. S. G., Guiot, M. L., López, G. G. P., Córtes, D. V., Maldonado, B. F., Hernández, H. S., Torres, G. C. R., Camacho, F. M. R. and Montoya, G. A. Serum estradiol level on the day of trigger as a predictor of number of metaphase II oocytes from IVF antagonist cycles and subsequent impact on pregnancy rates. JBRA Assist Reprod. 2021; 25 (3): 447-452.	Wrong study design;
Robertson, I., Chmiel, F. P. and Cheong, Y. Streamlining follicular monitoring during controlled ovarian stimulation: a data-driven approach to efficient IVF care in the new era of social distancing. Hum Reprod. 2021; 36 (1): 99-106.	Wrong intervention;
Rodríguez-Fuentes, A., Hernández, J., Rouleau, J. P., Martín-Vasallo, P. and Palumbo, A. A follicular volume of >0.56 cm(3) at trigger is the cutoff to predict oocyte maturity: a starting point for novel volume-based triggering criteria. Fertil Steril. 2024; 121 (6): 991-999.	Wrong study design;
Shah, N., Romanski, P. A., Bortoletto, P., Rosenwaks, Z. and Kligman, I. Determining the optimal follicle size at trigger in patients undergoing ovarian stimulation with a clomiphene citrate plus gonadotropin and GnRH antagonist protocol for in-vitro fertilization. Minerva Obstet Gynecol. 2022; 74 (1): 75-82.	Wrong study design;
Wei, C. X., Zhang, L., Pang, C. H., Qi, Y. H. and Zhang, J. W. Effect of the ratios of estradiol increase on the outcome of in vitro fertilization-embryo transfer with antagonist regimens: a single center retrospective cohort study. BMC Pregnancy Childbirth. 2023; 23 (1): 134.	Wrong study design;
Xie, Q., Jiang, W., Wei, Y., Ni, D., Yan, N., Yang, Y., Zhao, C., Shen, R. and Ling, X. Increasing dominant follicular proportion was associated with adverse IVF/ICSI outcomes in low-prognosis women undergoing GnRH antagonist protocol: a retrospective cohort study. J Ovarian Res. 2024; 17 (1): 179.	Wrong study design;

15. Is hormonal assessment on the day of final oocyte maturation recommended?

Flowchart



List of excluded papers

	Exclusion criterion
Acet, M., Aktün, L. H., Başaranoğlu, S., Yorgunlar, B., Acet, T. and Deregözü, A. Premature Progesterone Elevation Does Not Affect Pregnancy Outcome in High-Responder Patients Undergoing Short-Interval Coasting in IVF Cycles. Med Sci Monit Basic Res. 2015; 21 247-52.	Wrong study design;
Arvis, P., Lehert, P. and Guivarc'h-Levêque, A. Both high and low HCG day progesterone concentrations negatively affect live birth rates in IVF/ICSI cycles. Reprod Biomed Online. 2019; 39 (5): 852-859.	Wrong outcomes;
Ashmita, J., Vikas, S. and Swati, G. The Impact of Progesterone Level on Day Of hCG Injection in IVF Cycles on Clinical Pregnancy Rate. J Hum Reprod Sci. 2017; 10 (4): 265-270.	Wrong outcomes;
Baldini, D., Savoia, M. V., Sciancalepore, A. G., Malvasi, A., Vizziello, D., Beck, R. and Vizziello, G. High progesterone levels on the day of HCG administration do not affect the embryo quality and the reproductive outcomes of frozen embryo transfers. Clin Ter. 2018; 169 (3): e91-e95.	Wrong intervention;
Benmachiche, A., Benbouhedja, S., Zoghmar, A. and Al Humaidan, P. S. H. The impact of preovulatory versus midluteal serum progesterone level on live birth rates during fresh embryo transfer. PLoS One. 2021; 16 (2): e0246440.	Wrong intervention;
Berger, M., Patel, H., Buyalos, R., Hubert, G., Wang, C., Shamonki, M. and Quinn, M. Estradiol to progesterone ratio is not a predictor of oocyte maturity at time of ovulation trigger. J Assist Reprod Genet. 2022; 39 (7): 1667-1672.	Wrong intervention;
Bila, J., Makhadiyeva, D., Dotlic, J., Andjic, M., Aimagambetova, G., Terzic, S., Bapayeva, G., Laganà, A. S., Sarria-Santamera, A. and Terzic, M. Predictive Role of Progesterone Levels for IVF Outcome in Different Phases of Controlled Ovarian Stimulation for Patients With and Without Endometriosis: Expert View. Reprod Sci. 2024; 31 (7): 1819-1827.	Wrong patient population;
Blazquez, A., Falcó, N., Caño, E., Rodriguez, F., Vassena, R., Miguel-Escalada, I., Popovic, M. and Rodriguez, A. No association between LH levels and ovarian response in oocyte donors triggered with gonadotropin-releasing hormone agonist: A prospective study. Eur J Obstet Gynecol Reprod Biol. 2024; 294 163-169.	Wrong study question;
Bosch, E., Labarta, E., Crespo, J., Simón, C., Remohí, J., Jenkins, J. and Pellicer, A. Circulating progesterone levels and ongoing pregnancy rates in controlled ovarian stimulation cycles for in vitro fertilization: analysis of over 4000 cycles. Hum Reprod. 2010; 25 (8): 2092-100.	included in systematic review;
Bouet, P. E., Bruand, M., Bellaïche, K., Vielle, B., Legendre, G., Descamps, P., Corroenne, R., May-Panloup, P. and El Hachem, H. The role of peak serum estradiol level in the prevention of multiple pregnancies in gonadotropin stimulated intrauterine insemination cycles. Sci Rep. 2022; 12 (1): 19554.	Wrong study question;
Bourdon, M., Ouazana, M., Maignien, C., Pocate-Cheriet, K., Patrat, C., Marcellin, L., Chapron, C. and Santulli, P. Impact of Supraphysiological Estradiol Serum Levels on Birth Weight in Singletons Born After Fresh Embryo Transfer. Reprod Sci. 2020; 27 (9): 1770-1777.	Wrong outcomes;
Boynukalin, F. K., Yarkiner, Z., Gultomruk, M., Turgut, N. E., Ecemis, S., Findikli, N. and Bahceci, M. Elevation of progesterone on the trigger day exerts no carryover effect on live birth in freeze-all cycles. Gynecol Endocrinol. 2021; 37 (4): 367-371.	Wrong intervention;
Chen, Y., Li, Y., Li, X., Liu, L., Liu, Z., Gui, W., Liu, X. and Chen, Y. Lower serum LH level was related to poor embryo quality and adverse pregnancy outcomes in fixed GnRH antagonist protocol with estradiol pretreatment. Gynecol Endocrinol. 2024; 40 (1): 2409147.	Wrong study design;
Cheng, J., Yang, S., Ma, H., Liang, Y. and Zhao, J. Estradiol (E(2)) Reduction Adversely Affect the Embryo Quality and Clinical Outcomes of In Vitro Fertilization and Embryo transfer (IVF-ET). J Healthc Eng. 2022; 2022 2473876.	Wrong intervention;
Cicek, M. N., Kahyaoglu, I. and Kahyaoglu, S. The comparison of microdose flare-up and multiple dose antagonist protocols based on hCG day estradiol (E2), progesterone (P) and P/E2 ratio among poor responder patients in ICSI-ET cycles. Eur Rev Med Pharmacol Sci. 2015; 19 (4): 539-44.	Wrong study design;
Connell, M. T., Patounakis, G., Healy, M. W., DeCherney, A. H., Devine, K., Widra, E., Levy, M. J. and Hill, M. J. Is the effect of premature elevated progesterone augmented by human chorionic gonadotropin versus gonadotropin-releasing hormone agonist trigger? Fertil Steril. 2016; 106 (3): 584-589.e1.	Wrong comparitor;
Cortés-Vazquez, A., Veliz-Figueroa, D., Vargas-Estrada, K., Moreno-García, J. D. and Cortés-Algara, A. Progesterone levels on hCG day and oocyte maturation in a Mexican IVF program. JBRA Assist Reprod. 2024;	Wrong outcomes;
De Cesare, R., Morenghi, E., Cirillo, F., Ronchetti, C., Canevisio, V., Persico, P., Baggiani, A., Sandri, M. T. and Levi-Setti, P. E. The Role of hCG Triggering Progesterone Levels: A Real-World	Mixed patients and interventions

Retrospective Cohort Study of More Than 8000 IVF/ICSI Cycles. Front Endocrinol (Lausanne). 2020; 11 547684.	
Demir, B., Kahyaoglu, I., Guvenir, A., Yerebasmaz, N., Altinbas, S., Dilbaz, B., Dilbaz, S. and Mollamahmutoglu, L. Progesterone change in the late follicular phase affects pregnancy rates both agonist and antagonist protocols in normoresponders: a case-controlled study in ICSI cycles. Gynecol Endocrinol. 2016; 32 (5): 361-5.	Wrong study question;
Dias, C. M. F., Furlan, S. M. P., Ferriani, R. A. and Navarro, Paas. Serum progesterone measurement on the day of fresh embryo transfer and its correlation with pregnancy success rates: Aprospective analysis. Clinics (Sao Paulo). 2024; 79 100511.	Wrong study question;
Doody, K., Devroey, P., Gordon, K., Witjes, H. and Mannaerts, B. LH concentrations do not correlate with pregnancy in rFSH/GnRH antagonist cycles. Reprod Biomed Online. 2010; 20 (4): 565-7.	Wrong intervention;
Dunne, C., Cho, K., Shan, A., Hutcheon, J., Durland, U. S., Seethram, K. and Havelock, J. C. Peak Serum Estradiol Level During Controlled Ovarian Stimulation Is not Associated with Lower Levels of Pregnancy-Associated Plasma Protein-Aor Small for Gestational Age Infants: ACohort Study. J Obstet Gynaecol Can. 2017; 39 (10): 870-879.	Does not report on critical or important outcomes;
Elgindy, E. A. Progesterone level and progesterone/estradiol ratio on the day of hCG administration: detrimental cutoff levels and new treatment strategy. Fertil Steril. 2011; 95 (5): 1639-44.	included in systematic review;
Elnashar, A. M. Progesterone rise on the day of HCG administration (premature luteinization) in IVF: an overdue update. J Assist Reprod Genet. 2010; 27 (4): 149-55.	Wrong study design;
Esteves, S. C., Khastgir, G., Shah, J., Murdia, K., Gupta, S. M., Rao, D. G., Dash, S., Ingale, K., Patil, M., Moideen, K., Thakor, P. and Dewda, P. Association Between Progesterone Elevation on the Day of Human Chronic Gonadotropin Trigger and Pregnancy Outcomes After Fresh Embryo Transfer in In Vitro Fertilization/Intracytoplasmic Sperm Injection Cycles. Front Endocrinol (Lausanne). 2018; 9 201.	Wrong study design;
Fanchin, R., Righini, C., Olivennes, F., de Ziegler, D., Selva, J. and Frydman, R. Premature progesterone elevation does not alter oocyte quality in in vitro fertilization. Fertil Steril. 1996; 65 (6): 1178-83.	included in systematic review;
Fanchin, R., Righini, C., Olivennes, F., Taieb, J., de Ziegler, D. and Frydman, R. Premature plasma progesterone and androgen elevation are not prevented by adrenal suppression in in vitro fertilization. Fertil Steril. 1997; 67 (1): 115-9.	Wrong intervention;
Fernandez, R. G. O., Barbosa, C. P., Christofolini, D. M., de Alcantara Sousa, L. V., de Oliveira, R. and Bianco, B. Impact of blood levels of progesterone on the day of ovulation onset on clinical, laboratory and reproductive parameters of young patients undergoing assisted reproduction: a cross-sectional study. Einstein (Sao Paulo). 2022; 20 eAO6896.	Wrong study question;
Gambini, S., Sonigo, C., Robin, G., Cedrin-Durnerin, I., Vinolas, C., Sifer, C., Boumerdassi, Y., Mayeur, A., Gallot, V., Grynberg, M. and Peigné, M. Risk factors for poor oocyte yield and oocyte immaturity after GnRH agonist triggering. Hum Reprod. 2024; 39 (5): 963-973.	Wrong study question;
Ganor-Paz, Y., Friedler-Mashiach, Y., Ghetler, Y., Hershko-Klement, A., Berkovitz, A., Gonen, O., Shulman, A. and Wiser, A. What is the best treatment for women with polycystic ovarian syndrome and high LH/FSH ratio? Acomparison among in vitro fertilization with GnRH agonist, GnRH antagonist and in vitro maturation. J Endocrinol Invest. 2016; 39 (7): 799-803.	Wrong study question;
George, J. S., Keefe, K. W., Lanes, A. and Yanushpolsky, E. Premature progesterone elevation during the early and mid-follicular phases in fresh in vitro fertilization (IVF) cycles is associated with lower live birth, clinical pregnancy, and implantation rates. J Assist Reprod Genet. 2023; 40 (5): 1029-1035.	Wrong study question;
González-Foruria, I., Rodríguez, I., Martínez, F., Rodríguez-Purata, J., Montoya, P., Rodríguez, D., Nicolau, J., Coroleu, B., Barri, P. N. and Polyzos, N. P. Clinically significant intra-day variability of serum progesterone levels during the final day of oocyte maturation: a prospective study with repeated measurements. Hum Reprod. 2019; 34 (8): 1551-1558.	Wrong outcomes;
Griesinger, G., Mannaerts, B., Andersen, C. Y., Witjes, H., Kolibianakis, E. M. and Gordon, K. Progesterone elevation does not compromise pregnancy rates in high responders: a pooled analysis of in vitro fertilization patients treated with recombinant follicle-stimulating hormone/gonadotropin-releasing hormone antagonist in six trials. Fertil Steril. 2013; 100 (6): 1622-8.e1.	included in systematic review;
Grin, L., Berkovitz-Shperling, R., Zohav, E., Namazov, A., Leyetes, S. and Friedler, S. Do spontaneously decreasing estradiol levels prior to triggering of ovulation adversely impact in vitro fertilization outcomes? Clin Exp Reprod Med. 2020; 47 (3): 213-220.	Wrong intervention;
Healy, M. W., Patounakis, G., Connell, M. T., Devine, K., DeCherney, A. H., Levy, M. J. and Hill, M. J. Does a frozen embryo transfer ameliorate the effect of elevated progesterone seen in fresh transfer cycles? Fertil Steril. 2016; 105 (1): 93-9.e1.	Mixed interventions

