

Review

doi: https://doi.org//10.19163/2070-1586-2022-15-2-59-65

Modified pre-abortion counseling section

L.V. Tkachenko, I.A. Gritsenko™, K.Yu. Tikhaeva, I.S. Gavrilova, V.A. Dolgova

Volgograd State Medical University, Volgograd, Russia

Abstract. The problem of pregnancy termination is multifaceted. According to the current legislation, women who come to a healthcare facility for an induced termination of pregnancy undergo pre-abortion counseling. During the consultation, the specialist has several tasks: to compare the arguments for pregnancy termination or preservation; to help competently assess the current life situation; to consider ways to solve problems; to provide information about federal and regional support measures for pregnant women and families with children; to inform about possible negative consequences of an artificial termination of pregnancy. The authors believe that in addition to psychological assistance to women in the situation of choice, it is of great importance to provide detailed information about the negative reproductive consequences of abortion, including the problem of premature ovarian insufficiency. Due to the high prevalence of premature ovarian insufficiency among female population, it seems necessary to supplement the existing pre-abortion counseling procedure with a section devoted to the problem of physiological and pathological loss of ovarian reserve and the impact of pregnancy termination on this process. To inform a woman about her risk of premature ovarian insufficiency and about her presence of this condition in general would allow a woman to consciously avoid additional negative influences (smoking, alcohol, stress), make an informed decision about her reproductive plans and their timing, and possibly resort to oocyte cryopreservation methods in cases where the risks of premature ovarian insufficiency are extremely high. When premature ovarian insufficiency is already diagnosed, the only way to have a baby is to use assisted reproductive technology, but with the use of donor eggs.

Keywords: pre-abortion counseling, premature ovarian insufficiency, ovarian reserve, antimueller hormone

Submitted 16.04.2022; accepted 18.08.2022; published 10.11.2022.

Обзор

УДК 614

doi: https://doi.org//10.19163/2070-1586-2022-15-2-59-65

Модифицированный раздел доабортного консультирования

Л.В. Ткаченко, И.А. Гриценко[™], К.Ю. Тихаева, И.С. Гаврилова, В.А. Долгова

Волгоградский государственный медицинский университет, Волгоград, Россия

Аннотация. Проблема прерывания беременности является многоплановой. В соответствии с действующим законодательством женщины, обращающиеся в медицинское учреждение за процедурой искусственного прерывания беременности, проходят доабортное консультирование. Во время консультации перед специалистом ставится несколько задач: сопоставить аргументы за прерывание и за сохранение беременности; помочь грамотно провести оценку сложившейся жизненной ситуации; рассмотреть пути решения возникших проблем; донести информацию о федеральных, региональных мерах поддержки беременных и семей с детьми; проинформировать о возможных негативных последствиях искусственного прерывания беременности. Авторы считают, что, помимо психологической помощи женщинам, оказавшимся в ситуации выбора, необходимо проводить детальное информирование о негативных репродуктивных последствиях аборта. В том числе о проблемы преждевременной недостаточности яичников. Ввиду широкой распространенности преждевременной недостаточности яичников среди женского населения представляется необходимым дополнить существующий порядок доабортного консультирования разделом, который посвящен проблеме физиологической и патологической потери овариального резерва и влияния прерывания беременности на данный процесс. Информированность женщины о наличии у нее риска преждевременной недостаточности яичников и вообще о наличии такого состояния позволило бы ей осознанно избегать дополнительных негативных влияний (курения, алкоголя, стресса), принимать обоснованное решение о репродуктивных планах и их сроке, а возможно, прибегнуть к применению методов криоконсервации ооцитов в том случае, если риски преждевременной недостаточности яичников чрезвычайно высоки. Когда преждевременная недостаточность яичников уже диагностирована, единственная возможность родить ребенка - это использование вспомогательных репродуктивных технологий (экстракорпоральное оплодотворение), но с использованием донорский яйцеклеток.

