Optimal in vitro fertilization in 2020 should reduce treatment burden and enhance care delivery for patients and staff

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This review argues that optimal in vitro fertilization in 2020 should include a way of enhancing the delivery of treatment for patients and staff by the minimization of patient, treatment, and clinic sources of burden. Two specific sources of burden are addressed. First, patient vulnerability can be tackled by implementation of pretreatment evidence-based screening for psychological distress, appropriate referral for support, elimination of barriers to acceptance of psychosocial support, and implementation of a routine care flowchart that identifies the specific stages of treatment when psychosocial support should be provided. Second, negative patient–staff interactions can be avoided by training staff in communication/interaction skills, promoting shared decision making, prioritizing psychological interventions that address aspects of care equally problematic for patients and staff, and monitoring the impact of change on patient, staff, and clinic outcomes. In addition, optimal in vitro fertilization should ensure now that the future generations of young adults know what “achieving parenthood” actually entails in the context of the many desired goals of adulthood, greater variety of reproductive techniques available, later age of first births, and, consequently, longer exposure to risk factors (e.g., smoking) that affect fertility.

Key Words: Infertility, IVF, patient vulnerability, patient–staff interactions, psychosocial care

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In the past decade there has been a growing interest in understanding the psychosocial challenges of undergoing infertility treatment, specifically which aspects make the treatment burdensome for patients and which interventions may prepare patients to better cope. However, more recently it was proposed that this approach may produce limited results because it is not only the patient, but also treatment (i.e., the nature, intensity, and intrusiveness of the medical treatment) and organizational factors (e.g., waiting times, suboptimal organization of care) that contribute to make treatment more onerous (1). This was confirmed by a systematic review that highlighted the psychological burden of treatment, clinic-related reasons, and organization problems as some of the main reasons that lead patients to discontinue treatment prematurely (2). The Integrated Approach to Fertility Care (1) was proposed to highlight the need to focus on identifying possible causes of burden across patient, treatment, and clinic domains and developing tailored interventions that can be easily integrated into routine care and implemented by fertility clinic staff (e.g., nurses, doctors, embryologists, administrators) to optimize the treatment experience. Ultimately, this should result in better treatment experiences for patients, leading to improved quality of life and lower discontinuation rates (3–6). It should also benefit staff by lower work overload and stress from working with a less distressed patient population. Finally, it should benefit the clinic itself through lower discontinuation, as suggested by recent systematic reviews of compliance studies (7), and consequently, higher success rates, higher patient satisfaction, and dissemination of positive reviews online.

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With a view to what should be considered optimal in vitro fertilization (IVF) treatment by 2020, this review will first focus on two specific sources of treatment burden identified in the Integrated Approach, namely, patient psychological vulnerability and negative staff–patient interactions. Second, the focus will be on psychological factors that optimize the chance of successful treatment. Table 1 presents a summary of the formulated recommendations.

## PATIENT PSYCHOLOGICAL VULNERABILITY

Every patient brings his or her personal history and characteristics into the clinical setting. For some patients, these may translate into increased difficulties in coping with the challenges of treatment, what mental health professionals refer to as patient psychological vulnerability. There is a significant amount of empirical evidence on what constitutes psychological vulnerability, how to assess it and how to target it. Based on these data, several recommendations have been formulated that need to be integrated into clinical practice.

### Implement Pretreatment Screening and Referral of Patients at Risk for Psychological Distress

Most patients are able to cope with the multiple demands of treatment and believe that they do not need professional support to do so [8]. However, ~20% of patients experience significant distress, which taxes their coping resources [9]. Patients experiencing distress are more likely to discontinue treatment prematurely [10, 11], engage in unhealthy lifestyles (e.g., smoking, drinking alcohol) [12], and experience a lower quality of life [13]. Patient distress can also be associated with distress in the clinical staff, possibly because staff may empathize with their patients’ suffering but also because these patients may interfere with treatment routines and have complaints that are difficult to handle [14]. Many patients only get a referral to psychosocial support when in this “crisis situation” [15], which may lead patients to perceive the referral in a punitive way, as an indication that they should be able to cope more positively with treatment [10].