Healy, M. W., Yamasaki, M., Patounakis, G., Richter, K. S., Devine, K., DeCherney, A. H. and Hill, M. J. The slow growing embryo and premature progesterone elevation: compounding factors for embryo-endometrial asynchrony. Hum Reprod. 2017; 32 (2): 362-367.	Wrong intervention;
Hill, M. J., Healy, M. W., Richter, K. S., Parikh, T., Devine, K., DeCherney, A. H., Levy, M., Widra, E. and Patounakis, G. Defining thresholds for abnormal premature progesterone levels during ovarian stimulation for assisted reproduction technologies. Fertil Steril. 2018; 110 (4): 671-679.e2.	Mixed patients and interventions
Hofmann, G. E., Khoury, J. and Michener, C. Elevated serum progesterone-to-estradiol ratio during gonadotropin stimulation for intrauterine insemination or in vitro fertilization is not associated with diminished ovarian reserve. Fertil Steril. 2002; 78 (1): 47-50.	Wrong outcomes;
Hokmabadi, E., Salahi, E. and Ghasemi, M. The relationship between serum progesterone level on the day of HCG trigger in IVF/ICSI cycles and oocyte maturation and embryo quality: a retrospective observational study. BMC Womens Health. 2024; 24 (1): 673.	Wrong outcomes;
Hu, L., Xiong, Y., Wang, M., Shi, H. and Sun, Y. Effect of progesterone on hCG day-to-basal progesterone ratio on live birth rate in long agonist fresh IVF/ICSI cycles: a 5-year, single-center study of more than 10,000 cycles. Gynecol Endocrinol. 2021; 37 (8): 706-710.	Wrong study question;
Huang, B., Ren, X., Wu, L., Zhu, L., Xu, B., Li, Y., Ai, J. and Jin, L. Elevated Progesterone Levels on the Day of Oocyte Maturation May Affect Top Quality Embryo IVF Cycles. PLoS One. 2016; 11 (1): e0145895.	Wrong outcomes;
Huang, C. C., Lien, Y. R., Chen, H. F., Chen, M. J., Shieh, C. J., Yao, Y. L., Chang, C. H., Chen, S. U. and Yang, Y. S. The duration of pre-ovulatory serum progesterone elevation before hCG administration affects the outcome of IVF/ICSI cycles. Hum Reprod. 2012; 27 (7): 2036-45.	included in systematic review;
Huang, J., Lu, X., Lin, J., Chen, Q., Gao, H., Lyu, Q., Cai, R. and Kuang, Y. Association between peak serum estradiol level during controlled ovarian stimulation and neonatal birthweight in freeze-all cycles: a retrospective study of 8501 singleton live births. Hum Reprod. 2020; 35 (2): 424-433.	Wrong outcomes;
Huang, J. C., Jackson, K. V., Hornstein, M. D. and Ginsburg, E. S. The effect of elevated serum progesterone during ovulation induction in in vitro fertilization-embryo transfer. J Assist Reprod Genet. 1996; 13 (8): 617-24.	included in systematic review;
Huang, L. J., Wan, Q., Li, T., Lv, X. Y., Geng, L. H., He, Q. Q., Zhong, Z. H., Li, Y. and Tang, X. J. Effect of serum progesterone on human chorionic gonadotropin trigger day / metaphase II oocyte ratio on pregnancy and neonatal outcomes in women undergoing ICSI cycle. BMC Pregnancy Childbirth. 2023; 23 (1): 224.	Wrong study question;
Huang, Y., Wang, E. Y., Du, Q. Y., Xiong, Y. J., Guo, X. Y., Yu, Y. P. and Sun, Y. P. Progesterone elevation on the day of human chorionic gonadotropin administration adversely affects the outcome of IVF with transferred embryos at different developmental stages. Reprod Biol Endocrinol. 2015; 13 82.	Wrong outcomes;
Hunt, S., Liu, J., Luo, P., Zhong, Y., Mol, B. W., Chi, L. and Wang, R. Can serum progesterone concentration direct a fresh or freeze-all transfer strategy in the first in vitro fertilisation cycle? J Assist Reprod Genet. 2024; 41 (6): 1549-1555.	Wrong study question;
Ibrahim, Y., Haviland, M. J., Hacker, M. R., Penzias, A. S., Thornton, K. L. and Sakkas, D. Elevated progesterone and its impact on birth weight after fresh embryo transfers. J Assist Reprod Genet. 2017; 34 (6): 759-764.	Does not report on critical or important outcomes;
Imudia, A. N., Awonuga, A. O., Doyle, J. O., Kaimal, A. J., Wright, D. L., Toth, T. L. and Styer, A. K. Peak serum estradiol level during controlled ovarian hyperstimulation is associated with increased risk of small for gestational age and preeclampsia in singleton pregnancies after in vitro fertilization. Fertil Steril. 2012; 97 (6): 1374-9.	Does not report on critical or important outcomes;
Imudia, A. N., Goldman, R. H., Awonuga, A. O., Wright, D. L., Styer, A. K. and Toth, T. L. The impact of supraphysiologic serum estradiol levels on peri-implantation embryo development and early pregnancy outcome following in vitro fertilization cycles. J Assist Reprod Genet. 2014; 31 (1): 65-71.	Wrong outcomes;
Ince, O. and Yilmaz, B. The impact of the trigger day progesterone, luteinizing hormone and their interaction on live birth rates in GnRH antagonist cycles. J Obstet Gynaecol Res. 2025; 51 (1): e16181.	Wrong study question;
Joo, B. S., Park, S. H., An, B. M., Kim, K. S., Moon, S. E. and Moon, H. S. Serum estradiol levels during controlled ovarian hyperstimulation influence the pregnancy outcome of in vitro fertilization in a concentration-dependent manner. Fertil Steril. 2010; 93 (2): 442-6.	Wrong study design;
Jreij, C., Halimeh, R., Fadel, D., Chamoun, P., Nassar, J., Saab, W., Seshadri, S. and Bersaoui, M. The Effect of Progesterone Elevation on the Day of Trigger Administration: A Review of the Literature. J Reprod Infertil. 2024; 25 (2): 102-109.	Wrong study design;
Kalakota, N. R., George, L. C., Morelli, S. S., Douglas, N. C. and Babwah, A. V. Towards an Improved Understanding of the Effects of Elevated Progesterone Levels on Human Endometrial	Wrong study design;

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Kasum, M., Simunić, V., Vrčić, H., Stanić, P., Orešković, S. and Beketić-Orešković, L. Follicular progesterone elevations with ovulation induction for IVF. Gynecol Endocrinol. 2014; 30 (8): 537-41.	Redundant review;
Katsoff, B., Check, J. H., Wilson, C. and Choe, J. K. Effect of serum progesterone level on the day of human chorionic gonadotropin injection on outcome following in vitro fertilization-embryo transfer in women using gonadotropin releasing hormone antagonists. Clin Exp Obstet Gynecol. 2011; 38 (4): 322-3.	Wrong outcomes;
Kaur, H., Pranesh, G. T., Rao, V. and Rao, K. A. Effect of trigger day serum luteinising hormone levels on the in-vitro fertilization outcome: an observational study. Obstet Gynecol Sci. 2024; 67 (2): 235-242.	Wrong intervention;
Khahani Namin, A., Mohammadian, F., Garrosi, L. and Tofighi, S. The effect of the ratio of serum progesterone level to oocyte count on the day of IVF-ICSI injection on pregnancy outcomes in HCG cycles. Horm Mol Biol Clin Investig. 2023; 44 (1): 53-60.	Wrong intervention;
Kofinas, J. D., Mehr, H., Ganguly, N., Biley, Y., Bochkovsky, S., McCulloh, D. and Grifo, J. Is it the egg or the endometrium? Elevated progesterone on day of trigger is not associated with embryo ploidy nor decreased success rates in subsequent embryo transfer cycles. J Assist Reprod Genet. 2016; 33 (9): 1169-74.	Wrong intervention;
Kohl Schwartz, A. S., Mitter, V. R., Amylidi-Mohr, S., Fasel, P., Minger, M. A., Limoni, C., Zwahlen, M. and von Wolff, M. The greater incidence of small-for-gestational-age newborns after gonadotropin-stimulated in vitro fertilization with a supraphysiological estradiol level on ovulation trigger day. Acta Obstet Gynecol Scand. 2019; 98 (12): 1575-1584.	Wrong study question;
Kolibianakis, E. M., Venetis, C. A., Bontis, J. and Tarlatzis, B. C. Significantly lower pregnancy rates in the presence of progesterone elevation in patients treated with GnRH antagonists and gonadotrophins: a systematic review and meta-analysis. Curr Pharm Biotechnol. 2012; 13 (3): 464-70.	Replaced by a newer systematic review;
Kosmas, I. P., Kolibianakis, E. M. and Devroey, P. Association of estradiol levels on the day of hCG administration and pregnancy achievement in IVF: a systematic review. Hum Reprod. 2004; 19 (11): 2446-53.	Wrong outcomes;
Kyrou, D., Al-Azemi, M., Papanikolaou, E. G., Donoso, P., Tziomalos, K., Devroey, P. and Fatemi, H. M. The relationship of premature progesterone rise with serum estradiol levels and number of follicles in GnRH antagonist/recombinant FSH-stimulated cycles. Eur J Obstet Gynecol Reprod Biol. 2012; 162 (2): 165-8.	included in systematic review;
L, N. Vuong, T, D. Pham, V, N. A. Ho, A, T. L. Vu, T, M. Ho and Yding Andersen, C. In vitro fertilization outcome based on the detailed early luteal phase trajectory of hormones: a prospective cohort study. Reprod Biol Endocrinol. 2024; 22 (1): 56.	Wrong study question;
Laufer, N., DeCherney, A. H., Tarlatzis, B. C. and Naftolin, F. The association between preovulatory serum 17 beta-estradiol pattern and conception in human menopausal gonadotropin-human chorionic gonadotropin stimulation. Fertil Steril. 1986; 46 (1): 73-6.	Wrong study design;
Lawrenz, B., Beligotti, F., Engelmann, N., Gates, D. and Fatemi, H. M. Impact of gonadotropin type on progesterone elevation during ovarian stimulation in GnRH antagonist cycles. Hum Reprod. 2016; 31 (11): 2554-2560.	Wrong outcomes;
Lawrenz, B. and Fatemi, H. M. Effect of progesterone elevation in follicular phase of IVF-cycles on the endometrial receptivity. Reprod Biomed Online. 2017; 34 (4): 422-428.	Wrong study design;
Lawrenz, B., Long, J., Stoop, D., Missou, I. and Fatemi, H. Impact of stimulation duration and gonadotropin type on the incidence of premature progesterone elevation - a retrospective analysis of the Ensure data. Gynecol Endocrinol. 2018; 34 (12): 1044-1047.	Wrong study design;
Lee, F. K., Lai, T. H., Lin, T. K., Horng, S. G. and Chen, S. C. Relationship of progesterone/estradiol ratio on day of hCG administration and pregnancy outcomes in high responders undergoing in vitro fertilization. Fertil Steril. 2009; 92 (4): 1284-1289.	Wrong outcomes;
Lersten, I. L., Grau, L., Jahandideh, S., Devine, K., Zalles, L., Plosker, S. M., Imudia, A. N., Hoyos, L. R., Uhler, M. L., Homer, M., Roeca, C., Sammel, M. D. and Polotsky, A. J. High estradiol levels in fresh embryo transfer cycles are not associated with detrimental impact on birth outcomes. J Assist Reprod Genet. 2024; 41 (4): 893-902.	Wrong intervention;
Levran, D., Lopata, A., Nayudu, P. L., Martin, M. J., McBain, J. C., Bayly, C. M., Speirs, A. L. and Johnston, W. I. Analysis of the outcome of in vitro fertilization in relation to the timing of human chorionic gonadotropin administration by the duration of estradiol rise in stimulated cycles. Fertil Steril. 1985; 44 (3): 335-41.	Wrong study question;
Li, X. F., Wang, Q. F., He, Q. Q., Wang, X. J., Lv, X. Y., Tang, X. J., Zhong, Z. H., Ding, Y. B. and Wan, Q. Low LH level does not indicate poor IVF cycle outcomes with GnRh-a single trigger: a retrospective analysis. BMC Pregnancy Childbirth. 2022; 22 (1): 951.	Wrong intervention;

Li, Y., Luo, K., Tang, Y., Lin, G., Lu, G. and Gong, F. Progesterone/estradiol ratio <0.25 on the day of human chorionic gonadotropin administration is associated with adverse pregnancy outcomes in prolonged protocols for in vitro fertilization/intracytoplasmic sperm injection. Taiwan J Obstet Gynecol. 2017; 56 (1): 27-31.	Wrong intervention;
Liang, Z., Huang, Q., Huang, J., Wu, J., Zeng, D. and Huang, P. High progesterone levels on the day after HCG injection has no effect on clinical pregnancy outcomes in in vitro fertilization-embryo transfer. Front Endocrinol (Lausanne). 2024; 15 1372753.	Wrong study question;
Lin, Y. J., Lan, K. C., Huang, F. J., Lin, P. Y., Chiang, H. J. and Kung, F. T. Reproducibility and clinical significance of pre-ovulatory serum progesterone level and progesterone/estradiol ratio on the day of human chorionic gonadotropin administration in infertile women undergoing repeated in vitro fertilization cycles. Reprod Biol Endocrinol. 2015; 13 41.	Wrong outcomes;
Liu, L., Huang, J., Li, T. C., Hong, X. T., Laird, S., Dai, Y. D., Tong, X. M., Zhu, H. Y. and Zhang, S. The effect of elevated progesterone levels before oocyte retrieval in women undergoing ovarian stimulation for IVF treatment on the genomic profile of peri-implantation endometrium. J Reprod Immunol. 2017; 121 17-25.	Wrong outcomes;
Liu, L., Zhao, L., Li, T. C., Zhu, H., Lin, X., Jin, X., Tong, X. and Zhang, S. Comparison of progesterone measurement on day of, and day after, HCG administration in IVF-embryo transfer cycles. Reprod Biomed Online. 2015; 30 (2): 157-65.	Wrong intervention;
Liu, R., Zhou, L., Chen, X., He, H. and Cai, Z. Letrozole Supplementation and the Increased Risk of Elevated Progesterone Levels on Trigger Day. Front Endocrinol (Lausanne). 2022; 13 904089.	Wrong study design;
Liu, Y., Li, J., Zhang, W. and Guo, Y. Association between serum oestradiol level on the hCG administration day and neonatal birthweight after IVF-ET among 3659 singleton live births. Sci Rep. 2021; 11 (1): 6084.	Does not report on critical or important outcomes;
Lu, X., Hong, Q., Sun, L., Chen, Q., Fu, Y., Ai, A., Lyu, Q. and Kuang, Y. Dual trigger for final oocyte maturation improves the oocyte retrieval rate of suboptimal responders to gonadotropin-releasing hormone agonist. Fertil Steril. 2016; 106 (6): 1356-1362.	Wrong study question;
Mahran, A., Khairy, M., Elkhateeb, R., Hegazy, A. R., Abdelmeged, A., Batiha, G. E., Alsharif, K. F., Hetta, H. F. and Bahaa, H. A. The value of serum progesterone level on day of human chorionic gonadotrophin administration / metaphase II oocyte ratio in predicting IVF/ICSI outcome in patients with normal ovarian reserve. J Ovarian Res. 2021; 14 (1): 52.	Wrong outcomes;
Martínez, F., Coroleu, B., Clua, E., Tur, R., Buxaderas, R., Parera, N., Barri, P. N. and Balasch, J. Serum progesterone concentrations on the day of HCG administration cannot predict pregnancy in assisted reproduction cycles. Reprod Biomed Online. 2004; 8 (2): 183-90.	included in systematic review;
Martinez, F., Rodriguez, I., Devesa, M., Buxaderas, R., Gómez, M. J. and Coroleu, B. Should progesterone on the human chorionic gonadotropin day still be measured? Fertil Steril. 2016; 105 (1): 86-92.	Wrong outcomes;
Meng, Y., Tong, X. H., Liu, R. and Zhang, Y. Does the elevated estradiol level on the day of human chorionic gonadotropin administration affect embryo quality among women undergoing in vitro fertilization? Int J Gynaecol Obstet. 2021; 152 (3): 358-364.	Wrong outcomes;
Merviel, P., Bouée, S., Jacamon, A. S., Chabaud, J. J., Le Martelot, M. T., Roche, S., Rince, C., Drapier, H., Perrin, A. and Beauvillard, D. Progesterone levels on the human chorionic gonadotropin trigger day affect the pregnancy rates for embryos transferred at different stages of development in both general and selected IVF/ICSI populations. BMC Pregnancy Childbirth. 2021; 21 (1): 363.	Wrong outcomes;
Mettler, L. and Tavmergen, E. N. Significance of oestradiol values in IVF-ET under a combined GnRH analogue--desensitization and simultaneous gonadotrophin stimulation for the outcome of pregnancies. Hum Reprod. 1989; 4 (8 Suppl): 59-64.	Wrong study design;
Mitra, S., Patil, M., Patil, M. and Nayak, P. K. Pre-Ovulatory Hormones on Day of Human Chorionic Gonadotropin Trigger and Assisted Reproductive Technique Outcomes in Different Ovarian Response Groups. J Hum Reprod Sci. 2021; 14 (4): 406-414.	Wrong outcomes;
Modest, A. M., Johnson, K. M., Aluko, A., Joshi, A., Wise, L. A., Fox, M. P., Hacker, M. R. and Sakkas, D. Elevated serum progesterone during in vitro fertilization treatment and the risk of ischemic placental disease. Pregnancy Hypertens. 2021; 24 7-12.	Does not report on critical or important outcomes;
Morales, H. S. G., Guiot, M. L., López, G. G. P., Córtes, D. V., Maldonado, B. F., Hernández, H. S., Torres, G. C. R., Camacho, F. M. R. and Montoya, G. A. Serum estradiol level on the day of trigger as a predictor of number of metaphase II oocytes from IVF antagonist cycles and subsequent impact on pregnancy rates. JBRA Assist Reprod. 2021; 25 (3): 447-452.	Wrong outcomes;
Mu, Z., Sa, Y., Sun, Z. and Yi, Y. Ovulation induction with high progesterone levels may be more suitable for elderly patients with low ovarian response. J Gynecol Obstet Hum Reprod. 2021; 50 (2): 101661.	Wrong intervention;

