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Oocyte donor screening: the selection process and cost analysis

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Objective: To evaluate the selection process and cost of screening oocyte donors.

Design: Retrospective analysis.

Setting: University-based IVF program.

Patient(s): Potential oocyte donors.

Intervention(s): Outcomes of all inquiries by individuals responding to recruitment advertisements for oocyte donors over a 10-month period were assessed. Recruitment and screening costs to bring a single donor into the program were calculated.

Main Outcome Measure(s): The attrition rate for each step of the oocyte donor screening process was determined. The costs assessed over the study period included the following: advertisement, administrative, professional, ultrasound, and blood screening. The total cost to bring a single donor into the program was calculated.

Result(s): Advertisements led to 315 phone inquiries from potential oocyte donors. Of these, a total of 223 (71%) voluntarily withdrew from the screening process, 54 (17%) were screened out for medical or psychological reasons, and 38 (12%) entered the active donor pool. The total cost to bring a single donor into the program was approximately $1,869.

Conclusion(s): There was significant attrition in the screening process for oocyte donation that needs to be taken into account in determining the costs of managing the program. (Fertil Steril® 2001;75:400–4. ©2001 by American Society for Reproductive Medicine.)

Key Words: Oocyte donor, screening process, cost

Since the 1984 report by Lutjen and coauthors of the first pregnancy and delivery after oocyte donation to a woman with primary ovarian failure (1), egg donation has become an established part of assisted reproductive technology (ART). Indications for the use of egg donation have expanded over time and currently include ovarian failure (idiopathic or secondary to surgery/chemotherapy), genetic concerns, poor response to ovarian stimulation, poor egg or embryo quality in IVF cycles, multiple failed IVF attempts, and advanced maternal age (2). The number of infertile couples requesting egg donation is increasing, and a major challenge for oocyte donation programs is to identify an adequate number of appropriate donors.

Sources of donated oocytes have included infertile women with normal ovarian function undergoing ART procedures who share eggs with another infertile woman, women planning unrelated gynecologic procedures (tubal ligation most commonly), and presumed fertile women—either known to the recipient or anonymous—who are willing to donate eggs. In egg sharing, both infertile women share in the cost of the ART cycle, and a preplanned, randomly selected portion of the eggs is given to another infertile woman (3). However, egg sharing may decrease the probability of pregnancy in the infertile donor because fewer oocytes and thus fewer embryos are created. Egg donation performed in association with gynecologic procedures has proved impractical. In one study, only 2.5% of 194 women who had previously decided to undergo elective sterilization were eligible to donate; 55% were disqualified because of age (>35 y) restrictions (4).

Many ART programs have developed protocols for anonymous egg donation in which

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TABLE 1

Steps in egg donor screening protocol.

1. Advertisements placed.
2. Telephone response from donor candidates.
3. Donor information and screening profiles mailed.
4. M.D. review of returned donor profiles.
5. Group teaching orientation.
6. Individual donor evaluation with M.D.
7. Individual donor evaluation with L.C.S.W.
8. Ovulation assessment.
9. STD screening and blood type and Rh assessments.

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presumed fertile women are recruited, screened, and matched to infertile couples seeking treatment. Desired donor qualities include a good potential for success as well as the ability of the donor to understand the process and complete informed consent. Demographic analysis of women recruited to participate as egg donors shows that they are often college-educated, working mothers who are frequently married with children (5, 6) A number of independent, for-profit agencies have been established that provide recruited oocyte donors to ART centers on an as-needed basis.

In this study, we evaluate the effectiveness and cost of the oocyte donor screening program in a university-based IVF program that recruits anonymous donors for recipient couples.

MATERIALS AND METHODS

A retrospective analysis of the oocyte donor screening program at the Oregon Health Sciences University from January 1999 through October 1999 was performed. Our program follows the guidelines for oocyte donation screening recommended by the American Society for Reproductive Medicine (ASRM; see Reference (7). Table 1 lists the steps in the screening process.