For all of these reasons, it is important to identify patients at risk for psychological distress in advance, before the start of IVF treatment, and to be able to determine their vulnerabilities [9]. The SCREENIVF [9] is an evidenced-base short self-administered valid and reliable questionnaire consisting of 34 items that, based on the responses given, identifies patients as at risk for psychological distress during treatment. It also provides more precise information on the risk profile of the patients (i.e., each patient’s specific vulnerabilities with regard to anxiety, depression, social support, and infertility cognitions). Prospective research showed that the SCREENIVF successfully identified 75% of patients undergoing IVF at risk for anxiety and depression [9]. The SCREENIVF process evaluation showed that 78%–80% of patients agreed to complete it, 90% found that it was useful, and 93% recognized themselves in the risk profile that was subsequently presented to them [16]. These results indicate that the SCREENIVF risk profile can be used to create a preventative treatment plan targeting the patients’ vulnerabilities. The Fertility Quality of Life (available in 26 languages) or the Fertility Problem Inventory are examples of other valid and reliable tools that can be helpful as a mechanism for clinicians and patients to gain insight into the impact of infertility on different domains of patient wellbeing (e.g., relational and social) [4, 17]. Information about the average Fertility Quality of Life total scores that correspond to the Hospital Anxiety and Depression Scale [18] clinical threshold on anxiety and depression is now available [13]. These tools have the advantage of providing precise evaluations of the impact of infertility—and not of other stressful events or factors—on patient wellbeing. More generic screening measures, such as the Hospital Anxiety and Depression Scale, the Beck Depression Inventory (BDI) [19], or the CES-D Scale [20], can also be used by clinics to know which patients should be referred to a mental health professional [21, 22]. Nonetheless, the capacity of these noninfertility specific tools to identify patients at risk of maladjustment during treatment has not been tested.

Through timely referral clinics can ensure that patients have the opportunity to receive support from trusted mental health professionals. Even if patients decide not to pursue professional psychological support, the screening procedure is still useful for patients to get validation and/or a better insight about the issues that are affecting them, which may enable them to better help themselves. In addition, the clinic staff will be more aware of each patient’s difficulties and better able to make decisions about access to treatment (e.g., in case of severe psychopathology consider postponement of treatment until problems are addressed). Nonetheless, it is noteworthy to point

### TABLE 1

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<th>Cause of burden</th>
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<td>Patient psychological vulnerability</td>
<td>Implement pretreatment screening and referral of patients at risk for psychological distress</td>
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<td>Provide clear information about how to access psychological support</td>
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<td>Offer training opportunities for acquisition of communication and interaction skills</td>
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<td>Increase involvement and/or collaboration in periconceptional advice and fertility awareness initiatives</td>
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<td>Offer interventions to address unhealthy lifestyle factors</td>
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<td>Support patients in adjusting to unmet parenthood goals</td>
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out that usually recommendations are to increase support during treatment rather than to deny treatment (23).

**Provide Clear Information on How to Access Psychosocial Support**

Results from the SCREENIVF process evaluation showed that, of the patients at risk for psychological distress, only 25% thought that they would benefit from psychological help and only 21% reported planning to seek it. However, the data also showed that 46% experienced travelling distance to a mental health professional as an obstacle and 79% did not know whether their insurance covered psychosocial support (16). This indicates that uptake of psychological support could be compromised by the perception of practical barriers (8) and clinics need to address such barriers. This implies providing patients with clear information about how to access psychosocial support, resources available for patients who may have to travel long distances and about insurance coverage for mental health care. Such information can be provided in different formats, for instance by brochures/posters within the clinic or on their web site. Recent research showed that patients and professionals assess the availability of such information differently, with professionals overestimating their clinics' quality performance on this matter (24). The clarity and privacy of the referral request procedure also needs to be assured.

**Provide General Psychosocial Support in Daily Care**

By directing specialized psychosocial support for the subgroup of patients that may effectively benefit from it, clinics may achieve higher therapeutic efficacy with limited human resources. Other available human resources can then be mobilized to provide general psychosocial support in daily care to the remaining 80% of patients, as recommended (1). Although these patients tend to adjust well, they still believe that they are particularly vulnerable to distress when facing specific stages of the IVF treatment process, for example, the 2-week waiting period to find out about pregnancy (25). By targeting specific stages with evidence-based tailored interventions, further “crisis situations” can potentially be prevented (1). Some of the currently available interventions are self-administered, with no or minimal explanations from the clinic staff required, thus using minimal resources. Examples include the Positive Reappraisal Coping Intervention, which aims to support positive reappraisal of the 2-week waiting period time (e.g., seeing possible benefits, learning from the experience) (26) and a two-page booklet with preparatory information for men undergoing a fertility workup (27).