Mutlu, M. F., Erdem, M., Erdem, A., Mutlu, I., Guler, I. and Demirdağ, E. The impact of premature progesterone rise on the outcome of intrauterine insemination cycles with controlled ovarian hyperstimulation in unexplained infertility. Eur J Obstet Gynecol Reprod Biol. 2016; 203 44-8.	Wrong study question;
Nagaraja, N., Talwar, P., Mukherjee, B. and Chakrabarty, B. K. Correlation between Serum Progesterone Level on the Day of Ovulation Trigger During In vitro Fertilization and Its Effect on Treatment Outcome. J Hum Reprod Sci. 2019; 12 (2): 136-140.	Wrong study design;
Neves, A. R., Santos-Ribeiro, S., García-Martínez, S., Devesa, M., Soares, S. R., García-Velasco, J. A., Garrido, N. and Polyzos, N. P. The effect of late-follicular phase progesterone elevation on embryo ploidy and cumulative live birth rates. Reprod Biomed Online. 2021; 43 (6): 1063-1069.	Wrong outcomes;
Nikolettos, N., Asimakopoulos, B., Köster, F., Schöpper, B., Schulz, Ch, Caglar, G. S., Efthimiadou, A., Pagonopoulou, O., Diedrich, K. and Al-Hasani, S. Cytokine profile in cases with premature elevation of progesterone serum concentrations during ovarian stimulation. Physiol Res. 2008; 57 (2): 215-224.	Wrong outcomes;
Niu, Z., Feng, Y., Zhang, A., Sun, Y. and Zhang, H. Progesterone levels on oocyte retrieval day can predict the quantity of viable embryos but not pregnancy outcome of intracytoplasmic sperm injection. Gynecol Endocrinol. 2008; 24 (8): 452-8.	Wrong outcomes;
Oktem, O., Yakin, K., Oguz, S. Y., Isiklar, A., Balaban, B. and Urman, B. High responders are not exempt from detrimental effects of prematurely rising progesterone levels in fresh embryo transfer cycles. Reprod Biomed Online. 2019; 38 (2): 206-215.	Wrong outcomes;
Ou, Y. C., Lan, K. C., Chang, S. Y., Kung, F. T. and Huang, F. J. Increased progesterone/estradiol ratio on the day of HCG administration adversely affects success of in vitro fertilization-embryo transfer in patients stimulated with gonadotropin-releasing hormone agonist and recombinant follicle-stimulating hormone. Taiwan J Obstet Gynecol. 2008; 47 (2): 168-74.	Wrong outcomes;
Ozçakir, H. T., Levi, R., Tavmergen, E. and Göker, E. N. Premature luteinization defined as progesterone estradiol ratio >1 on hCG administration day seems to adversely affect clinical outcome in long gonadotropin-releasing hormone agonist cycles. J Obstet Gynaecol Res. 2004; 30 (2): 100-4.	Wrong outcomes;
Panaino, T. R., Silva, J. B., Lima, M. A., Lira, P., Arêas, P. C., Mancebo, A. C., Souza, M. M., Antunes, R. A. and Souza, M. D. High Progesterone levels in the beginning of ICSI antagonist cycles and clinical pregnancy: still a concern? JBRA Assist Reprod. 2017; 21 (1): 11-14.	Wrong study design;
Papanikolaou, E. G., Kolibianakis, E. M., Pozzobon, C., Tank, P., Tournaye, H., Bourgain, C., Van Steirteghem, A. and Devroey, P. Progesterone rise on the day of human chorionic gonadotropin administration impairs pregnancy outcome in day 3 single-embryo transfer, while has no effect on day 5 single blastocyst transfer. Fertil Steril. 2009; 91 (3): 949-52.	included in systematic review;
Park, J. H., Jee, B. C. and Kim, S. H. Factors influencing serum progesterone level on triggering day in stimulated in vitro fertilization cycles. Clin Exp Reprod Med. 2015; 42 (2): 67-71.	Wrong outcomes;
Peng, C., Guo, Z., Long, X. and Lu, G. Progesterone levels on the hCG day and outcomes in vitro fertilization in women with polycystic ovary syndrome. J Assist Reprod Genet. 2012; 29 (7): 603-7.	included in systematic review;
Pereira, N., Elias, R. T., Christos, P. J., Petrini, A. C., Hancock, K., Lekovich, J. P. and Rosenwaks, Z. Supraphysiologic estradiol is an independent predictor of low birth weight in full-term singletons born after fresh embryo transfer. Hum Reprod. 2017; 32 (7): 1410-1417.	Does not report on critical or important outcomes;
Pereira, N., Reichman, D. E., Goldschlag, D. E., Lekovich, J. P. and Rosenwaks, Z. Impact of elevated peak serum estradiol levels during controlled ovarian hyperstimulation on the birth weight of term singletons from fresh IVF-ET cycles. J Assist Reprod Genet. 2015; 32 (4): 527-32.	Wrong outcomes;
Polim, A. A., Abdullah, N., Hatta, M., Natzir, R., Soebijanto, S., Hutomo, C., Pradana, A. and Rambei, R. Positive Correlation of Oestradiol Level on Trigger Day with the Secretion Level of Endometrial Kisspeptin and Leukaemia Inhibitory Factor in the Mid-Luteal Stimulated Cycle. J Hum Reprod Sci. 2022; 15 (1): 72-77.	Wrong outcomes;
Polyzos, N. P., Anckaert, E., Drakopoulos, P., Tournaye, H., Schiettecatte, J., Donner, H., Bobba, G., Miles, G., Verhagen-Kamerbeek, W. D. J. and Bosch, E. EStradiol and PRogesterone in In vitro ferTilization (ESPRIT): a multicenter study evaluating third- versus second-generation estradiol and progesterone immunoassays. J Endocrinol Invest. 2020; 43 (9): 1239-1248.	Wrong study design;
Popovic-Todorovic, B., Santos-Ribeiro, S., Drakopoulos, P., De Vos, M., Racca, A., Mackens, S., Thorrez, Y., Verheyen, G., Tournaye, H., Quintero, L. and Blockeel, C. Predicting suboptimal oocyte yield following GnRH agonist trigger by measuring serum LH at the start of ovarian stimulation. Hum Reprod. 2019; 34 (10): 2027-2035.	Wrong study question;
Pouya, K., Şükür, Y. E., İsrafilova, G., Özmen, B., Sönmezer, M., Berker, B., Atabekoğlu, C. S. and Aytaç, R. hCG day progesterone level has no impact on the frozen thawed embryo transfer cycle outcome. J Gynecol Obstet Hum Reprod. 2021; 50 (6): 102120.	Wrong study question;
Quigley, M. M., Sokoloski, J. E. and Richards, S. I. Timing human chorionic gonadotropin administration by days of estradiol rise. Fertil Steril. 1985; 44 (6): 791-5.	Wrong intervention;

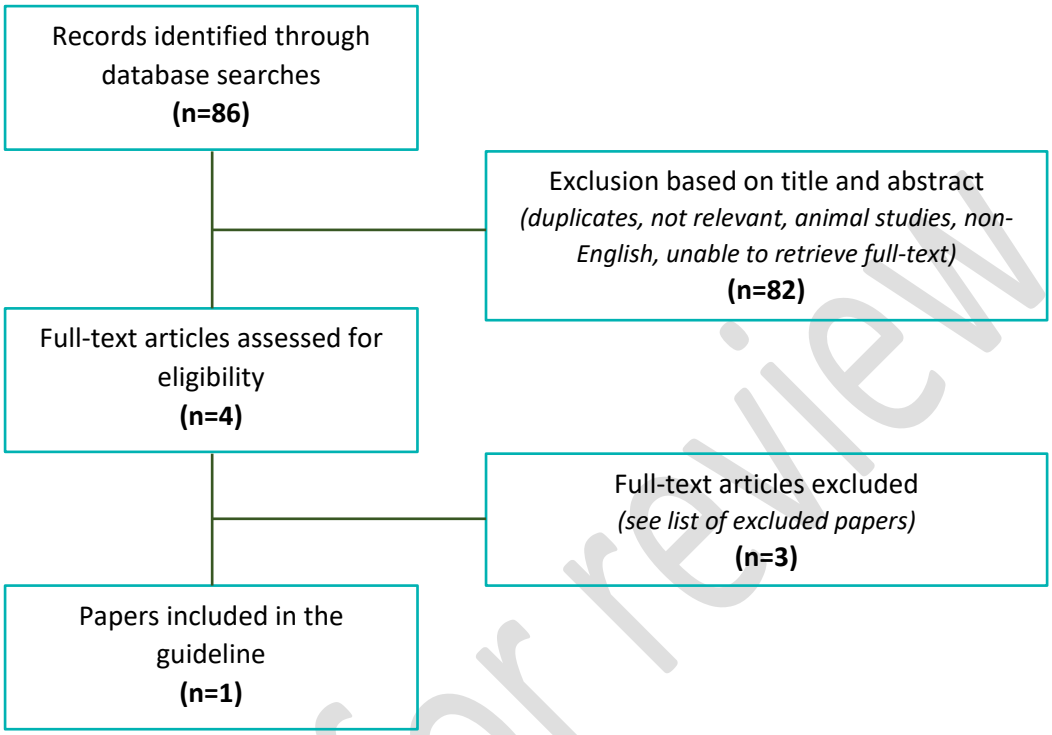
Racca, A., De Munck, N., Santos-Ribeiro, S., Drakopoulos, P., Errazuriz, J., Galvao, A., Popovic-Todorovic, B., Mackens, S., De Vos, M., Verheyen, G., Tournaye, H. and Blockeel, C. Do we need to measure progesterone in oocyte donation cycles? A retrospective analysis evaluating cumulative live birth rates and embryo quality. Hum Reprod. 2020; 35 (1): 167-174.	Wrong outcomes;
Racca, A., Santos-Ribeiro, S., De Munck, N., Mackens, S., Drakopoulos, P., Camus, M., Verheyen, G., Tournaye, H. and Blockeel, C. Impact of late-follicular phase elevated serum progesterone on cumulative live birth rates: is there a deleterious effect on embryo quality? Hum Reprod. 2018; 33 (5): 860-868.	Wrong design;
Ramachandran, A., Jamdade, K., Kumar, P., Adiga, S. K., Bhat, R. G. and Ferrao, S. R. Is there a Need for Luteinizing Hormone (LH) Estimation in Patients Undergoing Ovarian Stimulation with Gonadotropin-Releasing Hormone (GnRH) Antagonists and Recombinant Follicle-Stimulating Hormone (rFSH)? J Clin Diagn Res. 2014; 8 (1): 90-2.	Wrong outcomes;
Rehman, R., Hussain, Z. and Faraz, N. Effect of estradiol levels on pregnancy outcome in obese women. J Ayub Med Coll Abbottabad. 2012; 24 (3-4): 3-5.	Wrong intervention;
Rehman, R., Hussain, Z. and Zuberi, N. A. Prediction of success in intracytoplasmic sperm injection (ICSI) by estimation of serum estradiol/progesterone ratio on the day of embryo transfer. J Pak Med Assoc. 2013; 63 (5): 609-13.	Wrong study design;
Rehman, R., Jawaid, S., Gul, H. and Khan, R. Impact of peak estradiol levels on reproductive outcome of intracytoplasmic sperm injection. Pak J Med Sci. 2014; 30 (5): 986-91.	Wrong outcomes;
Reljic, M., Vlaisavljevic, V., Gavric, V., Kovacic, B. and Cizek-Sajko, M. Value of the serum estradiol level on the day of human chorionic gonadotropin injection and on the day after in predicting the outcome in natural in vitro fertilization/intracytoplasmic sperm injection cycles. Fertil Steril. 2001; 75 (3): 539-43.	Wrong study design;
Requena, A., Cruz, M., Bosch, E., Meseguer, M. and García-Velasco, J. A. High progesterone levels in women with high ovarian response do not affect clinical outcomes: a retrospective cohort study. Reprod Biol Endocrinol. 2014; 12 69.	Wrong design;
Rezaee, Z., Ghaseminejad, A., Forootan, M., Hosseinipoor, T. and Forghani, F. Assessment of Serum Progesterone Level on the Day of hCG Injection in Infertile Polycystic Ovarian Syndrome Patients Referred to Women's Hospital, Tehran, 2009. Int J Fertil Steril. 2012; 5 (4): 231-4.	included in systematic review;
Robati, S., Saab, W., Durán-Retamal, M., Saab, W., Theodorou, E., Cawood, S., Serhal, P. and Seshadri, S. The Association Between Elevated Progesterone Level on Day of hCG Trigger and Live Birth Rates in ART Cycles: A Single Centre Observational Study. J Reprod Infertil. 2020; 21 (4): 283-290.	Wrong design;
Romanski, P. A., Bortoletto, P., Liu, Y. L., Chung, P. H. and Rosenwaks, Z. Length of estradiol exposure >100 pg/ml in the follicular phase affects pregnancy outcomes in natural frozen embryo transfer cycles. Hum Reprod. 2021; 36 (7): 1932-1940.	Wrong patient population;
Salat-Baroux, J., Antoine, J. M., Giacomini, P., Alvarez, S., Tibi, C., Cornet, D., Mandelbaum, J., Plachot, M., Firmin, C. and Kelly, R. Prognostic value of pre-ovulatory serum progesterone, LH and oestradiol-17 beta levels in stimulated cycles for in-vitro fertilization. Hum Reprod. 1988; 3 (3): 281-4.	Wrong outcomes;
Santos-Ribeiro, S., Racca, A., Roelens, C., De Munck, N., Mackens, S., Drakopoulos, P., Tournaye, H. and Blockeel, C. Evaluating the benefit of measuring serum progesterone prior to the administration of HCG: effect of the duration of late-follicular elevated progesterone following ovarian stimulation on fresh embryo transfer live birth rates. Reprod Biomed Online. 2019; 38 (4): 647-654.	Wrong intervention;
Seow, K. M., Lin, Y. H., Hsieh, B. C., Huang, L. W., Huang, S. C., Chen, C. Y., Chen, P. H., Tzeng, C. R. and Hwang, J. L. Characteristics of progesterone changes in women with subtle progesterone rise in recombinant follicle-stimulating hormone and gonadotropin-releasing hormone antagonist cycle. Gynecol Obstet Invest. 2010; 70 (1): 64-8.	Wrong intervention;
Seow, K. M., Lin, Y. H., Huang, L. W., Hsieh, B. C., Huang, S. C., Chen, C. Y., Chen, P. H., Tzeng, C. R. and Hwang, J. L. Subtle progesterone rise in the single-dose gonadotropin-releasing hormone antagonist (cetrorelix) stimulation protocol in patients undergoing in vitro fertilization or intracytoplasmic sperm injection cycles. Gynecol Endocrinol. 2007; 23 (6): 338-42.	Wrong outcomes;
Shanker, U., Lawrenz, B., Bungum, L., Depret Bixio, L., Ruiz, F., Coughlan, C. and Fatemi, H. M. Significant Serum Progesterone Variations on the Day of Final Oocyte Maturation in Stimulated IVF Cycles. Front Endocrinol (Lausanne). 2019; 10 806.	Wrong outcomes;
Shi, Q., Jiang, Y., Kong, N., Huang, C., Liu, J., Shen, X., Sun, Y., Lu, F., Mei, J. and Zhou, J. Serum LH Level on the Day of hCG Administration as a Predictor of the Reproductive Outcomes in Ovulation Induction Cycle Frozen-Thawed Embryo Transfer. J Pers Med. 2022; 13 (1):	Wrong patient population;
Simon, C., Branet, L., Moreau, J., Gatimel, N., Cohade, C., Lesourd, F., Parinaud, J. and Leandri, R. Association between progesterone to number of mature oocytes index and live birth in GnRH antagonist protocols. Reprod Biomed Online. 2019; 38 (6): 901-907.	Wrong intervention;