Oocyte donor candidates responded to advertisements placed in local community and college newspapers by telephone contact with the clinic. An introductory packet that included an overall description of the egg donor cycle and of the risks of the procedure was sent to each donor candidate. Potential donors completed a 21-page screening form that profiles the donor's personal medical history and family medical history. Completed donor profiles were physician reviewed. To continue the screening process, oocyte donor candidates and their first-degree relatives needed to meet the genetic screening criteria for gamete donors as outlined by the current guidelines established by the ASRM (8). Back-up consultation with a geneticist was obtained by the screening physician as needed. Donor candidates who passed initial screening were invited to attend a group teaching orientation.

The group teaching orientation outlined recipient indications for pursuing egg donation, the physiology of ovulation, and the rationale behind each step of the ovulation induction protocol. Other issues reviewed included cycle synchronization with the recipient, laboratory aspects of IVF and embryo transfer, recipient chances of success, and cost of a cycle. Cryopreservation of surplus embryos was discussed, along with the potential for future embryo donation at the discretion of the recipient couple. Donor risks discussed included discomfort from injections and blood draws, side effects of medications, risks of retrieval (pain, bleeding, infection, anesthesia), postretrieval discomfort, ovarian hyperstimulation syndrome, unknown long-term risks (including the unknown risk of ovarian cancer), and psychological risks. The need for sexual abstinence or barrier contraception was reviewed. The overall estimate of the time commitment to complete the screening process and the duration of the donation was outlined. Contact telephone numbers and procedures to follow in the event of any untoward complications experienced by the donor was discussed along with the oocyte donor insurance program that was established to cover any medical costs associated with treating an oocyte donor for a cycle-related complication. Financial issues including the amount of compensation ($2,000 at the time of the study), the federal requirement of the program to report donor compensation to the Internal Revenue Service by filing Form 1099, and the program's policy of prorated compensation in the event of an incomplete cycle were reviewed. Women attending the group orientation were invited to continue the screening process by contacting the clinic to initiate appointments with the physician and the clinic counselor.

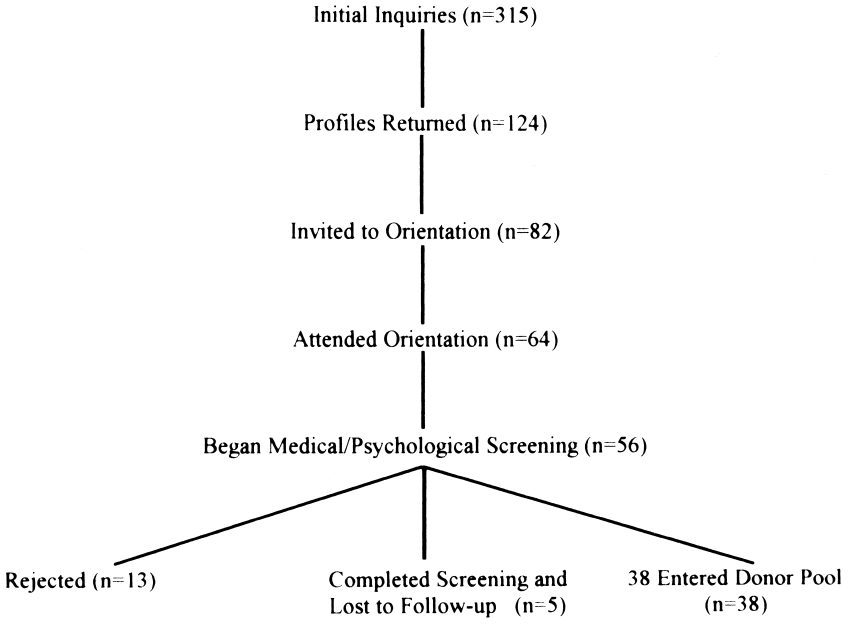
Each donor met individually with the physician for medical screening and ovulation assessment. The physician consultation confirmed the donor's personal history and family medical history and evaluated fertility history and menstrual cycle regularity. Contraception issues for the donor were discussed again. A general physical exam was performed including a pelvic examination using transvaginal sonography screening for pelvic pathology and ovarian accessibility. The donor was then monitored throughout a spontaneous menstrual cycle, and a day 3 FSH, late follicular phase ultrasound, and a midluteal progesterone level were obtained. Normal ovulation parameters were required for a donor to continue in the screening process.