Ключевые слова: доабортное консультирование, преждевременная недостаточность яичников, овариальный резерв, антимюллеров гормон

Статья поступила 16.04.2022; принята к публикации 18.08.2022; опубликована 10.11.2022.



A woman's reproductive choice and the procedure of pre-abortion counseling are debatable issues both in Russia and in other countries. In the Russian Federation, in accordance with the Concept of reproductive health protection of the population of the Russian Federation for 2016–2025, state support measures are aimed at strengthening the family institution, creating a system of reproductive health protection, as well as reducing the level of reproductive losses.

Any woman facing the problem of reproductive choice is vulnerable and needs both advice from a gynecologist and as well as social and psychological support.

According to the research data, among the reasons that lead women to refuse to continue a pregnancy, the main ones are:

- inconsistency of having a child with plans for the near future:
 - low income;
 - dissatisfaction with living conditions;
- lack of prospects for having a child within marriage or lack of confidence in preserving marriage;
 - fear for their own health during and after pregnancy;
- family problems (seriously ill relatives, drug or alcohol addiction of relatives);
 - moral pressure from relatives.

There may be situations in which women are left alone with the difficult problem of choosing between motherhood and abortion. It is important to understand the socio-psychological state of a woman. Unexpected news of pregnancy can lead to confusion and shock, anxiety, depression, aggression, emotional instability, sense of loneliness [1, 2, 3, 4]. Without professional counseling, the likelihood of making a wrong decision that the woman will regret increases. This is why the work of professionals providing pre-abortion counseling is so important.

There are several stages in the decision to terminate or maintain a pregnancy [5]. The beginning of this difficult situation is the news of the pregnancy, with the woman making her preliminary choice. Then, this is followed by gathering opinions – the woman reports the pregnancy to a narrow circle of people close to her and assesses their reactions. At this stage, it is possible to approve or change the previously chosen decision concerning the pregnancy. The next step is the final decision. Then, after terminating or continuing the pregnancy, an evaluation of her choice follows. At any of these stages, the woman needs the qualified assistance of a pre-abortion counseling.

Pre-abortion counseling by a psychologist is mandatory when referring for an abortion. It is conducted at the beginning of the «silence» period. In accordance with Article 56 of the 323 Federal Law «On the Fundamentals of Public Healthcare in the Russian Federation», if the

pregnancy is 8-10 weeks and there are no social indications, an abortion may not be performed within 7 days of the request. If the pregnancy is 4–7 weeks and 11–12 weeks (not later than the end of the 12th week) the «silence» time is 48 hours. After the regulated «silence» time, a woman gets an appointment with an obstetriciangynecologist again and makes the final decision on whether to have an abortion or to maintain the pregnancy.

During the consultation, the specialist has several tasks: to compare the arguments for pregnancy termination or preservation; to help competently assess the current life situation; to consider ways to solve problems; to provide information about federal and regional support measures for pregnant women and families with children; to inform about possible negative consequences of an artificial termination of pregnancy [6]. Also, if a woman agrees, counseling is possible together with the father of the child or other relatives.

The approved counseling scheme includes 8 stages. First, the woman's attitude toward pregnancy, its termination, and motherhood is analyzed. Then, internal and external resources are analyzed as well. The focus is on self-esteem, emotional-volitional qualities, self-control skills, life values, support from family and friends, and material conditions. Further during the conversation, the woman's awareness of responsibility for her choice is formed. After that situations of preservation of pregnancy and further possible motherhood are considered and compared. It is important for the specialist to explain what the woman might lose by choosing induced termination of pregnancy. Then the psychologist returns to the consideration of external and internal resources, thereby conducting their secondary assessment. As a result of this conversation, the woman makes a preliminary decision whether to terminate or maintain the pregnancy. The psychologist also draws attention to the possibility of repeated consultations to help her make a final decision.

Due to the course of counseling, psychologists use various techniques:

- listening;
- asking questions;
- encouraging and reassuring;
- paraphrasing and summarizing;
- reflection;
- silence and pauses;
- information;
- confrontation;
- working with resources.