Physicians and nurses should play an active role in providing routine psychosocial support to their patients. This is practical because of the regular contact nurses and physicians have with patients and it is in line with patients' stated preference (28). There is now a growing movement concerned with patient-centered care, which aims to elucidate on how to better deliver care in accordance to patients needs and preferences (29, 30) against the practical realities of treatment delivery (staff workload, time constraints). As a result, it is now known which aspects of care patients consider important and, from these, which constitute problem areas that make treatment more onerous and are associated with lower patient quality of life (3, 30). All clinics can now elicit detailed feedback from patients about their performance on such matters using the Patient Centeredness Questionnaire–Infertility (31). The Patient Centeredness Questionnaire–Infertility is the first questionnaire designed to assess infertility patient-centred care. It is a valid and reliable tool that assesses patients’ experience with fertility care according to a theoretical and empirical validated model of patient-centred care (31–33). The information collected can be used for benchmarking and to inform strategies for care quality improvement. The optional Fertility Quality of Life Treatment Module is a 10-item questionnaire that assesses quality of life during treatment (environment and experience of mental and physical symptoms, disruption in daily life due to treatment) that could also be used (4).

In summary, addressing patient vulnerability implies assessing it before the start of treatment and referring patients at risk for psychological distress to mental health professionals, eliminating all barriers to the pursuit of psychosocial support, and implementing a routine care flowchart that defines stages of upcoming treatment when psychosocial support is to be provided, to whom, by whom, and how. Furthermore, it implies using patient feedback about the treatment experiences to inform decisions about how to make treatment more patient friendly.

**NEGATIVE STAFF–PATIENT INTERACTIONS**

A recent systematic review showed that most infertile patients report that establishing a positive relationship with trustworthy, sensitive, and respectful staff is very important, but are not satisfied with how this need is met at the fertility clinics they attend (30, 34). Patients experience distress, lower quality of life, and discontinue treatment or change clinics due to interaction and/or communication problems with staff, such as poorly formulated explanations about care, lack of empathy, or lack of attention to the psychological aspects of treatment (2, 5, 35, 36). Negative patient–staff interactions are also stressful for the clinic staff (37), and associated with work burnout and lower job satisfaction (38). There are reasons to believe that problematic patient–staff interactions at fertility clinics are common. The incidence of mental disorders in patients undergoing IVF is high (39), treatments are usually prolonged, and patients feel increasingly strained with the number of cycles they undergo (40, 41). Each treatment cycle has low success rates (42) and clinic staff have to frequently deliver bad news to patients and thus face unpredictable negative emotional reactions (43). In addition, many patients feel uncomfortable and experience distress when undergoing demanding and intrusive medical procedures (34). Despite this scenario, very little research has been conducted within the field on interventions to tackle communication and interaction issues. Therefore, at present, it is almost impossible to list recommendations with a strong evidence base.
Offer Training Opportunities for Acquisition of Communication and Interaction Skills

Studies in other areas of health care show that doctors who perceive their training in communication skills as inadequate appear at risk of burnout and impaired mental health (44). When physicians know how to proceed in the context of difficult staff–patient interactions, such as disclosing “bad news,” they experience less stress than those who do not have a defined protocol to follow (43). Physicians and nurses who undergo training in communication skills report a significant increase in their self-efficacy to perform the essential communicative demands their routine work requires and this improvement remains stable for 6 months, as shown in a randomized controlled trial (45).

Recent research focusing on fertility care suggests that clinic staff lack precise knowledge about how to address their patients’ concerns, needs, and preferences (46). Physicians and nurses express difficulties in evaluating their performance, in general being more critical toward themselves than are patients (24), and believe that they need detailed, concrete, and clear feedback on their current practice to improve it (46). Evidence-based training in communication/interaction may improve staff communication skills and their ability to manage difficult situations and patient characteristics. In a recent study 13 infertility physicians underwent a 2-day training workshop in empathic skills for fertility doctors based on modeling (i.e., observe how to do) and role play (i.e., practice how to do it in simulated interactions) techniques. They were evaluated by 2,146 patients before and after receiving the workshop and an increase was observed in patient satisfaction with perceived information quality and physician expertise (47). Another study with 348 men and women undergoing fertility diagnosis or treatment at Portuguese fertility clinics showed that patients are more willing to comply with treatment when they are able to establish relationships with a reference doctor who is competent, respectful of their interests, involves them in the treatment process, and provides them with the information they need to address their concerns about the medical procedures (33).

Future research should prioritize the effective implementation of communication skills in fertility care. Training should be offered to all staff that has direct contact with patients, as negative patient–staff interactions are known to occur even with office personnel (30).