Simon, C., Moreau, J., Gatimel, N., Cohade, C., Parinaud, J. and Leandri, R. Impact of estradiol and progesterone levels during the late follicular stage on the outcome of GnRH antagonist protocols. Gynecol Endocrinol. 2019; 35 (6): 481-484.	Wrong outcomes;
Singh, N., Malik, N., Malhotra, N., Vanamail, P. and Gupta, M. Impact of progesterone (on hCG day)/oocyte ratio on pregnancy outcome in long agonist non donor fresh IVF/ICSI cycles. Taiwan J Obstet Gynecol. 2016; 55 (4): 503-6.	Wrong intervention;
Stormlund, S., Sopa, N., Lyng Forman, J., Zedeler, A., Bogstad, J., Prætorius, L., Nielsen, H. S., Klajnbard, A., Englund, A. L., Ziebe, S., Freiesleben, N. C., Bergh, C., Humaidan, P., Nyboe Andersen, A., Pinborg, A. and Løssl, K. The prevalence of late-follicular phase progesterone elevation and impact on the ongoing pregnancy rate after fresh and frozen blastocyst transfer. Sub-study of an RCT. Hum Fertil (Camb). 2024; 27 (1): 2265153.	Too little patients in study group;
Sun, Y. and Zhu, A. Effect of body mass index on progesterone level on trigger day in gonadotropin-releasing hormone antagonist cycles. Gynecol Endocrinol. 2024; 40 (1): 2364892.	Wrong study question;
Tavaniotou, A., Albano, C., Van Steirteghem, A. and Devroey, P. The impact of LH serum concentration on the clinical outcome of IVF cycles in patients receiving two regimens of clomiphene citrate/gonadotrophin/0.25 mg cetrorelix. Reprod Biomed Online. 2003; 6 (4): 421-6.	Wrong study design;
Thabet, M., Abdelhafez, M. S., Elshamy, M. R., Albahlol, I. A., Fayala, E., Wageeh, A., El-Zayadi, A. A., Bahgat, N. A., Mohammed, S. M., Mohamed, A. A. and et al. Competence of Combined Low Dose of Human Chorionic Gonadotropin (HCG) and Clomiphene Citrate (CC) Versus Continued CC during Ovulation Induction in Women with CC-Resistant Polycystic Ovarian Syndrome: a Randomized Controlled Trial. Medicina (Kaunas). 2024; 60 (8):	Wrong study question;
Tsai, Y. R., Lin, Y. J., Lin, Y. C., Hsu, T. Y. and Lan, K. C. Factors associated with extremely high progesterone concentrations on the day of HCG administration. J Gynecol Obstet Hum Reprod. 2020; 49 (8): 101720.	Wrong outcomes;
Tulic, L., Tulic, I., Bila, J., Nikolic, L., Dotlic, J., Lazarevic-Suntov, M. and Kalezic, I. Correlation of progesterone levels on the day of oocyte retrieval with basal hormonal status and the outcome of ART. Sci Rep. 2020; 10 (1): 22291.	Wrong intervention;
Vanni, V. S., Somigliana, E., Reschini, M., Pagliardini, L., Marotta, E., Faulisi, S., Paffoni, A., Vigano, P., Vegetti, W., Candiani, M. and Papaleo, E. Top quality blastocyst formation rates in relation to progesterone levels on the day of oocyte maturation in GnRH antagonist IVF/ICSI cycles. PLoS One. 2017; 12 (5): e0176482.	Wrong outcomes;
Vaughan, D. A., Harrity, C., Sills, E. S. and Mocanu, E. V. Serum estradiol:oocyte ratio as a predictor of reproductive outcome: an analysis of data from >9000 IVF cycles in the Republic of Ireland. J Assist Reprod Genet. 2016; 33 (4): 481-8.	Wrong study design;
Venetis, C. A., Kolibianakis, E. M., Bosdou, J. K., Lainas, G. T., Sfontouris, I. A., Tarlatzis, B. C. and Lainas, T. G. Estimating the net effect of progesterone elevation on the day of hCG on live birth rates after IVF: a cohort analysis of 3296 IVF cycles. Hum Reprod. 2015; 30 (3): 684-91.	Wrong study design;
Venetis, C. A., Kolibianakis, E. M., Bosdou, J. K., Lainas, G. T., Sfontouris, I. A., Tarlatzis, B. C. and Lainas, T. G. Basal serum progesterone and history of elevated progesterone on the day of hCG administration are significant predictors of late follicular progesterone elevation in GnRH antagonist IVF cycles. Hum Reprod. 2016; 31 (8): 1859-65.	Wrong outcomes;
Venetis, C. A., Kolibianakis, E. M., Papanikolaou, E., Bontis, J., Devroey, P. and Tarlatzis, B. C. Is progesterone elevation on the day of human chorionic gonadotrophin administration associated with the probability of pregnancy in in vitro fertilization? A systematic review and meta-analysis. Hum Reprod Update. 2007; 13 (4): 343-55.	Replaced by a newer systematic review;
Verschuere, H., Laenen, A., Debrock, S., Tomassetti, C. and Lie Fong, S. Luteinizing hormone profiles during ovarian stimulation in assisted reproductive treatment. Front Endocrinol (Lausanne). 2024; 15 1481546.	Wrong study question;
Wang, J., Ding, J., Qu, B., Zhang, Y. and Zhou, Q. Does Serum LH Level Influence IVF Outcomes in Women with PCOS Undergoing GnRH-Antagonist Stimulation: A Novel Indicator. J Clin Med. 2022; 11 (16):	Wrong study design;
Wei, C. X., Zhang, L., Pang, C. H., Qi, Y. H. and Zhang, J. W. Effect of the ratios of estradiol increase on the outcome of in vitro fertilization-embryo transfer with antagonist regimens: a single center retrospective cohort study. BMC Pregnancy Childbirth. 2023; 23 (1): 134.	Wrong intervention;
Wei, L., Zhao, Y., Xu, C. and Zhang, C. Slightly Elevated Progesterone on HCG Trigger Day Has an Impact on Pregnancy Outcomes of Fresh Single Blastocyst Transfer Cycles Under an Early Follicular Phase Prolonged Protocol Cycle. Int J Womens Health. 2022; 14 1761-1768.	Wrong study design;
Wei, M., Zhang, X. M., Gu, F. L., Lv, F., Ji, Y. R., Liu, K. F., She, H. and Hu, R. The impact of LH, E2, and P level of HCG administration day on outcomes of in vitro fertilization in controlled ovarian hyperstimulation. Clin Exp Obstet Gynecol. 2015; 42 (3): 361-6.	Wrong study design;

Wei, Y., Luan, T., Shen, J., Zhang, J., Zhang, J., Su, Y., Ling, X., Li, X. and Zhao, C. LH on GnRH-ant day to basal LH affects the IVF/ICSI outcome of PCOS women undergoing GnRH-antagonist protocol. Int J Gynaecol Obstet. 2024; 164 (2): 624-632.	Wrong study question;
Wu, J., Zhang, H. and Wang, X. E2 level > 2950 pg/ml on hCG trigger day is an independent predictor for birthweight loss of full-term singletons born after fresh embryo transfers in non-PCOS patients. Reprod Biol Endocrinol. 2022; 20 (1): 162.	Wrong outcomes;
Xiong, Y., Hu, L., Zhang, T., Wang, M., Xu, H., Li, T. C., Sun, Y. and Wang, C. C. Effects of high progesterone in in-vitro fertilization cycle on DNA methylation and gene expression of adhesion molecules on endometrium during implantation window. J Assist Reprod Genet. 2020; 37 (1): 33-43.	Wrong outcomes;
Xiong, Y., Wang, J., Liu, L., Chen, X., Xu, H., Li, T. C., Wang, C. C. and Zhang, S. Effects of high progesterone level on the day of human chorionic gonadotrophin administration in in vitro fertilization cycles on epigenetic modification of endometrium in the peri-implantation period. Fertil Steril. 2017; 108 (2): 269-276.e1.	Wrong study question;
Xu, B., Li, Z., Zhang, H., Jin, L., Li, Y., Ai, J. and Zhu, G. Serum progesterone level effects on the outcome of in vitro fertilization in patients with different ovarian response: an analysis of more than 10,000 cycles. Fertil Steril. 2012; 97 (6): 1321-7.e1.	included in systematic review;
Yadav, A., Noor, N., Mahey, R., Singh, N., Dwarakanathan, V. and Malhotra, N. Serum progesterone on the day of human chorionic gonadotropin (hCG) trigger as a predictor of in-vitro fertilization (IVF) outcome - a retrospective analysis of seven years. JBRA Assist Reprod. 2023; 27 (2): 156-162.	Wrong study design;
Yanaihara, A., Yorimitsu, T., Motoyama, H., Ohara, M. and Kawamura, T. Mild stimulation with clomiphene citrate in combination with recombinant follicle-stimulating hormone and gonadotropin-releasing hormone antagonist and its influence on serum estradiol level and pregnancy rate. Reprod Med Biol. 2008; 7 (2): 85-89.	Wrong study design;
Yang, Y., Liu, B., Wu, G. and Yang, J. Exploration of the value of progesterone and progesterone/estradiol ratio on the hCG trigger day in predicting pregnancy outcomes of PCOS patients undergoing IVF/ICSI: a retrospective cohort study. Reprod Biol Endocrinol. 2021; 19 (1): 184.	Wrong study design;
Yding Andersen, C., Bungum, L., Nyboe Andersen, A. and Humaidan, P. Preovulatory progesterone concentration associates significantly to follicle number and LH concentration but not to pregnancy rate. Reprod Biomed Online. 2011; 23 (2): 187-95.	included in systematic review;
Yoldemir, T. and Fraser, I. S. The effect of elevated serum estradiol levels on the day of human chorionic gonadotropin injection on pregnancy outcomes in an assisted reproduction program. Aust N Z J Obstet Gynaecol. 2009; 49 (5): 545-50.	Wrong outcomes;
Younis, J. S., Yakovi, S., Perlitz, Y. and Izhaki, I. Proof of concept use of progesterone/estradiol ratio to investigate late follicular progesterone in women with low number of preovulatory follicles. Minerva Endocrinol (Torino). 2024; 49 (1): 25-32.	Wrong study design;
Zhang, J., Du, M., Wu, Y., Wei, Z. and Guan, Y. Effect of serum progesterone levels on hCG trigger day on pregnancy outcomes in GnRH antagonist cycles. Front Endocrinol (Lausanne). 2022; 13 982830.	Wrong study design;
Zhao, S., Xu, H., Wu, X., Xia, L., Li, J., Zhang, D., Zhang, A. and Xu, B. The serum follicle stimulating hormone-to-luteinizing hormone ratios can predict assisted reproductive technology outcomes in women undergoing gonadotropin releasing hormone antagonist protocol. Front Endocrinol (Lausanne). 2023; 14 1093954.	Wrong study design;

16. WHICH CRITERIA FOR CYCLE CANCELLATION ARE MEANINGFUL REGARDING PREDICTED LOW/HIGH OOCYTE YIELD?

Flowchart

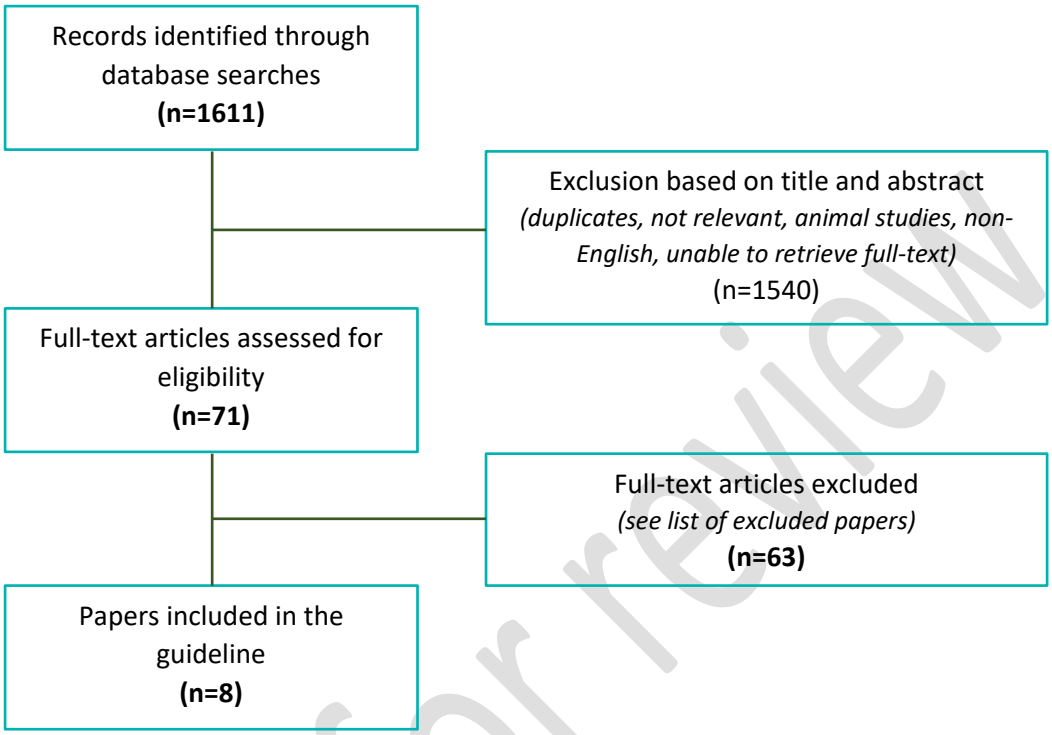


List of excluded papers

	Exclusion criterion
Feferkorn, I., Ata, B., Esteves, S. C., La Marca, A., Paulson, R., Blockeel, C., Conforti, A., Fatemi, H. M., Humaidan, P., Lainas, G. T., Mol, B. W., Norman, R. J., Orvieto, R., Polyzos, N. P., Santos-Ribeiro, S., Sunkara, S. K., Tan, S. L., Ubaldi, F. M., Urman, B., Velasco, J. G., Weissman, A., Yarali, H. and Dahan, M. H. The HERA(Hyper-response Risk Assessment) Delphi consensus definition of hyper-responders for in-vitro fertilization. J Assist Reprod Genet. 2023; 40 (5): 1071-1081.	Wrong study design;
Izhar, R., Husain, S., Tahir, M. A., Kausar, M., Sana, T. and Ghalib, F. Antral follicle count and anti-Müllerian hormone level as predictors of ovarian hyperstimulation syndrome in women with polycystic ovarian syndrome undergoing controlled ovarian stimulation. J Ultrason. 2021; 21 (86): e200-e205.	Wrong intervention;
Lainas, G. T., Lainas, T. G., Sfontouris, I. A., Venetis, C. A., Kyprianou, M. A., Petsas, G. K., Tarlatzis, B. C. and Kolibianakis, E. M. Adecision-making algorithm for performing or cancelling embryo transfer in patients at high risk for ovarian hyperstimulation syndrome after triggering final oocyte maturation with hCG. Hum Reprod Open. 2020; 2020 (3): hoaa013.	Wrong intervention;

17. WHAT IS THE PREFERRED DRUG FOR TRIGGERING OF FINAL OOCYTE MATURATION IN TERMS OF EFFICACY AND SAFETY IN THE OVERALL IVF/ICSI POPULATION?