The main goal of a specialist during the pre-abortion counseling is to lead a woman to a pregnancy realization that means nothing in the solution of her life problems. It is of great importance to realize a great contribution



of social work specialists who explains peculiarities that support in social care sphere. Besides to psychological assistance, women must have opportunities to understand negative reproductive consequences of abortion. This includes the problem of premature ovarian insufficiency.

According to the authors, the problem of premature ovarian insufficiency (POI) [7, 8] is faced by from 1 to 7 % of women of reproductive age. The diagnosis criteria of POI are follicle-stimulating hormone levels of more than 25 mIU/ml in combination with oligo/amenorrhea of 4 months or even more in women under the age of 40 [9]. POI leads to a persistent impairment of reproductive function with the possibility of its realization in case the use of donor oocytes, which in some cases is unacceptable for a woman or a couple [10, 11, 12].

The presence of high risk factors for POI is an indication for a detailed assessment of the ovarian reserve using available methods (laboratory, instrumental), which allows tactics for further monitoring or timely intervention [13, 14].

Currently, there is no clear system for the premature ovarian insufficiency onset predicting. At the same time, it is not uncommon for a woman to terminate an unwanted pregnancy in younger age long before the POI manifestation. It is a «hard blow» to find out for a woman, that her «own» pregnancy was terminated, and further reproductive function cannot be achieved naturally and with her own genetic material.

To inform a woman about her risk of POI and about her presence of this condition in general would allow a woman to consciously avoid additional negative influences (smoking, alcohol, stress), make an informed decision about her reproductive plans and their timing, and possibly resort to oocyte cryopreservation methods in cases where the risks of PO I are extremely high.

To our mind, an important factor is the possibility to evaluate the ovarian reserve of a woman planning to terminate their first pregnancy. POI risk factor awareness can influence a woman's decision to remain her being pregnant and make this decision more informed and well-informed.

We propose to add a section to the existing algorithm of pre-abortion counseling, which is dedicated to informing the patient about such a condition as a POF, about the complexity of its prediction.

Taking into account the existing counseling algorithm (Figure 1), it is of logic to discuss the POI problem at the initial admission, since by the second appointment of the gynecologist, the woman should already have all the information about the upcoming decision and make a decision.

In this regard, the obstetrician-gynecologist at the first request of a woman about the termination of an unwanted pregnancy conducts a conversation about the POI and conducts an assessment of the risks of the POI.

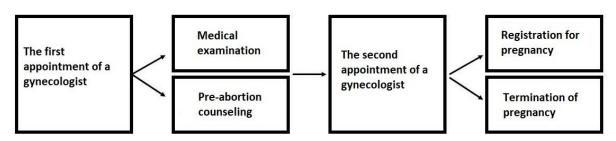


Figure 1. Algorithm of pre-abortion counseling

For whom: It is appropriate to discuss the problem of POI with women who are planning to terminate their first pregnancy, as well as with women who have not ruled out the desire to have a second and subsequent children in the future.

Who conducts: a doctor or a paramedic, any specialist involved in consultation.

When: During the first visit to a gynecologist for an unwanted pregnancy.

Timing: 10 to 15 minutes.

Support materials: teaching materials (Figure 2, Figure 3).

Suggested outline of the interview:

Let me tell you about such medical condition called Premature Ovarian Insufficiency (POI). I think, this is to be of great importance for you since, you are making a big decision.

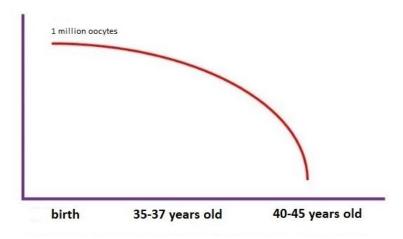
At birth, a woman receives a supply of oocytes and gradually this supply is expended, eventually leading to ovarian depletion and then to menopause (Figure 2 shows). This is natural and ordinary process.