The donor's psychological evaluation was performed by a licensed clinical social worker (L.C.S.W.) and included assessment of stability, donor motivation, educational level, life stressors, relationship history, assessment of sexual/reproductive trauma, legal history, substance abuse, and family history of mental illness or substance abuse. Donors who successfully completed the medical, psychological, and menstrual cycle assessment screening had blood drawn to check blood type and Rh and had a profile of sexually transmitted disease screening tests.

The outcome of all telephone inquiries into the program

FIGURE 1

Egg donation screening analysis illustrating the sequential steps and dropouts during the screening process for potential egg donors (n = 315).



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by potential oocyte donors responding to advertisements during the study interval was assessed. The attrition rate of the screening process was calculated, and the reason for each exclusion of a donor candidate was considered. Cost analysis of the screening program included the following: advertisements, clerical support, printing/mailing, physician (profile review with genetics consult as needed, teaching donor orientation, individual donor consult/physical exam/screening pelvic ultrasound, and ovulation assessment), psychological evaluation, laboratory studies (sexually transmitted disease profile, blood type, and Rh, FSH, and progesterone levels) and the prorated facility use fee.

A time study was performed, taking into account all the steps of the screening process, and the total costs to screen all the donors responding to advertisements during the study time period was determined. Clerical personnel costs included salary plus benefits and were based on estimates of time spent working with donor candidates during each step of the screening process. The professional costs of the physician and L.C.S.W. were based on the hourly fee that would be generated by each for a comprehensive patient evaluation. Ovulation monitoring and laboratory costs to screen donors were based on the usual and customary charges for these services as provided through our clinic. The prorated facility use fee included space lease expense, equipment lease, telephone, and parking. The cost to bring a single donor into the active donor pool was calculated.

RESULTS

In the 10-month study period, 315 women contacted the program in response to advertisements placed in local community and college newspapers. Figure 1 shows the attrition of oocyte donor candidates undergoing the screening process. Only 124 (39%) of donor candidates returned completed profiles, and of these, 42 (34%) were rejected after physician review of the profile. Rejections were based on excessive weight (10 candidates), alcoholism in donor or family (6 candidates), smoking (5 candidates), mental illness in donor or family (7 candidates), medical issues in donor/family (6 candidates), age—too young or too old (4 candidates), incomplete family history (1 candidate), children given up for adoption (1 candidate), reproductive emotional trauma (1 candidate), and current pregnancy (1 candidate).

Eighty-two donor candidates were invited to continue the screening process by attending the group donor teaching session; 64 actually attended the orientation, and of those, 56 (18% of original inquiries) donor candidates began medical/psychological screening. Thirteen of the donor candidates who initiated medical/psychological screening were rejected based on the following: ovulation dysfunction (8 candidates), trauma from examination (1 candidate), emotional issues associated with a recipient pregnancy (1 candidate), atonement for therapeutic abortion (1 candidate), ovarian inaccessibility (1 candidate), and incomplete screening (1

TABLE 2

Egg donor screening—cost analysis (10-mo period).

Expense	Expenditure ($)
Advertisements	
Personnel (80 h)	2,540
Ads	3,649
Clerical support	
Initial call with donor (78.75 h)	1,488
Scheduling for screening (28 h)	529
Printing and mailing costs (315 packets)	1,614
Donor profile review and disposition	
Physician (41.3 h)	8,266
Coordinator (31 h)	984
Donor teaching orientation	
Physician (16 h)	3,200
Clerical support staff (8 h)	171
Physician medical screening (53 h) including	10,600
Individual donor consult/physical exam	
Data review	
Ovulation assessment parameters	
STD screens	
L.C.S.W. psychological screening (56 h)	5,040
Initial screening pelvic ultrasound (53 donors)	5,300
Ovulation monitoring (52 donors): ultrasound, progesterone, FSH	11,180
STD panel/blood type (43 donors)	7,095
Facility use fee	9,360
TOTAL	71,018
Screening cost per donor (38 donors)	1,869

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candidate). Five donors completed the full screening process successfully and were then lost to follow-up. In summary, of the original 315 potential oocyte donors, 223 (71%) voluntarily withdrew from the screening process, and 54 (17%) failed medical or psychological screening. A total of 38 women (12% of all initial inquiries) entered the active donor pool.