Flowchart



List of excluded papers

	Exclusion criterion
Abdulkhalikova, D., Bokal, E. V., Stimpfel, M., Ciglar, P. and Korosec, S. Reproductive Outcome After GnRH Agonist Triggering With Co-Administration of 1500 IU hCG on the Day of Oocyte Retrieval in High Responders: A Long-Term Retrospective Cohort Study. Front Endocrinol (Lausanne). 2022; 13 826411.	Wrong patient population;
Aflatoonian, A., Haghighi, F., Hoseini, M. and Haghdani, S. Does the repeat dose of gonadotropin-releasing hormone agonist trigger in polycystic ovarian syndrome improve in vitro fertilization cycles outcome? A clinical trial study. Int J Reprod Biomed. 2020; 18 (7): 485-490.	Wrong intervention;
Albeitawi, S., Marar, E. A., Reshoud, F. A., Hamadneh, J., Hamza, R., Alhasan, G., Omeish, H. and Vigano, P. Dual trigger with gonadotropin-releasing hormone agonist and human chorionic gonadotropin significantly improves oocyte yield in normal responders on GnRH-antagonist cycles. JBRA Assist Reprod. 2022; 26 (1): 28-32.	Cohort study in the presence of higher quality evidence;
Alborzi, M., Pouya, K., Maman, R. A., Fattahi, A., Hamdi, K. and Hakimi, P. Dual FSH and HCG Triggering Increases Clinical Pregnancy Rate in IUI for Unexplained Infertility: a Randomized Controlled Trial. International Journal of Women's Health and Reproduction Sciences. 2024; 12 (2): 83-88.	Wrong setting;
Ali, S. S., Elsenosy, E., Sayed, G. H., Farghaly, T. A., Youssef, A. A., Badran, E., Abbas, A. M. and Abdelaleem, A. A. Dual trigger using recombinant HCG and gonadotropin-releasing hormone agonist improve oocyte maturity and embryo grading for normal responders in GnRH antagonist cycles: Randomized controlled trial. J Gynecol Obstet Hum Reprod. 2020; 49 (5): 101728.	Included in meta-analysis;
Ammar, I. M. M., Alnemr, A. A. A., Abdou, A. M. and Shazly, S. A. Gonadotropin-releasing hormone agonist versus human chorionic gonadotropin for ovulation triggering in letrozole stimulated cycles. Middle East Fertility Society Journal. 2018; 23 (4): 303-309.	Timed intercourse
Aziz, N. A., Ibrahim, A., Ramli, R., Yaacob, N., Rahman, S. N. A., Ismail, E. H. E. and Omar, A. A. Comparison between hCG and GnRH Agonist for Ovulation Trigger in GnRH Antagonist In-Vitro Fertilization Cycles in a Tertiary Hospital in Malaysia: An observational study. JBRA Assist Reprod. 2024; 28 (1): 21-6.	Cohort study in the presence of higher quality evidence;
Bar Hava, I., Yafee, H., Omer, Y., Humaidan, P. and Ganer Herman, H. GnRHa for trigger and luteal phase support in natural cycle frozen embryo transfer - A proof of concept study. Reprod Biol. 2020; 20 (3): 282-287.	Frozen embryo transfer;
Beck-Fruchter, R., Baram, S., Geslevich, Y. and Weiss, A. Gonadotropin Releasing Hormone Agonist Final Oocyte Maturation and Human Chorionic Gonadotropin as Exclusive Luteal Support in Normal Responders. Gynecol Obstet Invest. 2019; 84 (1): 27-34.	Wrong intervention;
Ben-Haroush, A., Sapir, O., Salman, L., Altman, E., Garor, R., Margalit, T., Shufaro, Y. and Oron, G. Does 'Dual Trigger' Increase Oocyte Maturation Rate? J Obstet Gynaecol. 2020; 40 (6): 860-862.	Cohort study in the presence of higher quality evidence;
Cevher Akdulum, M. F., Arık, Sİ, Demirdağ, E., Erdem, M. and Erdem, A. In Vitro Fertilization Outcomes With a Dual Trigger in Normoresponders in Antagonist Cycles. Cureus. 2023; 15 (9): e45623.	Wrong study design;
Cherrière, F., Arvis, P., Le Pabic, E., Bidet, M., Jaffré, F. and Guivarc'h-Levêque, A. Equivalent live-birth rate in antagonist IVF/ICSI protocol after oocyte triggering with GnRH agonist supplemented with 1500 r-hCG the day of oocyte retrieval vs r-hCG : A case-control study. J Gynecol Obstet Hum Reprod. 2020; 49 (6): 101702.	Wrong intervention;
Chung, E. H., Khorshid, A., Bavan, B. and Lathi, R. B. A cost analysis of hCG trigger alone versus dual trigger for achieving live birth following in vitro fertilization. Reprod Fertil. 2025; 6 (1):	Wrong study design;
Chung, R. K., Mancuso, A. C., Summers, K. M., Sparks, A. E., Duran, H. E. and Mejia, R. B. Dual trigger protocol is an effective in vitro fertilization strategy in both normal and high responders without compromising pregnancy outcomes in fresh cycles. F S Rep. 2021; 2 (3): 314-319.	Wrong patient population;
Deepika, K., Suvarna, R., Sumi, M., Snehal, D., Arveen, V., Anuja, K., Gautham, P. and Kamini, R. HCG trigger versus GnRH agonist trigger in PCOS patients undergoing IVF cycles: frozen embryo transfer outcomes. JBRA Assist Reprod. 2021; 25 (1): 48-58.	Wrong study design;
Dong, L., Lian, F., Wu, H., Xiang, S., Li, Y., Wei, C., Yu, X. and Xin, X. Reproductive outcomes of dual trigger with combination GnRH agonist and hCG versus trigger with hCG alone in women undergoing IVF/ICSI cycles: a retrospective cohort study with propensity score matching. BMC Pregnancy Childbirth. 2022; 22 (1): 583.	Cohort study in the presence of higher quality evidence;
Eftekhar, M., Naghshineh, E., Neghab, N. and Hosseinisadat, R. A comparison of dual triggering (by administration of GnRH agonist plus HCG) versus HCG alone in poor ovarian responders in ART outcomes. Middle East Fertility Society Journal. 2018; 23 (4): 350-353.	Included in meta-analysis;

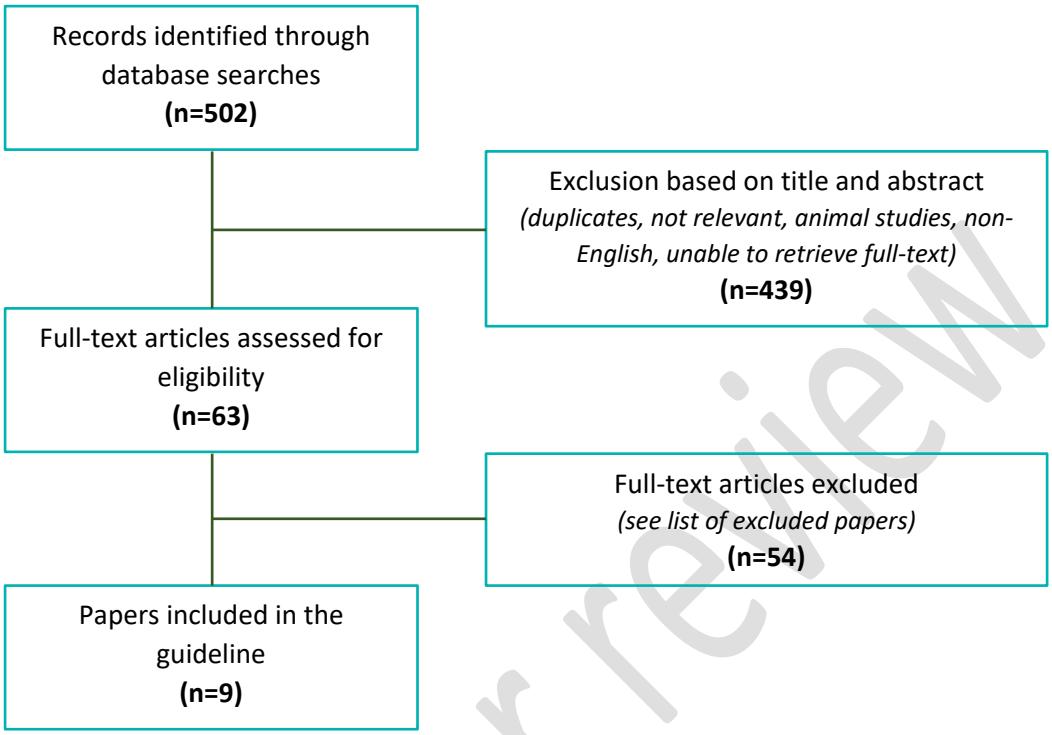
Engmann, L. L., Maslow, B. S., Kaye, L. A., Griffin, D. W., DiLuigi, A. J., Schmidt, D. W., Grow, D. R., Nulsen, J. C. and Benadiva, C. A. Low dose human chorionic gonadotropin administration at the time of gonadotropin releasing-hormone agonist trigger versus 35 h later in women at high risk of developing ovarian hyperstimulation syndrome - a prospective randomized double-blind clinical trial. J Ovarian Res. 2019; 12 (1): 8.	Wrong study design;
Farouk, D., Hawas, H. M., Shaban, M. M., Mekhimer, M. I., Sheeba, M. and Nabil, M. The administration of GnRH and HCG: double trigger vs HCG alone for follicular oocyte maturation in poor IVF responders—a randomized controlled trial. Middle East Fertility Society Journal. 2024; 29 (1):	Poor quality study due to incomplete reporting of methodology;
Gao, F., Wang, Y., Fu, M., Zhang, Q., Ren, Y., Shen, H. and Han, H. Effect of a "Dual Trigger" Using a GnRH Agonist and hCG on the Cumulative Live-Birth Rate for Normal Responders in GnRH-Antagonist Cycles. Front Med (Lausanne). 2021; 8 683210.	Cohort study in the presence of higher quality evidence;
González, V. G., Triana, A. M., García, I. S., Nieto, S. O., Urrutia, M. C., García, I. C. and Gastañaga-Holguera, T. Dual trigger vs. Conventional trigger outcomes in In Vitro Fertilization. Systematic review and meta-analysis. JBRA Assist Reprod. 2023; 27 (1): 112-119.	Pooled data from RCTs and cohort studies;
Guner, F. C., Ozekinci, M., Mendilcioglu, I. and Kasabali, Z. Reproductive Outcomes of Dual Trigger versus hCG Alone in Women Undergoing In Vitro Fertilization with Fresh Embryo Transfer Cycles. Obstet Gynecol Int. 2024; 2024 9972437.	Cohort study in the presence of higher quality evidence;
Guo, D., Pang, C. and Wang, K. Comparison of pregnancy outcomes in women with normal ovarian response to the gonadotropin-releasing hormone agonist protocol using different trigger methods: a single-center retrospective cohort study based on propensity score matching. Arch Gynecol Obstet. 2024; 309 (5): 2153-2165.	Cohort study in the presence of higher quality evidence;
Gurbuz, A. S., Deveer, R. and Gode, F. Evaluation of Dual Trigger with Combination of Gonadotropin-Releasing Hormone Agonist and Human Chorionic Gonadotropin in İmproving Oocyte-Follicle Ratio in Normo-Responder Patients. Niger J Clin Pract. 2021; 24 (8): 1159-1163.	Wrong study design;
Haas, J., Bassil, R., Samara, N., Zilberberg, E., Mehta, C., Orvieto, R. and Casper, R. F. GnRH agonist and hCG (dual trigger) versus hCG trigger for final follicular maturation: a double-blinded, randomized controlled study. Hum Reprod. 2020; 35 (7): 1648-1654.	Included in meta-analysis;
He, Y., Tang, Y., Chen, S., Liu, J. and Liu, H. Effect of GnRH agonist alone or combined with different low-dose hCG on cumulative live birth rate for high responders in GnRH antagonist cycles: a retrospective study. BMC Pregnancy Childbirth. 2022; 22 (1): 172.	Cohort study in the presence of higher quality evidence;
He, Z., Liu, Y., Huang, N., Liu, X., Zeng, L., Lian, Y., Li, R. and Chi, H. Dual trigger versus human chorionic gonadotropin trigger for blastocyst quality and cumulative live birth. J Assist Reprod Genet. 2024; 41 (12): 3445-3453.	Frozen embryo transfer;
Hsia, L. H., Lee, T. H., Lin, Y. H., Huang, Y. Y., Chang, H. J. and Liu, Y. L. Dual trigger improves the pregnancy rate in fresh in vitro fertilization (IVF) cycles compared with the human chorionic gonadotropin (hCG) trigger: a systematic review and meta-analysis of randomized trials. J Assist Reprod Genet. 2023;	Pooled data from fresh and frozen cycles;
Hu, K. L., Wang, S., Ye, X., Zhang, D. and Hunt, S. GnRH agonist and hCG (dual trigger) versus hCG trigger for follicular maturation: a systematic review and meta-analysis of randomized trials. Reprod Biol Endocrinol. 2021; 19 (1): 78.	More recent meta-analysis available;
Humaidan, P., Bredkjaer, H. E., Bungum, L., Bungum, M., Grøndahl, M. L., Westergaard, L. and Andersen, C. Y. GnRH agonist (buserelin) or hCG for ovulation induction in GnRH antagonist IVF/ICSI cycles: a prospective randomized study. Hum Reprod. 2005; 20 (5): 1213-20.	Included in meta-analysis;
Kahraman, S. and Sahin, Y. Is there a critical LH level for hCG trigger after the detection of LH surge in modified natural frozen-thawed single blastocyst transfer cycles? J Assist Reprod Genet. 2020; 37 (12): 3025-3031.	Frozen embryo transfer;
Kalafat, E., Turkgeldi, E., Yildız, S., Dizdar, M., Keles, I. and Ata, B. Outcomes of a GnRH Agonist Trigger Following a GnRH Antagonist or Flexible Progestin-Primed Ovarian Stimulation Cycle. Front Endocrinol (Lausanne). 2022; 13 837880.	Wrong comparator;
Kang, M. K., Kim, M. K., Kim, T. H., Kim, J. W., Chang, E. M., Lyu, S. W., Kim, J. Y. and Lee, W. S. Association between different dual trigger dosages and in vitro fertilization results in patients with patient-oriented strategies encompassing individualized oocyte number group IV. Obstet Gynecol Sci. 2022; 65 (2): 215-222.	Wrong patient population;
Kol, S. and Segal, L. GnRH agonist triggering followed by 1500 IU of HCG 48 h after oocyte retrieval for luteal phase support. Reprod Biomed Online. 2020; 41 (5): 854-858.	Wrong intervention;
Li, X., Cao, Y., Lin, J., Cai, R., Zhang, L. and Liu, Y. Effects of gonadotropin-releasing hormone antagonist (GnRH-ant) cessation on trigger day in a GnRH-ant protocol: a meta-analysis. J Obstet Gynaecol. 2025; 45 (1): 2444496.	Wrong intervention;
Liu, X., Tian, L., Li, P. and Shi, J. Clinical Outcomes of Frozen-Thawed Embryo Transfer in Natural Cycles with Spontaneous or Induced Ovulation: a Retrospective Cohort Study from 1937 Cycles. Reprod Sci. 2021; 28 (3): 794-800.	Frozen embryo transfer;