But sometimes this exhaustion occurs much earlier and causes a young woman to lose the ability to procreate. There are two broad groups of causes that lead to the latter (Figure 3):

- 1) the girl (woman) was originally born with a small supply of oocytes;
- 2) external and internal factors caused abnormal quick oocyte exhaustion.



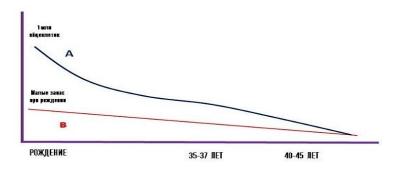
Physiological loss of ovarian reserve



There is a gradual loss of ovarian reserve. This is a normal aging process.

Figure 2. Physiological loss of ovarian reserve

Патологическая потеря резерва яичников



А- ПРОИСХОДИТ ЧРЕЗМЕРНАЯ ПОТЕРЯ ЗАПАСА ЯЙЦЕКЛЕТОК В-ИЗНАЧАЛЬНО ПРИ РОЖДЕНИИ У ЖЕНЩИНЫ БЫЛО МАЛО ЯЙЦЕКЛЕТОК

Figure 3. Pathological loss of ovarian reserve

Factors that can lead to low reserve and excessive loss can be diseases, bad habits, ecology, stress, and genetics as well. Unfortunately, the POI causes are not fully understood, and there is still much to learn and understand. But your life and health are important to us now.

At least 1% of women of reproductive age face the POI problem. POI is the early, untimely onset of menopause in women under 40. But it does not mean that a woman will lose her ability to have a baby at exactly 40. Fertility disorders occur several years before that. When POI is already diagnosed, the only possibility to have a child is the use of assisted reproductive technologies (ART), but with the use of donor oocytes. Once again, please note, that it is still possible to have a baby, but genetically it will be a donor's baby. There is no way to reliably tell if you have this condition.

Unfortunately, there are no reliable prognostic systems for POI. More often, doctors state the fact of its onset: a woman loses her periods, and at hormonal examination the doctor confirms the onset of early menopause.

There are several factors that can help you identify high risks of POI, for this I will ask you a few questions:

- 1. At what age did your mother go through menopause? Grandmothers? Sisters?
- 2. Have any of your female relatives been diagnosed with POI?
- 3. Do you have female relatives who have problems in conception combined with lack of menstruation?
- 4. Have you ever undergone radiation or chemotherapy?
- 5. Did you have ovarian cysts as a child, adolescent, or adult?



6. Have you changed the length of your cycle in the last 1–2 years (it has become shorter, menstruation is scarcer)?

Instead of the POI term it is advisable to use phrases such as: early menopause in the conversation. These phrases can be understood more unambiguously by a patient.

The questions are not intended to make a POI diagnosis, but to identify possible prognostic markers, which lead a specialist to assume that an unwanted pregnancy has occurred at risk of POI onset.

In case the woman responded positively to questions 2–5, or if the patient's mother/grandmother went through menopause before age 45, it is reasonable to suggest the woman be tested for antimullerian hormone (AMH) levels.

In case the woman does not agree to undergo the AMH study or has no information concerning the questions you ask, nevertheless, a specialist achieves the most important goal of informing the patient about POI risks, which is sure to lead a patient for being informed to make the decision about whether to continue or terminate her pregnancy.

Further discussion can be continued according to guidelines for the pre-abortion counseling.

Conclusion

The proposed modified section of the pre-abortion counseling algorithm will allow a more informed choice to be made by women who intend to terminate a pregnancy.

Additional information

Author contribution. All authors made a substantial contribution to the conception of the work, acquisition, analysis, interpretation of data for the work, drafting and revising the work, final approval of the version to be published and agree to be accountable for all aspects of the work.

Source of financing. The study was carried out with the financial support from intramural grants of the Volgograd State Medical University (Order «On approval of the results of the competition for funding projects in the field of research activities» dated of December 7, 2020 No. 1444-KO).

Conflict of interests. The authors declare no obvious and potential conflicts of interest related to the publication of this article.