Table 2 lists the screening costs by categories over the 10-month study period. Approximately 9.8 hours per week of personnel time (both clerical and professional) was devoted to the egg donor screening process, and personnel costs accounted for approximately 46.2% of the total cost of screening. Screening laboratory studies and ultrasound costs (used in baseline screening and ovulation assessment) accounted for 33.2% of the total cost. The total estimated screening cost incurred over the 10-month interval was $71,018, and the cost to bring a single donor into the program was approximately $1,869.

DISCUSSION

Oocyte donor screening was a time-consuming process associated with a relatively low number of donors (12% in our study) becoming accepted into the active donor pool. Our results are similar to findings of other investigators, except that the percentage of accepted donors in our study is lower compared with that in two previous reports (28.9% and 38.8% respectively; see References (9, 10) Attention to the screening costs associated with bringing a single donor into our egg donor pool is a unique feature of this analysis that has not been previously addressed.

Donor recruitment through advertisement represents a significant cost. We used less costly local community and college campus papers because ads placed in newspapers for general circulation are expensive and did not reach the correct target group. Furthermore, some of the large general-circulation newspapers did not welcome ads related to oocyte donation, surrogacy, or adoption. Timing of ad placement was important. We avoided advertising in college newspapers over the summer months when the student population was low. Advertisements placed just before major holidays at the end of the year had also resulted in a limited response.

The attrition in potential egg donor candidates occurred at multiple steps in the screening process. The largest attrition point of the oocyte-screening program occurred early in the process; only 40% of the initial donor profiles were returned. It was not clear whether early dropouts were secondary to the complexity of the process of oocyte donation, the time commitments, or the required screening procedures.

One third of the completed donor profiles provided information that resulted in rejection of the donor. The single most common reason for donor rejection was obesity. Theoretically, greater amounts of medication might be required to stimulate an overweight donor, thereby increasing the cost of the cycle. Increased weight could also diminish visualization of the ovaries, with pelvic ultrasound potentially making ovulation induction monitoring and egg retrieval more difficult. Furthermore, in our program, recipient couples selected their own donor based on the donor profile, and in our experience, overweight women were rarely chosen by a recipient couple.

Of interest is that although our advertisement clearly stated that we were seeking nonsmoking women, a significant number of responders were smokers. Alcoholism or mental illness in the donor or in the donor's family was associated with a large number of donor rejections.

The group-teaching orientation was a time-consuming part of the screening process. Each 2-hour session included a prepared standard presentation, a question and answer session, and a facility tour. The teaching session, led by the physician, was offered in the evenings for the convenience of working women at a time when clinic space was readily available. Physician interaction with donor candidates was a significant benefit in our program. Observing the donor candidate at the orientation allowed important initial insights about the donor's personality, punctuality, communication

and language skills, and personal relationships. We believe that multiple exposures to the donor candidate on paper and in person were useful in the screening process. In our program, the physician had the most consistent contact with the donors, and repeated interactions were necessary in personalizing the program to the donor and in ensuring proper informed consent.

The percentage of donor candidates who were invited but did not attend an orientation (22%) was significant despite repeat invitations and attempts at rescheduling the sessions. Although all women attending the orientation were invited to continue medical and psychological screening, 14.3% did not initiate any further contact with the clinic after attending the orientation. No attempt was made to contact these individuals, and therefore their reasons for discontinuation was unclear. One study found that a significant reason for voluntary donor withdrawal from the screening process was concern about potential complications and problems with time commitment (9).