Maged, A. M., Ragab, M. A., Shohayeb, A., Saber, W., Ekladious, S., Hussein, E. A., El-Mazny, A. and Hany, A. Comparative study between single versus dual trigger for poor responders in GnRH-antagonist ICSI cycles: A randomized controlled study. Int J Gynaecol Obstet. 2021; 152 (3): 395-400.	Included in meta-analysis;
Mahajan, N., Sharma, S., Arora, P. R., Gupta, S., Rani, K. and Naidu, P. Evaluation of dual trigger with gonadotropin-releasing hormone agonist and human chorionic gonadotropin in improving oocyte maturity rates: a prospective randomized study. J Hum Reprod Sci. 2016; 9 (2): 101-106.	Included in meta-analysis;
Maslow, B. L., Guarnaccia, M., Stefanacci, C., Ramirez, L. and Klein, J. U. The use of GnRH-agonist trigger for the final maturation of oocytes in normal and low responders undergoing planned oocyte cryopreservation. Hum Reprod. 2020; 35 (5): 1054-1060.	Wrong patient population;
Matsumoto, L., Yamakami, L. Y. S., Turco, E. G. L., Benetti-Pinto, C. L. and Yela, D. A. Use of Triggers on in vitro Fertilization and Evaluation of Risk Factors for Sub-Optimal Maturation Rate. Rev Bras Ginecol Obstet. 2022; 44 (4): 369-375.	Cohort study in the presence of higher quality evidence;
Mutlu, I., Demirdag, E., Cevher, F., Erdem, A. and Erdem, M. Dual trigger with the combination of gonadotropin-releasing hormone agonist and standard dose of human chorionic gonadotropin improves in vitro fertilisation outcomes in poor ovarian responders. J Obstet Gynaecol. 2022; 42 (5): 1239-1244.	Cohort study in the presence of higher quality evidence;
Oliveira, C. M. Filho, Oliveira, C. A. M., Fonseca, L. L., Souza, K. R. R. and Radaelli, M. R. M. GnRH agonist in association with hCG versus hCG alone for final oocyte maturation triggering in GnRH antagonist cycles. JBRA Assist Reprod. 2021; 25 (2): 246-251.	Poor quality study due to incomplete reporting of methodology;
Orvieto, R., Nahum, R., Frei, J., Zandman, O., Frenkel, Y. and Haas, J. GnRH-Agonist Ovulation Trigger in Patients Undergoing Controlled Ovarian Hyperstimulation for IVF with Stop GnRH-Agonist Combined with Multidose GnRH-Antagonist Protocol. Gynecol Obstet Invest. 2021; 86 (5): 427-431.	Wrong intervention;
Rahav Koren, R., Miller, N., Moran, R., Decter, D., Berkowitz, A., Haikin Herzberger, E. and Wiser, A. GnRH agonist-triggering ovulation in women with advanced age. Sci Rep. 2022; 12 (1): 16401.	Wrong study design;
Setti, A. S., Maldonado, L. G. L., Braga, Dpaf, Iaconelli, A., Jr. and Borges, E., Jr. Dual trigger improves response to ovarian stimulation and ICSI outcomes in patients with a previous r-hCG triggered ICSI cycle. JBRA Assist Reprod. 2022; 26 (2): 255-260.	Wrong study design;
Shakerian, B., Turkgeldi, E., Guler Cekic, S., Yildiz, S., Keles, I. and Ata, B. Dual Trigger Compared with Human Chorionic Gonadotropin Alone and Effects on Clinical Outcome of Intracytoplasmic Sperm Injection. Int J Fertil Steril. 2021; 15 (4): 294-299.	Cohort study in the presence of higher quality evidence;
Shapiro, M., Romanski, P., Thomas, A., Lanes, A. and Yanushpolsky, E. Low dose hCG supplementation in a Gn-RH-agonist trigger protocol is associated with worse pregnancy outcomes: a retrospective cohort study. Fertil Res Pract. 2021; 7 (1): 12.	Cohort study in the presence of higher quality evidence;
Singh, N., Girish, B., Malhotra, N., Mahey, R. and Perumal, V. Does Double Dose of Recombinant Human Chorionic Gonadotropin for Final Follicular Maturation in In vitro Fertilization Cycles Improve Oocyte Quality: A Prospective Randomized Study. J Hum Reprod Sci. 2019; 12 (4): 310-315.	Wrong comparator;
Sloth, A., Kjølhede, M., Sarmon, K. G. and Knudsen, U. B. Effect of dual trigger on reproductive outcome in low responders: a systematic PRISMA review and meta-analysis. Gynecol Endocrinol. 2022; 38 (3): 213-221.	Pooled data from poor responders and DOR patients;
Snosi, M. S., Mostafa, M. H., Eldin, M. A. and Abdel Hamid, A. S. GnRH agonist trigger vs. HCG trigger for tinal oocyte maturation in GnRH antagonist protocol ICSI cycles: a randomized controlled trial. Ginekologia i poloznictwo. 2023; 18 (2):	Wrong study design;
Tan, J., Jing, C., Zhang, L., Lo, J., Kan, A. and Nakhuda, G. GnRH triggering may improve euploidy and live birth rate in hyper-responders: a retrospective cohort study. J Assist Reprod Genet. 2020; 37 (8): 1939-1948.	Wrong outcomes;
Tesarik, J., Galán-Lázaro, M., Mendoza, N. and Mendoza-Tesarik, R. Double HCG trigger improves recovery of oocytes in women with a paucifollicular response to ovarian stimulation: A pilot study. Int J Gynaecol Obstet. 2022; 157 (1): 149-153.	Wrong comparator;
Tu, B., Zhang, H., Chen, L., Yang, R., Liu, P., Li, R. and Qiao, J. Co-administration of GnRH-agonist and hCG (double trigger) for final oocyte maturation increases the number of top-quality embryos in patients undergoing IVF/ICSI cycles. J Ovarian Res. 2024; 17 (1): 137.	Cohort study in the presence of higher quality evidence;
Tulek, F., Kahraman, A. and Demirel, L. C. Dual trigger with gonadotropin releasing hormone agonist and human chorionic gonadotropin improves live birth rates in POSEIDON group 3 and 4 expected poor responders. Gynecol Endocrinol. 2022; 38 (9): 731-735.	Cohort study in the presence of higher quality evidence;
Valipour, F. and Navali, N. Comparison of Ovulation Triggering Outcomes by Standard Dose of hCG versus Declined hCG Dose With GnRH Agonist in Antagonist Cycles: a Randomized Clinical Trial. International Journal of Women's Health and Reproduction Sciences. 2022; 10 (2): 111-116.	Wrong comparator;

Wang, Q., Wan, Q., Li, T., Wang, X., Hu, Y., Zhong, Z., Pu, K., Ding, Y. and Tang, X. Effect of GnRH agonist trigger with or without low-dose hCG on reproductive outcomes for PCOS women with freeze-all strategy: a propensity score matching study. Arch Gynecol Obstet. 2024; 309 (2): 679-688.	Cohort study in the presence of higher quality evidence;
Wang, Y., Yi, Y. C., Guu, H. F., Chen, Y. F., Kung, H. F., Chang, J. C., Chen, L. Y., Chuan, S. T. and Chen, M. J. GnRH agonist-only trigger, compared to dual trigger, reduces oocyte retrieval rate in high responders without affecting cumulative live birth rate. Front Endocrinol (Lausanne). 2024; 15 1461317.	Wrong study design;
Wu, X., Yang, L., Tang, H., Luo, S., Tang, T., Ouyang, M., Liu, Z., Peng, X., Pan, X. and Yu, H. Safety and effectiveness of dual trigger (GnRH agonist + HCG) versus HCG alone in patients with high ovarian response. Am J Transl Res. 2024; 16 (11): 6668-6678.	Wrong comparator;
Xie, Q., Ni, D., Chen, S., Zhang, W., Wang, J., Ling, X. and Shen, R. Meta-analysis of trigger timing in normal responders undergoing GnRH antagonist ovarian hyperstimulation protocol. J Ovarian Res. 2024; 17 (1): 56.	Pooled data from RCTs and cohort studies;
Xu, K., Wang, J., Yang, S., Wang, Z., Hou, N. and Sun, M. Comparison of HCG Trigger versus Dual Trigger in Improving Pregnancy Outcomes in Patients with Different Ovarian Responses: A Retrospective Study. Int J Endocrinol. 2024; 2024 2507026.	Cohort study in the presence of higher quality evidence;
Yilmaz, N., Ceran, M. U., Ugurlu, E. N., Gülerman, H. C. and Engin Ustun, Y. GnRH agonist versus HCG triggering in different IVF/ICSI cycles of same patients: a retrospective study. J Obstet Gynaecol. 2020; 40 (6): 837-842.	Cohort study in the presence of higher quality evidence;
Zhang, Y., Guo, X., Guo, L., Chang, H. M., Shu, J. and Leung, P. C. K. Outcomes comparison of IVF/ICSI among different trigger methods for final oocyte maturation: A systematic review and meta-analysis. Faseb j. 2021; 35 (7): e21696.	More recent meta-analysis available;
Zhu, H., Zhao, C., Pan, Y., Zhou, H., Jin, X., Xu, W. and Zhang, S. Dual Trigger for Final Follicular Maturation Improves Cumulative Live-Birth Rate in Ovarian Stimulation for Freeze-All In Vitro Fertilization/Intracytoplasmic Sperm Injection Cycles. Front Endocrinol (Lausanne). 2021; 12 708247.	Wrong comparator;

18. WHAT IS THE EFFICACY AND SAFETY OF LUTEAL SUPPORT PROTOCOLS?

Flowchart



List of excluded papers

	Exclusion criterion
Statement of Retraction: Luteal support with vaginal dydrogesterone increases pregnancy rate in patients with clomifene resistant polycystic ovary syndrome receiving letrozole for ovulation induction. Gynecol Endocrinol. 2024; 40 (1): 2381309.	Wrong setting;
Abdelhakim, A. M., Abd-ElGawad, M., Hussein, R. S. and Abbas, A. M. Vaginal versus intramuscular progesterone for luteal phase support in assisted reproductive techniques: a systematic review and meta-analysis of randomized controlled trials. Gynecol Endocrinol. 2020; 36 (5): 389-397.	Pooled data from fresh and frozen cycles;
Beck-Fruchter, R., Baram, S., Geslevich, Y. and Weiss, A. Gonadotropin Releasing Hormone Agonist Final Oocyte Maturation and Human Chorionic Gonadotropin as Exclusive Luteal Support in Normal Responders. Gynecol Obstet Invest. 2019; 84 (1): 27-34.	Cohort study in the presence of higher quality evidence;
Buhbut, E., Nabulsi, R., Avigdor, G. and Ben-Ami, I. Comparison of pregnancy rates in antagonist cycles after luteal support with GnRH-agonist versus progesterone: prospective randomized study. Arch Gynecol Obstet. 2023; 308 (1): 255-263.	More cycles than patients included;
Buhl Borgstrøm, M., Willum Adrian, S., Nøhr, B., Peters Michaelsen, M., Cæcilie Nielsen, L., Bruun Gyldenvang, M. and Schiøler Kesmodel, U. Patient attitudes towards and satisfaction with subcutaneous injection of progesterone versus vaginal administration in assisted reproductive technology treatment. Eur J Obstet Gynecol Reprod Biol. 2023; 287 1-7.	Small study population, wrong outcomes;
Çakar, E., Tasan, H. A., Kumru, P., Cogendez, E., Usal, N. T., Kutlu, H. T., Özkaya, E. and Eser, S. K. Combined use of oestradiol and progesterone to support luteal phase in antagonist intracytoplasmic sperm injection cycles of normoresponder women: a case-control study. J Obstet Gynaecol. 2020; 40 (2): 264-269.	Cohort study in the presence of higher quality evidence;
Carosso, A. R., Canosa, S., Gennarelli, G., Sestero, M., Evangelisti, B., Charrier, L., Bergandi, L., Benedetto, C. and Revelli, A. Luteal Support with very Low Daily Dose of Human Chorionic Gonadotropin after Fresh Embryo Transfer as an Alternative to Cycle Segmentation for High Responders Patients Undergoing Gonadotropin-Releasing Hormone Agonist-Triggered IVF. Pharmaceuticals (Basel). 2021; 14 (3):	Already included in the 2018 version of the guideline;
Chi, H., Li, R., Qiao, J., Chen, X., Wang, X., Hao, G., Wu, Q., Cao, Y., Cai, L., Ye, H., Zhu, Y., Wang, S., Zhang, X., Zhang, C., Zhang, Y., Lv, Q., Sun, Y., Li, H., Huang, X. and Wang, F. Vaginal progesterone gel is non-inferior to intramuscular progesterone in efficacy with acceptable tolerability for luteal phase support: A prospective, randomized, multicenter study in China. Eur J Obstet Gynecol Reprod Biol. 2019; 237 100-105.	Included in systematic review;
Conforti, A., Carbone, L., Iorio, G. G., Cariati, F., Bagnulo, F., Marrone, V., Strina, I. and Alviggi, C. Luteal Phase Support Using Subcutaneous Progesterone: A Systematic Review. Front Reprod Health. 2021; 3 634813.	Pooled data from fresh and frozen cycles;
Demir, A., Köse, C., Şahin Güleç, E., Türkmen, P., Töz, E. and Peker, N. GnRH agonist administration as luteal support on the transfer day of single blastocyst in dual-triggered cycles. Ginekol Pol. 2023; 94 (5): 374-388.	Cohort study in the presence of higher quality evidence;
Di Guardo, F., Midassi, H., Racca, A., Tournaye, H., De Vos, M. and Blockeel, C. Luteal Phase Support in IVF: Comparison Between Evidence-Based Medicine and Real-Life Practices. Front Endocrinol (Lausanne). 2020; 11 500.	Wrong study design;
Duijkers, I. J. M., Klingmann, I., Prinz, R., Wargenau, M., Hrafnsdottir, S., Magnusdottir, T. B. and Klipping, C. Effect on endometrial histology and pharmacokinetics of different dose regimens of progesterone vaginal pessaries, in comparison with progesterone vaginal gel and placebo. Hum Reprod. 2018; 33 (11): 2131-2140.	Wrong study design;
Eftekhar, M., Mirzaei, M., Mangoli, E. and Mehrolhasani, Y. Effects of multiple doses of gonadotropin-releasing hormone agonist on the luteal-phase support in assisted reproductive cycles: a clinical trial study. International journal of reproductive biomedicine. 2021; 19 (7): 645-652.	Cohort study in the presence of higher quality evidence;
Fujii, S., Sato, S., Fukui, A., Kimura, H., Kasai, G. and Saito, Y. Continuous administration of gonadotrophin-releasing hormone agonist during the luteal phase in IVF. Hum Reprod. 2001; 16 (8): 1671-5.	Wrong study design;
Fusi, F. M., Brigante, C. M., Zanga, L., Mignini Renzini, M., Bosisio, C. and Fadini, R. GnRH agonists to sustain the luteal phase in antagonist IVF cycles: a randomized prospective trial. Reprod Biol Endocrinol. 2019; 17 (1): 103.	low quality study, high risk of bias
Gawron, I. M., Chrostowski, B., Derbisz, K., Jach, R. and Pietrus, M. Comparison of dydrogesterone plus progesterone gel with subcutaneous aqueous progesterone plus progesterone gel for luteal phase supplementation of subsequent in vitro cycle in women after previous cycle failure. Ginekol Pol. 2023;	Wrong comparator;