Дополнительная информация

Вклад авторов. Все авторы подтверждают соответствие своего авторства международным критериям ICMJE (все авторы внесли существенный вклад в разработку концепции, проведение исследования

и подготовку статьи, прочли и одобрили финальную версию перед публикацией).

Источник финансирования. Исследование проводилось при финансовой поддержке очных грантов Волгоградского государственного медицинского университета (Приказ «Об утверждении результатов конкурса на финансирование проектов в области научно-исследовательской деятельности» от 7 декабря 2020 г. № 1444-КО.

Конфликт интересов. Авторы декларируют отсутствие явных и потенциальных конфликтов интересов, связанных с публикацией настоящей статьи.

REFERENCES

- 1. Ratmanov M. A. et al. The problem of reproductive choice: strategic directions in a demographic situation and a systematic approach to the prevention of medical abortion. *Voprosy ginekologii, akusherstva i perinatologii = Issues of gynecology, obstetrics and perinatology.* 2020;19(3):124–132. (in Rus.).
- 2. Balina T. N. Reproductive attitudes of women in the context of the legislative right to abortion. *Filosofiya prava = Philosophy of Law.* 2018;1(84). (in Rus.).
- 3. Puchkova Yu. M. Study of the factors that determine the reproductive choice of women. *Sotsialnaya dinamika naseleniya i ustoichivoe razvitie = Social dynamics of the population and sustainable development*. 2019:102–105. (in Rus.).
- 4. Ivanova A. D., Suldin A. M. Social portrait of a woman who came for an abortion. Effectiveness of pre-abortion counseling. Aktualnye problemy teoreticheskoi, eksperimentalnoi, klinicheskoi meditsiny i farmatsii = Actual problems of theoretical, experimental, clinical medicine and pharmacy. 2018:262–262. (in Rus.).
- 5. Information and methodological letter of the Ministry of Health of the Russian Federation dated July 17, 2017 No. 15-4/10/2-4792 "Psychological counseling for women planning artificial termination of pregnancy". (in Rus.).
- 6. Sheimukhova L.V., Kartlamayeva E.V. Psychological counseling in a situation of reproductive choice ("pre-abortion counseling"). Work experience of the psychological department of the City Clinical Hospital No. 1 (Perinatal Center). *Natsionalnye proekty prioritet razvitiya zdravookhraneniya regionov = National projects a priority for the development of health care in the regions*. 2019;257–259. (in Rus.).
- 7. Cordts E.B., Christofolini D.M., Dos Santos A.A. et al. Genetic aspects of premature ovarian failure: a literature review. *Arch Gynecol Obstet*. 2011;283(3):635–643. https://doi.org/10.1007/s00404-010-1815-4.
- 8. Panay N., Anderson R.A., Nappi R.E. et al. Premature ovarian insufficiency: an International Menopause Society White Paper. *Climacteric*. 2020;23(5):426–446. https://doi.org/10.1080/13697137.2020.1804547.
- 9. Webber L., Davies M., Anderson R. et al. European Society for Human Reproduction and Embryology (ESHRE) Guideline Group on POI. ESHRE Guideline: management of women with premature ovarian insufficiency. *Hum Reprod*. 2016;5(31):926–937. https://doi.org/10.1093/humrep/dew027



- 10. Chae-Kim J.J., Gavrilova-Jordan L. Premature ovarian insufficiency: procreative management and preventive strategies. *Biomedicines*. 2019;7(1);2. https://doi.org/10.3390/biomedicines7010002.
- 11. Hoekman E. J. et al. Ovarian tissue cryopreservation: Low usage rates and high live-birth rate after transplantation. *Acta obstetricia et gynecologica Scandinavica*. 2020;99(2):213–221. https://doi.org/10.1111/aogs.13735.
- 12. Leonel E.C.R., Lucci C.M., Amorim C.A. Cryopreservation of human ovarian tissue: a review. Transfusion Medicine and Hemotherapy. 2019;46(3):173–181. https://doi.org/10.1159/000499054.
- 13. Nguyen H.H., Milat F., Vincent A. Premature ovarian insufficiency in general practice: meeting the needs of women. *Aust Fam Physician*. 2017;46(6):360–366.
- 14. Golezar S., Ramezani T.F., Khazaei S. et al. The global prevalence of primary ovarian insufficiency and early menopause: a meta-analysis. *Climacteric*. 2019;22(4):403–411. https://doi.org/10.1080/13697137.2019.1574738.