After medical and psychological screening were completed, ovulation dysfunction was the most common cause for rejecting a donor candidate. Interestingly, all women stated in the screening profile that they had regular, normal menstrual cycles. When monitored through a spontaneous cycle, eight donors (61.5% of donors rejected after medical screening was begun) were rejected based on abnormal findings. Of the donors who successfully completed the screening process, five (29.4% of fully screened donors) were lost to follow-up for various reasons (moving from the area, going out of the country for an extended amount of time, or experiencing change in job or school plans that resulted in less available time). Finally, failure to achieve a donor–recipient match for a fully screened donor can also occur. The financial loss associated with losing a donor who is fully screened but is not used needs to be amortized into the total cost of running the program.

Oocyte donor screening costs were a significant part of the total cost of treating recipient couples who seek egg donation as a therapy. In our program, the cost to bring a donor into the active pool represented approximately 14.5% of the total cost of a conventional IVF cycle using an egg donor. Approximately 31.1% of the total screening costs were linked to the physician (profile review, donor orientation, and medical screening including data review of ovulation assessment parameters and sexually transmitted disease screens). Although we have considered using less expensive personnel to take over the physician screening tasks, we believe physician involvement has allowed appropriate medical screening of donor candidates who at times present with complex personal and family medical backgrounds. We also believe that physician involvement in the donor orientation has ensured proper informed consent of the donor. The technical cost (laboratory and ultrasound) of documenting normal ovulation parameters was about 15.7% of the total screening cost. Considering that ovulation dysfunction was the most common reason for eliminating a donor after medical screening was initiated, we believe this part of the screening protocol should not be eliminated. We also theorize that egg donors who demonstrate normal ovulation function have a greater chance of achieving a recipient pregnancy and possibly a decreased chance of a donor-related cycle complication or cancellation. The laboratory costs associated with the sexually transmitted disease screening panel and blood type and Rh recommended by the ASRM guidelines constituted about 10% of the total cost of screening.

After completing our cost analysis, we discovered that we were undercharging recipient couples for the services associated with providing them with an egg donor. We also realized that the precycle costs to actually initiate an egg donor cycle included more than just the screening costs to bring a single donor into the pool. The time and cost associated with matching the recipient to the donor were highly variable and were not considered in the analysis. Other precycle costs not included in our current analysis related to the one-to-one time spent with the donor immediately before the cycle in reviewing injection technique, distributing medications, and confirming cycle dates.

We conclude that managing an oocyte donor screening program requires a great deal of time and effort and is associated with significant cost. Most women who express initial interest in the program do not become active donors.

References

1. Lutjen P, Trounson A, Leeton J, Findlay J, Wood C, Reno U, et al. The establishment and maintenance of pregnancy using *in vitro* fertilization and embryo donation in a patient with primary ovarian failure. Nature 1984;307:174–5.
2. Selection and screening of potential oocyte donors. In: Fundamentals and principles of oocyte and embryo donation. Sauer MV, ed. New York: Springer-Verlag, 1998.
3. Ahuja KK, Simons EG, Fiamanya W, Dalton M, Armar NA, Kirkpatrick P, et al. Egg-sharing in assisted conception: ethical and practical considerations. Hum Reprod 1996;11:1126–31.
4. Feinman M, Barad D, Szigetvar I, Kaali SG. Availability of donated oocytes from an ambulatory sterilization program. J Reprod Med 1989; 34:441–3.
5. Sauer MV, Paulson RJ. Oocyte donors: a demographic analysis of women at the University of Southern California. Hum Reprod 1992;7: 726–8.
6. Lessor R, Cervantes N, O'Connor N. An analysis of social and psychological characteristics of women volunteering to become oocyte donors. Fertil Steril 1993;59:65–71.
7. American Society for Reproductive Medicine. Guidelines for oocyte donation. Fertil Steril 1998;70(Suppl 3):5S–6S.
8. American Society for Reproductive Medicine. Appendix A: minimal genetic screening for gamete donors. Fertil Steril 1998;70(Suppl 3): 12S–13S.
9. Kan AK, Abdalla HI, Ogunyemi BO, Korea L, Latarche E. A survey of anonymous oocyte donors: demographics. Hum Reprod 1998;10: 2762–6.
10. Marina S, Exposito R, Marina F, Nadal J, Masramon M, Verges A. Oocyte donor selection from 554 candidates. Hum Reprod 1999; 11:2770–6.