Han, S. J., Kim, H., Hong, Y. S., Kim, S. W., Ku, S. Y. and Suh, C. S. Comparison of the efficacy of vaginal micronised progesterone tablet and gel for in vitro fertilisation. J Obstet Gynaecol. 2025; 45 (1): 2436518.	Cohort study in the presence of higher quality evidence;
Herencia, A., Bernabeu, A., Pitas, A., Ortiz, J. A., Gavilán, C., Albero, S., Castillo, J. C. and Bernabeu, R. Progesterone levels on the day of embryo transfer using a single pessary of 400mg of vaginal progesterone vs. 200mg x2 pessaries in hormonal replacement cycles. JBRA Assist Reprod. 2023; 27 (4): 651-4.	FET
Ikechebelu, J. I., Dim, C. C., Eleje, G. U., Joe-Ikechebelu, N., Okpala, B. C. and Okam, P. C. A randomised control trial on oral dydrogesterone versus micronized vaginal progesterone pessary for luteal phase support in in vitro fertilization cycles. J Med Life. 2023; 16 (1): 62-69.	FET
Inamdar, D. B. and Majumdar, A. Evaluation of the impact of gonadotropin-releasing hormone agonist as an adjuvant in luteal-phase support on IVF outcome. J Hum Reprod Sci. 2012; 5 (3): 279-84.	Included in systematic review;
Kao, T. C., Tu, Y. A., Yang, P. K., Huang, C. C., Yang, J. H., Chen, S. U. and Chao, K. H. Clinical use of aqueous subcutaneous progesterone compared with vaginal progesterone as luteal support in in vitro fertilization: a randomized controlled study in Taiwan. Taiwan J Obstet Gynecol. 2022; 61 (5): 863-867.	Sample size too small.;
Kapur, A., Prasad, S. and Kumar, A. Is luteal phase estradiol supplementation beneficial in long agonist IVF-ET cycles? First prospective randomised controlled study from indian subcontinent. Journal of Clinical and Diagnostic Research. 2018; 12 (10): QC01-QC03.	Wrong outcomes;
Kasapoglu, I., Düzok, N., Şen, E., Çakır, C., Avcı, B. and Uncu, G. Luteal oestradiol for patients with serum oestradiol levels lower than expected per oocyte. Human fertility (Cambridge). 2021; 24 (2): 122-128.	Wrong study design;
Kastora, S. L., Gkova, G., Stavridis, K., Balachandren, N., Kastoras, A., Karakatsanis, A. and Mavrelos, D. Comparison of luteal support protocols in fresh IVF/ICSI cycles: a network meta-analysis. Sci Rep. 2024; 14 (1): 14492.	Better quality meta-analysis available.
La Marca, A., Anserini, P., Borini, A., D'Amato, G., Greco, E., Livi, C., Papaleo, E. and Rago, R. Luteal phase support in assisted reproductive technology centers: Italian survey. Minerva Obstet Gynecol. 2023;	Wrong study design;
Lai, T. J., Teng, S. W., Chang, C. K. and Huang, C. Y. Progesterone in Pregnancy: Evidence-Based Strategies to Reduce Miscarriage and Enhance Assisted Reproductive Technology. Med Sci Monit. 2024; 30 e943400.	Wrong study design;
Li, N., Fan, L., Cai, H., Pan, D., Shi, W., Shi, J. and Wang, H. Luteal phase support of intramuscular progesterone associated with lower hypertensive disorders of pregnancy as compared to vaginal progesterone: A cohort study. Int J Gynaecol Obstet. 2024;	Wrong outcomes;
Li, N., Huang, Y., Fan, L., Shi, Z., Cai, H., Shi, J. and Wang, H. Effect of estradiol supplementation on luteal support following a significant reduction in serum estradiol levels after hCG triggering: a prospective randomized controlled trial. Reprod Biol Endocrinol. 2024; 22 (1): 117.	Compared mixture of progesterone and added estradiol;
Lorillon, M., Robin, G., Keller, L., Cailliau, E., Delcourt, C., Simon, V., Decanter, C. and Catteau-Jonard, S. Is oral dydrogesterone equivalent to vaginal micronized progesterone for luteal phase support in women receiving oocyte donation? Reprod Biol Endocrinol. 2024; 22 (1): 154.	FET
Ma, X., Du, W., Hu, J., Yang, Y. and Zhang, X. Effect of Gonadotrophin-Releasing Hormone Agonist Addition for Luteal Support on Pregnancy Outcome in vitro Fertilization/Intracytoplasmic Sperm Injection Cycles: A Meta-Analysis Based on Randomized Controlled Trials. Gynecol Obstet Invest. 2020; 85 (1): 13-25.	Replaced by a more recent meta-analysis;
Madani, T., Arabipoor, A., Ramezanali, F., Khodabakhshi, S. and Zolfaghary, Z. The Effects of Three Methods of Luteal Phase Support on Pregnancy Outcomes in Poor Ovarian Responders: A Randomized Clinical Trial. Int J Fertil Steril. 2025; 19 (1): 10-16.	Does include GnRha at all onlu hcg.;
Mendoza-Tesarik, R., Mendoza, N., López, C. C. and Tesarik, J. GnRH agonist treatment of luteal phase deficiency in HCG-triggered IVF cycles: a matched case-control study. Reprod Biomed Online. 2019; 39 (2): 225-230.	Cohort study in the presence of higher quality evidence;
Mohammed, A., Woad, K. J., Mann, G. E., Craigon, J., Raine-Fenning, N. and Robinson, R. S. Evaluation of progestogen supplementation for luteal phase support in fresh in vitro fertilization cycles. Fertil Steril. 2019; 112 (3): 491-502.e3.	Mixed different study types (RCT and CS) without sub-analyses by study type;
Naghshineh, E., Ghasemi Tehrani, H., Sharifian, F. and Haghighat, S. A Comparison of Oral Dydrogesterone with Vaginal Progesterone for Luteal-Phase Support in In vitro Fertilization: a Randomized Controlled Trial. Advanced biomedical research. 2023; 12 132.	Wrong outcomes;
Nho, E. J., Hong, Y. H., Park, J. H., Kim, S. K., Lee, J. R., Jee, B. C. and Kim, S. H. Efficacy of dual progesterone administration (intramuscular and vaginal) for luteal support in fresh day 3 or day 4 embryo transfer cycles. Clin Exp Reprod Med. 2020; 47 (3): 227-232.	low quality study; high risk of bias

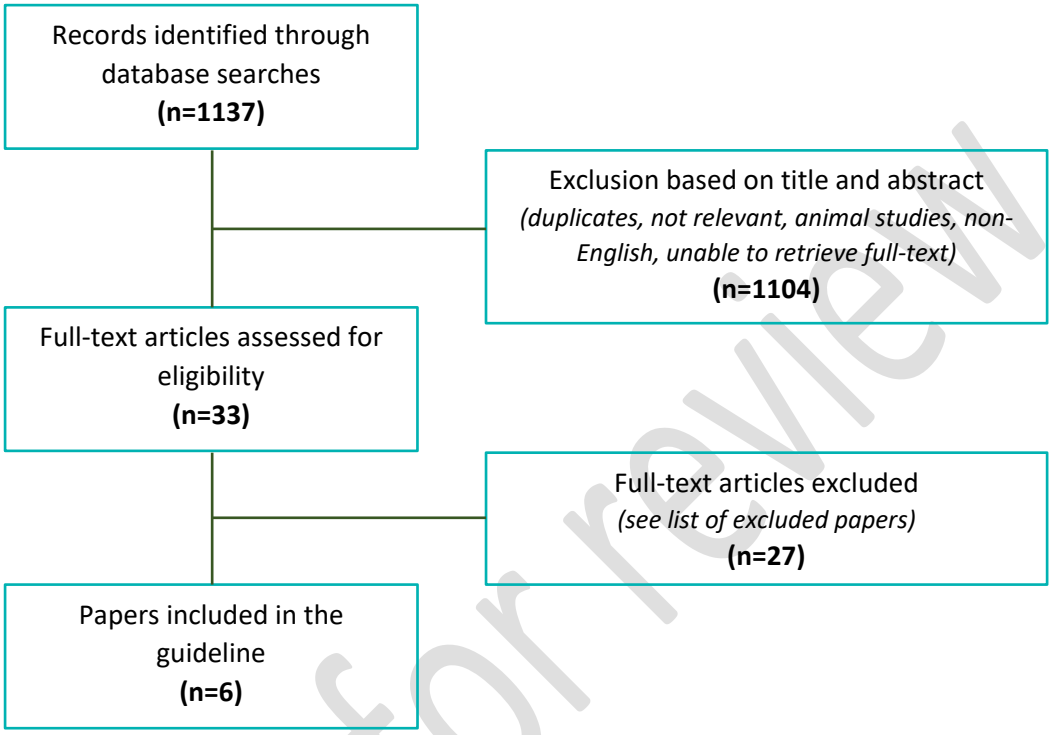
Pan, S. P., Chao, K. H., Huang, C. C., Wu, M. Y., Chen, M. J., Chang, C. H., Yang, J. H., Yang, Y. S. and Chen, S. U. Early stop of progesterone supplementation after confirmation of pregnancy in IVF/ICSI fresh embryo transfer cycles of poor responders does not affect pregnancy outcome. PLoS One. 2018; 13 (8): e0201824.	Cohort study in the presence of higher quality evidence;
Parvathi Devi, T. S. V., Gahlot, A., Sharma, S., Choudhary, M., Soni, R. and Sharma, M. Pregnancy outcomes following supplementation of single dose GnRH agonist to sustain the luteal phase in antagonist fresh embryo transfer cycles: a multicentric prospective cohort study. Asian pacific journal of reproduction. 2023; 12 (4): 162-169.	Cohort study in the presence of higher quality evidence;
Pirard, C., Loumaye, E., Laurent, P. and Wyns, C. Contribution to More Patient-Friendly ART Treatment: efficacy of Continuous Low-Dose GnRH Agonist as the Only Luteal Support-Results of a Prospective, Randomized, Comparative Study. Int J Endocrinol. 2015; 2015 727569.	Wrong study design;
Qu, D. and Li, Y. Multiple-dose versus single-dose gonadotropin-releasing hormone agonist after first in vitro fertilization failure associated with luteal phase deficiency: A randomized controlled trial. J Int Med Res. 2020; 48 (6): 300060520926026.	low quality study, high risk of bias
Qublan, H., Amarin, Z., Al-Qudah, M., Diab, F., Nawasreh, M., Malkawi, S. and Balawneh, M. Luteal phase support with GnRH-a improves implantation and pregnancy rates in IVF cycles with endometrium of <or=7 mm on day of egg retrieval. Hum Fertil (Camb). 2008; 11 (1): 43-7.	included in systematic review;
Rinaldi, L., Crescenzi, F. and Selman, H. Oral dydrogesterone along with vaginal micronized progesterone supplementation for luteal phase support in IVF patients, and its impact on pregnancy and live birth rates: a prospective randomized trial. BMC Pregnancy Childbirth. 2024; 24 (1): 845.	Wrong comparator;
Rodríguez-Varela, C., Salvaleda-Mateu, M., Bosch, E. and Labarta, E. A 12-h Difference in Exogenous Progesterone Initiation Does Not Have an Impact on Ongoing Pregnancy Rates in Artificial Cycles, as Long as Luteal Phase Support Starts Five Days Before Blastocyst Transfer. Reprod Sci. 2025; 32 (2): 488-494.	Retrospective cohort study;
Saharkhiz, N., Salehpour, S., Hosseini, S., Hosseinirad, H. and Nazari, L. Effects of gonadotropin-releasing hormone agonist (GnRH-a) as luteal phase support in intracytoplasmic sperm injection (ICSI) cycles: a randomized controlled trial. Middle East Fertility Society Journal. 2020; 25 (1):	included in systematic review;
Salehpour, S., Nazari, L., Hosseini, S., Azizi, E., Borumandnia, N. and Hashemi, T. Efficacy of daily GnRH agonist for luteal phase support following GnRH agonist triggered ICSI cycles versus conventional strategy: a Randomized controlled trial. JBRA Assist Reprod. 2021; 25 (3): 368-372.	Wrong study design;
Saunders, H., Khan, C., D'Hooghe, T., Magnúsdóttir, T. B., Klingmann, I. and Hrafnsdóttir, S. Efficacy, safety and tolerability of progesterone vaginal pessaries versus progesterone vaginal gel for luteal phase support after in vitro fertilisation: a randomised controlled trial. Hum Reprod. 2020; 35 (2): 355-363.	Wrong outcomes;
Scheffer, J. B., Scheffer, B. B., Carvalho, R. F., Aguiar, A. P., Lozano, D. H. M., Labrosse, J. and Grynberg, M. A comparison of the effects of three luteal phase support protocols with estrogen on in vitro fertilization-embryo transfer outcomes in patients on a GnRH antagonist protocol. JBRA Assist Reprod. 2019; 23 (3): 239-245.	Cohort study in the presence of higher quality evidence;
Shen, X., Yang, Q., Li, L. and Lu, W. Clinical Pregnancy and Incidence of Ovarian Hyperstimulation Syndrome in High Ovarian Responders Receiving Different Doses of hCG Supplementation in a GnRH-Agonist Trigger Protocol. Evid Based Complement Alternat Med. 2021; 2021 2180933.	Retracted article;
Shukry, S. A., Al-Moaamar, M. J. and Al-Hili, N. M. Effect of administration of single dose gnrh agonist in luteal phase on clinical pregnancy of fresh icsi cycles. Pharmacologyonline. 2021; 1 517-524.	low quality study;
Svenstrup, L., Möller, S., Fedder, J., Pedersen, D. E., Erb, K., Andersen, C. Y. and Humaidan, P. Investigation of luteal HCG supplementation in GnRH-agonist-triggered fresh embryo transfer cycles: a randomized controlled trial. Reprod Biomed Online. 2024; 48 (5): 103415.	Wrong comparator;
Tu, J., Lin, G. and Gong, F. Additional luteal support might improve IVF outcomes in patients with low progesterone level in middle luteal phase following a GnRH agonist protocol. Gynecol Endocrinol. 2021; 37 (2): 132-136.	Cohort study in the presence of higher quality evidence;
Wiser, A., Klement, A. H., Shavit, T., Berkovitz, A., Koren, R. R., Gonen, O., Amichay, K. and Shulman, A. Repeated GnRH agonist doses for luteal support: a proof of concept. Reprod Biomed Online. 2019; 39 (5): 770-776.	low quality study, high risk of bias;
Wiser, A., Klement, A. H., Shavit, T., Berkovitz, A., Koren, R. R., Gonen, O., Amichay, K. and Shulman, A. Corrigendum to â€˜ Repeated GnRH agonist doses for luteal support: a proof of conceptâ€□(Reproductive BioMedicine Online (2019) 39(5) (770â€“776), (S1472648319306649), (10.1016/j.rbmo.2019.07.031)). Reprod Biomed Online. 2020; 40 (2): 343-.	correction of previous article.;
Yang, D. Z., Griesinger, G., Wang, W., Gong, F., Liang, X., Zhang, H., Sun, Y., Kahler, E., Pexman-Fieth, C., Olofsson, J. I., Tournaye, H. and Chen, Z. J. A Phase III randomized controlled trial of oral dydrogesterone versus intravaginal progesterone gel for luteal phase support in in vitro fertilization	included in systematic review;