СПИСОК ИСТОЧНИКОВ

- 1. Проблема репродуктивного выбора: стратегические направления в условиях демографической ситуации и системный подход к профилактике медицинских абортов / М.А. Ратманов [и др.] // Вопросы гинекологии, акушерства и перинатологии. 2020. № 19 (3). С. 124—132.
- 2. Балина Т.Н. Репродуктивные установки женщин в контексте законодательного права на аборт // Философия права. 2018. № 1 (84).
- 3. Пучкова Ю.М. Исследование факторов, детерминирующих репродуктивный выбор женщины // Социальная динамика населения и устойчивое развитие. 2019. С. 102–105.
- 4. Иванова А.Д., Сульдин А.М. Социальный портрет женщины, пришедшей на аборт. Эффективность доабортного консультирования // Актуальные проблемы теоретической, экспериментальной, клинической медицины и фармации. 2018. С. 262–262.
- 5. Информационно-методическое письмо Министерства здравоохранения Российской Федерации от 17.07.2017 года № 15-4/10/2-4792 «Психологическое консультирова-

- ние женщин, планирующих искусственное прерывание беременности».
- 6. Шеймухова Л. В., Картламаева Е. В. Психологическое консультирование в ситуации репродуктивного выбора («доабортное консультирование»). Опыт работы психологического отдела ГКБ № 1 (Перинатальный центр) // Национальные проекты приоритет развития здравоохранения регионов. 2019. С. 257–259.
- 7. Genetic aspects of premature ovarian failure: a literature review / E.B. Cordts, D.M. Christofolini, A.A. Dos Santos [et al.] // Arch Gynecol Obstet. 2011. No. 283 (3). P. 635–643. https://doi.org/10.1007/s00404-010-1815-4
- 8. Premature ovarian insufficiency: an International Menopause Society White Paper / N. Panay, R.A. Anderson, R.E. Nappi [et al.] // Climacteric. 2020. No. 23 (5). P. 426–446. https://doi.org/10.1080/13697137.2020.1804547
- 9. European Society for Human Reproduction and Embryology (ESHRE) Guideline Group on POI ESHRE Guideline: management of women with premature ovarian insufficiency. / L. Webber, M. Davies, R. Anderson [et al.] // Hum Reprod. 2016. No. 5 (31): 926-37. https://doi.org/10.1093/humrep/dew027
- 10. Chae-Kim J. J., Gavrilova-Jordan L. Premature ovarian insufficiency: procreative management and preventive strategies // Biomedicines. 2019. No. 7 (1). P. 2. https://doi.org/10.3390/biomedicines7010002
- 11. Ovarian tissue cryopreservation: Low usage rates and high live-birth rate after transplantation / E.J. Hoekman [et al.] // Acta obstetricia et gynecologica Scandinavica. 2020. No. 99 (2). P. 213–221. https://doi.org/10.1111/aogs.13735
- 12. Leonel E. C. R., Lucci C. M., Amorim C. A. Cryopreservation of human ovarian tissue: a review // Transfusion Medicine and Hemotherapy. 2019. No. 46 (3). P. 173–181. https://doi.org/10.1159/000499054
- 13. Nguyen H.H., Milat F., Vincent A. Premature ovarian insufficiency in general practice: meeting the needs of women // Aust Fam Physician. 2017. No. 46 (6). P. 360–366.
- 14. The global prevalence of primary ovarian insufficiency and early menopause: a meta-analysis / S. Golezar, T.F. Ramezani, S. Khazaei [et al.] // Climacteric. 2019. No. 22 (4). P. 403–411. https://doi.org/10.1080/13697137.2019.1574738

About the authors

Liudmila V. Tkachenko – MD, Dr Sci Med, Professor, Head of the Department of Obstetrics and Gynecology; Research Group «Reproductive Medicine and Reproductive Genetics»; Volgograd State Medical University, Volgograd, Russia, ORCID: https://orcid.org/0000-0002-1935-4277, E-mail:biosoc@yandex.ru

Irina A. Gritsenko – MD, PhD, Associate Professor, Department of Obstetrics and Gynecology; Research Group «Reproductive Medicine and Reproductive Genetics»; Volgograd State Medical University, Volgograd, Russia, ORCID: https://orcid.org/0000-0001-6761-2990, [⊠] E-mail: irina-gritsenko@yandex.ru

Ksenia Yu. Tikhaeva – MD, PhD, Associate Professor, Department of Pathophysiology, Clinical Pathophysiology; Research Group «Reproductive Medicine and Reproductive Genetics»; Volgograd State Medical University, Volgograd, Russia, ORCID: https://orcid.org/0000-0002-1956-6448, E-mail: tikhaeva34@gmail.com

Irina S. Gavrilova – PhD (Philosophy), Associate Professor, Department of Medical and Social Technologies with the Course in Pedagogy and Educational Technologies of Additional Professional Education; Research Group «Reproductive Medicine and Reproductive Genetics»; Volgograd State Medical University, Volgograd, Russia, ORCID: https://orcid.org/0000-0002-4175-5499. E-mail: biosoc@yandex.ru



Valeriia A. Dolgova – 4th year Student, Faculty of General Medicine; Research Group «Reproductive Medicine and Reproductive Genetics»; Volgograd State Medical University, Volgograd, Russia, ORCID: https://orcid.org/0000-0003-0260-1670, E-mail: biosoc@yandex.ru

Информация об авторах

Людмила Владимировна Ткаченко – доктор медицинских наук, профессор, заведующая кафедрой акушерства и гинекологии Института непрерывного медицинского и фармацевтического образования; научно-исследовательская группа «Репродуктивная медицина и репродуктивная генетика»; Волгоградский государственный медицинский университет, Волгоград, Россия, ORCID: https://orcid.org/0000-0002-1935-4277, E-mail: biosoc@yandex.ru

Ирина Анатольевна Гриценко — кандидат медицинских наук, доцент кафедры акушерства и гинекологии Института непрерывного медицинского и фармацевтического образования; научно-исследовательская группа «Репродуктивная медицина и репродуктивная генетика»; Волгоградский государственный медицинский университет, Волгоград, Россия, ORCID: https://orcid.org/0000-0001-6761-2990, [™] E-mail: irina-gritsenko@yandex.ru

Ксения Юрьевна Тихаева – кандидат медицинских наук, доцент кафедры патофизиологии, клинической патофизиологии; научно-исследовательская группа «Репродуктивная медицина и репродуктивная генетика»; Волгоградский государственный медицинский университет, Волгоград, Россия, ORCID: https://orcid.org/0000-0002-1956-6448, E-mail: tikhaeva34@gmail.com

Ирина Сергеевна Гаврилова – кандидат философских наук, доцент кафедры медико-социальных технологий с курсом педагогики и образовательных технологий дополнительного профессионального образования; научно-исследовательская группа «Репродуктивная медицина и репродуктивная генетика»; Волгоградский государственный медицинский университет, Волгоград, Россия, ORCID: https://orcid.org/0000-0002-4175-5499, E-mail: biosoc@yandex.ru

Валерия Андреевна Долгова — студентка 4-го курса лечебного факультета; научно-исследовательская группа «Репродуктивная медицина и репродуктивная генетика»; Волгоградский государственный медицинский университет, Волгоград, Россия, ORCID: https://orcid.org/0000-0003-0260-1670, E-mail: biosoc@yandex.ru