(Lotus II): results from the Chinese mainland subpopulation. Gynecol Endocrinol. 2020; 36 (2): 175-183.	
Yıldız, G. A., Şükür, Y. E., Ateş, C. and Aytaç, R. The addition of gonadotrophin releasing hormone agonist to routine luteal phase support in intracytoplasmic sperm injection and embryo transfer cycles: a randomized clinical trial. Eur J Obstet Gynecol Reprod Biol. 2014; 182 66-70.	included in systematic review;
Statement of Retraction: Luteal support with vaginal dydrogesterone increases pregnancy rate in patients with clomifene resistant polycystic ovary syndrome receiving letrozole for ovulation induction. Gynecol Endocrinol. 2024; 40 (1): 2381309.	Wrong setting;
Abdelhakim, A. M., Abd-ElGawad, M., Hussein, R. S. and Abbas, A. M. Vaginal versus intramuscular progesterone for luteal phase support in assisted reproductive techniques: a systematic review and meta-analysis of randomized controlled trials. Gynecol Endocrinol. 2020; 36 (5): 389-397.	Pooled data from fresh and frozen cycles;
Beck-Fruchter, R., Baram, S., Geslevich, Y. and Weiss, A. Gonadotropin Releasing Hormone Agonist Final Oocyte Maturation and Human Chorionic Gonadotropin as Exclusive Luteal Support in Normal Responders. Gynecol Obstet Invest. 2019; 84 (1): 27-34.	Cohort study in the presence of higher quality evidence;
Buhbut, E., Nabulsi, R., Avigdor, G. and Ben-Ami, I. Comparison of pregnancy rates in antagonist cycles after luteal support with GnRH-agonist versus progesterone: prospective randomized study. Arch Gynecol Obstet. 2023; 308 (1): 255-263.	More cycles than patients included;
Buhl Borgstrøm, M., Willum Adrian, S., Nøhr, B., Peters Michaelsen, M., Cæcilie Nielsen, L., Bruun Gyldenvang, M. and Schiøler Kesmodel, U. Patient attitudes towards and satisfaction with subcutaneous injection of progesterone versus vaginal administration in assisted reproductive technology treatment. Eur J Obstet Gynecol Reprod Biol. 2023; 287 1-7.	Small study population, wrong outcomes;
Çakar, E., Tasan, H. A., Kumru, P., Cogendez, E., Usal, N. T., Kutlu, H. T., Özkaya, E. and Eser, S. K. Combined use of oestradiol and progesterone to support luteal phase in antagonist intracytoplasmic sperm injection cycles of normoresponder women: a case-control study. J Obstet Gynaecol. 2020; 40 (2): 264-269.	Cohort study in the presence of higher quality evidence;
Carosso, A. R., Canosa, S., Gennarelli, G., Sestero, M., Evangelisti, B., Charrier, L., Bergandi, L., Benedetto, C. and Revelli, A. Luteal Support with very Low Daily Dose of Human Chorionic Gonadotropin after Fresh Embryo Transfer as an Alternative to Cycle Segmentation for High Responders Patients Undergoing Gonadotropin-Releasing Hormone Agonist-Triggered IVF. Pharmaceuticals (Basel). 2021; 14 (3):	Already included in the 2018 version of the guideline;
Chi, H., Li, R., Qiao, J., Chen, X., Wang, X., Hao, G., Wu, Q., Cao, Y., Cai, L., Ye, H., Zhu, Y., Wang, S., Zhang, X., Zhang, C., Zhang, Y., Lv, Q., Sun, Y., Li, H., Huang, X. and Wang, F. Vaginal progesterone gel is non-inferior to intramuscular progesterone in efficacy with acceptable tolerability for luteal phase support: Aprospective, randomized, multicenter study in China. Eur J Obstet Gynecol Reprod Biol. 2019; 237 100-105.	Included in systematic review;
Conforti, A., Carbone, L., Iorio, G. G., Cariati, F., Bagnulo, F., Marrone, V., Strina, I. and Alviggi, C. Luteal Phase Support Using Subcutaneous Progesterone: ASystematic Review. Front Reprod Health. 2021; 3 634813.	Pooled data from fresh and frozen cycles;
Demir, A., Köse, C., Şahin Güleç, E., Türkmen, P., Töz, E. and Peker, N. GnRH agonist administration as luteal support on the transfer day of single blastocyst in dual-triggered cycles. Ginekol Pol. 2023; 94 (5): 374-388.	Cohort study in the presence of higher quality evidence;
Di Guardo, F., Midassi, H., Racca, A., Tournaye, H., De Vos, M. and Blockeel, C. Luteal Phase Support in IVF: Comparison Between Evidence-Based Medicine and Real-Life Practices. Front Endocrinol (Lausanne). 2020; 11 500.	Wrong study design;
Duijkers, I. J. M., Klingmann, I., Prinz, R., Wargenau, M., Hrafnsdottir, S., Magnusdottir, T. B. and Klipping, C. Effect on endometrial histology and pharmacokinetics of different dose regimens of progesterone vaginal pessaries, in comparison with progesterone vaginal gel and placebo. Hum Reprod. 2018; 33 (11): 2131-2140.	Wrong study design;
Eftekhar, M., Mirzaei, M., Mangoli, E. and Mehrolhasani, Y. Effects of multiple doses of gonadotropin-releasing hormone agonist on the luteal-phase support in assisted reproductive cycles: a clinical trial study. International journal of reproductive biomedicine. 2021; 19 (7): 645-652.	Cohort study in the presence of higher quality evidence;
Fujii, S., Sato, S., Fukui, A., Kimura, H., Kasai, G. and Saito, Y. Continuous administration of gonadotrophin-releasing hormone agonist during the luteal phase in IVF. Hum Reprod. 2001; 16 (8): 1671-5.	Wrong study design;
Fusi, F. M., Brigante, C. M., Zanga, L., Mignini Renzini, M., Bosisio, C. and Fadini, R. GnRH agonists to sustain the luteal phase in antagonist IVF cycles: a randomized prospective trial. Reprod Biol Endocrinol. 2019; 17 (1): 103.	low quality study, high risk of bias
Gawron, I. M., Chrostowski, B., Derbisz, K., Jach, R. and Pietrus, M. Comparison of dydrogesterone plus progesterone gel with subcutaneous aqueous progesterone plus progesterone gel for luteal	Wrong comparator;

phase supplementation of subsequent in vitro cycle in women after previous cycle failure. Ginekol Pol. 2023;	

19. WHICH GNRH AGONIST MEDICATION AS A METHOD OF TRIGGERING WILL ADD TO THE PREVENTION OF THE OVARIAN HYPERSTIMULATION SYNDROME ALSO WITH REGARDS TO OVERALL EFFICACY?

Flowchart



List of excluded papers

	Exclusion criterion
Beck-Fruchter, R., Baram, S., Geslevich, Y. and Weiss, A. Gonadotropin Releasing Hormone Agonist Final Oocyte Maturation and Human Chorionic Gonadotropin as Exclusive Luteal Support in Normal Responders. Gynecol Obstet Invest. 2019; 84 (1): 27-34.	Wrong patient population;
Berkkanoglu, M., Coetzee, K., Bulut, H. and Ozgur, K. Risk of ovarian torsion is reduced in GnRH agonist triggered freeze-all cycles: a retrospective cohort study. J Obstet Gynaecol. 2019; 39 (2): 212-217.	Wrong patient population;
Bosdou, J. K., Venetis, C. A., Tarlatzis, B. C., Grimbizis, G. F. and Kolibianakis, E. M. Higher probability of live-birth in high, but not normal, responders after first frozen-embryo transfer in a freeze-only cycle strategy compared to fresh-embryo transfer: a meta-analysis. Hum Reprod. 2019; 34 (3): 491-505.	Wrong patient population;
Boynukalin, F. K., Turgut, N. E., Gultomruk, M., Ecemis, S., Yarkiner, Z., Findikli, N. and Bahceci, M. Impact of elective frozen vs. fresh embryo transfer strategies on cumulative live birth: Do deleterious effects still exist in normal &hyper responders? PLoS One. 2020; 15 (6): e0234481.	Trigger is unclear. so not extractable;
Bushaqer, N. J., Dayoub, N. M., AlHattali, K. K., Ayyoub, H. A., AlFaraj, S. S. and Hassan, S. N. Follicular aspiration versus coasting for ovarian hyper-stimulation syndrome prevention. Saudi Med J. 2018; 39 (3): 290-295.	Irrelevant;
Carosso, A. R., Canosa, S., Gennarelli, G., Sestero, M., Evangelisti, B., Charrier, L., Bergandi, L., Benedetto, C. and Revelli, A. Luteal Support with very Low Daily Dose of Human Chorionic Gonadotropin after Fresh Embryo Transfer as an Alternative to Cycle Segmentation for High Responders Patients Undergoing Gonadotropin-Releasing Hormone Agonist-Triggered IVF. Pharmaceuticals (Basel). 2021; 14 (3):	Cohort study in the presence of higher quality evidence;
Deng, L., Li, X. L., Ye, D. S., Blockeel, C., Zhou, X. Y., Chen, S. L. and Chen, X. A Second Dose of GnRHa in Combination with Luteal GnRH Antagonist May Eliminate Ovarian Hyperstimulation Syndrome in Women with ≥30 Follicles Measuring ≥11 mm in Diameter on Trigger Day and/or Pre-trigger Peak Estradiol Exceeding 10 000 pg/mL. Curr Med Sci. 2019; 39 (2): 278-284.	Wrong comparator;
Duan, X., Li, Z., Li, M. and Ma, X. Analysis of controlled ovarian hyperstimulation protocols in women over 35 years old with poor ovarian response: a real-world study. BMC Pregnancy Childbirth. 2023; 23 (1): 813.	Wrong patient population;
Engmann, L. L., Maslow, B. S., Kaye, L. A., Griffin, D. W., DiLuigi, A. J., Schmidt, D. W., Grow, D. R., Nulsen, J. C. and Benadiva, C. A. Low dose human chorionic gonadotropin administration at the time of gonadotropin releasing-hormone agonist trigger versus 35 h later in women at high risk of developing ovarian hyperstimulation syndrome - a prospective randomized double-blind clinical trial. J Ovarian Res. 2019; 12 (1): 8.	Wrong intervention;
Fernández-Sánchez, M., Fatemi, H., García-Velasco, J. A., Heiser, P. W., Daftary, G. S. and Mannaerts, B. Incidence and severity of ovarian hyperstimulation syndrome (OHSS) in high responders after gonadotropin-releasing hormone (GnRH) agonist trigger in "freeze-all" approach. Gynecol Endocrinol. 2023; 39 (1): 2205952.	Not comparative;
Fouda, U. M., Elshaer, H. S., Youssef, G. G., Hanafy, A., Mehrem, W. M., Youssef, M. A., Farouk, M. and Nabil, H. Cabergoline versus calcium infusion in the prevention of ovarian hyperstimulation syndrome: a randomised controlled study. Journal of obstetrics and gynaecology. 2022; 42 (1): 122-126.	Wrong intervention
Gaafar, S., El-Gezary, D. and El Maghraby, H. A. Early onset of cabergoline therapy for prophylaxis from ovarian hyperstimulation syndrome (OHSS): Apotentially safer and more effective protocol. Reprod Biol. 2019; 19 (2): 145-148.	Not comparative;
Gullo, G., Basile, G., Cucinella, G., Greco, M. E., Perino, A., Chiantera, V. and Marinelli, S. Fresh vs. frozen embryo transfer in assisted reproductive techniques: a single center retrospective cohort study and ethical-legal implications. Eur Rev Med Pharmacol Sci. 2023; 27 (14): 6809-6823.	Wrong patient population;
Huang, T. C., Lin, Y. H., Pan, S. P., Tu, Y. A., Huang, C. C., Chen, M. J., Hwang, J. L. and Chen, S. U. A novel GnRH-antagonist protocol by switching to medroxyprogesterone when patients being at risk of ovarian hyperstimulation syndrome during ovarian stimulation. J Formos Med Assoc. 2020; 119 (11): 1642-1649.	Wrong intervention;
Hussein, M., Sayed, A., Eldaly, A., AlSawaf, A. H., Eid, M. M., Abdel-Rasheed, M. and Rashwan, A. S. Fresh versus frozen embryo transfer in women with polycystic ovaries syndrome undergoing in vitro fertilisation. Middle East Fertility Society Journal. 2023; 28 (1):	Wrong intervention
Kailasam, C., Griffith, H., Wilson, P. and Gordon, U. The effect of early coasting on blastocyst development and outcome following blastocyst transfer in IVF/ICSI programme. JBRA Assist Reprod. 2018; 22 (4): 301-306.	Wrong comparator;

Le, K. D., Vuong, L. N., Ho, T. M., Dang, V. Q., Pham, T. D., Pham, C. T., Norman, R. J. and Mol, B. W. J. Acost-effectiveness analysis of freeze-only or fresh embryo transfer in IVF of non-PCOS women. Hum Reprod. 2018; 33 (10): 1907-1914.	Wrong patient population;
Le, T. M. C., Ong, P. T., Nguyen, Q. A. and Roque, M. Fresh versus elective frozen embryo transfer: Cumulative live birth rates of 7,236 IVF cycles. JBRA Assist Reprod. 2022; 26 (3): 450-459.	Wrong intervention
Maheshwari, A., Bell, J. L., Bhide, P., Brison, D., Child, T., Chong, H. Y., Cheong, Y., Cole, C., Coomarasamy, A., Cutting, R., Hardy, P., Hamoda, H., Juszczak, E., Khalaf, Y., Kurinczuk, J. J., Lavery, S., Linsell, L., Macklon, N., Mathur, R., Pundir, J., Raine-Fenning, N., Rajkohwa, M., Scotland, G., Stanbury, K., Troup, S. and Bhattacharya, S. Elective freezing of embryos versus fresh embryo transfer in IVF: a multicentre randomized controlled trial in the UK(E-Freeze). Hum Reprod. 2022; 37 (3): 476-487.	Wrong patient population;
Palomba, S., Costanzi, F., Nelson, S. M., Caserta, D. and Humaidan, P. Interventions to prevent or reduce the incidence and severity of ovarian hyperstimulation syndrome: a systematic umbrella review of the best clinical evidence. Reprod Biol Endocrinol. 2023; 21 (1): 67.	Wrong intervention;
Pilegaard, S. P., Schmidt, L., Stormlund, S., Koert, E., Bogstad, J. W., Praetorius, L., Nielsen, H. S., la Cour Freiesleben, N., Sopa, N., Klajnbard, A. and et al. Psychosocial wellbeing shortly after allocation to a freeze-all strategy compared with a fresh transfer strategy in women and men: a sub-study of a randomized controlled trial. Hum Reprod. 2023; 38 (11): 2175-2186.	Wrong patient population;
Qi, Q., Xia, Y., Luo, J., Wang, Y. and Xie, Q. Cocktail treatment by GnRH-antagonist, letrozole, and mifepristone for the prevention of ovarian hyperstimulation syndrome: a prospective randomized trial. Gynecol Endocrinol. 2023; 39 (1): 2269281.	Wrong intervention;
Shen, X., Yang, Q., Li, L. and Lu, W. Clinical Pregnancy and Incidence of Ovarian Hyperstimulation Syndrome in High Ovarian Responders Receiving Different Doses of hCG Supplementation in a GnRH-Agonist Trigger Protocol. Evidence-based complementary and alternative medicine. 2021; 2021	Wrong study design;
Smith, Adac, Tilling, K., Lawlor, D. A. and Nelson, S. M. Live birth rates and perinatal outcomes when all embryos are frozen compared with conventional fresh and frozen embryo transfer: a cohort study of 337,148 in vitro fertilisation cycles. BMC Med. 2019; 17 (1): 202.	Wrong patient population;
Turktekin, N., Karakus, C. and Ozyurt, R. Calcium gluconate infusion is not as effective as dopamine agonists in preventing ovarian hyperstimulation syndrome. Eur Rev Med Pharmacol Sci. 2022; 26 (4): 1248-1254.	Wrong intervention;
Wu, D., Shi, H., Yu, Y., Yu, T. and Zhai, J. Comparison of the Effectiveness of Various Medicines in the Prevention of Ovarian Hyperstimulation Syndrome: A Network Meta-Analysis of Randomized Controlled Trials. Front Endocrinol (Lausanne). 2022; 13 808517.	Wrong intervention;
Yanagihara, Y., Tanaka, A., Nagayoshi, M., Tanaka, I., Shinohara, R., Fukushima, F., Tanaka, A., Ohno, M., Yamaguchi, T. and Itakura, A. A modified GnRH antagonist method in combination with letrozole, cabergoline, and GnRH antagonist for PCOS: Safe and effective ovarian stimulation to treat PCOS and prevent OHSS. Reprod Med Biol. 2022; 21 (1): e12429.	Wrong intervention;