Promote Explicit Communication and Shared Decision Making

Negative interactions may also arise from the different perspectives that patient and staff have about what are acceptable treatment outcomes (5). For instance, from a medical perspective, premature discontinuation is often considered a negative outcome. However, for some patients it can be a carefully considered value-based decision (7). Explicit communication and shared decision making will ensure that patients’ values, motivations, and decisions are fully exchanged with staff. Patients are faced with many complex decisions during the treatment process for which they perceive a lack of clear guidance (48), and for which they themselves may be hindered in their capacity to make autonomous choices due to their pressing desire for children (49). Therefore, a greater emphasis should be placed within the field for the development of tools that elicit patient–staff discussion (e.g., option grid) (50) and decisional aids concerning important treatment-related issues (51). For instance, a tool to help patients deciding on the number of embryos to transfer in IVF was tested against standard care for IVF in a randomized controlled trial. Results showed that the tool encouraged the use of single ET, increased patients’ knowledge, had no effect on anxiety and depression, and resulted in a reduction of treatment-related costs (52).

Prioritize Intervention in Areas That Are Problematic for Patient and Staff Alike and Monitor Change

Research has shown that physicians tend to underestimate the importance patients attribute to the quality of care they receive at fertility clinics (5) and this may also explain why patients perceive certain aspects of care to be problematic. Infertility staff may exhibit reluctance to implement changes in the way they deliver care because they may not anticipate benefits for themselves or the clinic and/or perceive it as increased job demands. Lack of time and work pressure are mentioned by infertility professionals as the main barriers to implement patient-centered care (46). Motivation for change in staff can be promoted by first targeting those aspects of care that are most distressing or dissatisfying for both patients and staff (e.g., informing about treatment failure). The implementation of change should then be monitored to demonstrate progress made and areas for further improvement. Optimal interventions should elicit benefits for patients and staff alike, but thus far most outcome evaluations focus only on the patient. Patients’ quality of life and care experiences can be assessed with tools such as the Fertility Quality of Life (4) or the Patient Centeredness Questionnaire–Infertility (31). The Patient Centeredness Questionnaire–Infertility can also be modified to assess staff views of the care they deliver (24), but more effort should be put in monitoring the impact of change in the clinic staff (e.g., well-being, burnout, job satisfaction) and the organizational level (e.g., costs, success rates).

In summary, negative patient–staff interactions could be avoided by training staff in communication and interaction skills, promoting explicit communication and shared decision making between patients and physicians, prioritizing interventions that address those aspects of care that are equally problematic for patients and staff, and monitoring the impact of change on patients, staff, and clinic outcomes. It is difficult to make an estimation of what the economic benefits of such an approach would be as there is great variability across clinics regarding, for example, number of staff and qualifications, number of treatments done per year, and organizational structure. Nonetheless, increased treatment compliance could be expected (2). A recent systematic review concluded that full compliance (i.e., three consecutive IVF cycles, when needed) could increase the clinics’ pregnancy rates (PRs) by
15% and lead to an average of an extra 110 cycles per year per clinic in Europe (7).

It should be noted that some mental health professionals are qualified to implement, coordinate, or provide consultancy on these issues, which are within their area of expertise. They are also in a position to elicit patients’ preferences, evaluations, and reports of care delivery (e.g., through structured interviews, focus groups, surveys) that can be critical elements for the implementation and assessment of practice guidelines and/or organizational policies internal to the clinics (53). Interdisciplinary work between physicians, nurses, psychologists, and/or counselors could thus prove to be highly productive in enhancing the care experience. However, mental health professionals need to recognize that radical changes have taken place in the provision of psychological support (e.g., e-health, m-health, self-cure) (54–56) and that they too need to diversify their skill set and move away from a strictly one-on-one care perspective.

**OPTIMAL USE OF IVF IN 2020**

In thinking of the patients of the future and planning strategies for maximizing PRs, it is important to consider the psychosocial issues that can impact those success rates. In vitro fertilization is most effective when people are young and have a healthy lifestyle (e.g., nonsmokers and healthy weight) (57, 58). However, there is a wealth of research showing that people do not behave optimally to maximize their chances of conception. First, couples are increasingly delaying childbearing. Second, only 56% of infertile couples are seeking fertility care and of those who do, 20% try to conceive on their own for more than 2 years before seeking out treatment (59). Third, negative lifestyle habits, such as smoking, alcohol, and drug consumption, and obesity have increased markedly during the past decade (60). Fourth, many patients maintain some of these lifestyles even during treatment, such as exercising in excess and/or drinking caffeine and alcohol (61). This scenario highlights the need for periconceptional advice and planning for interventions to increase fertility awareness and knowledge. Recommendations are presented in the following sections.

**Increase Involvement and/or Collaboration in Periconceptional Advice and Fertility Awareness Initiatives**

People need to be prompted to start to think about their parenthood goals from an earlier age in much the same way as they do for other important life goals such as education and/or professional career. The aim should be to increase people’s insight about their reproductive goals and about the possible consequences of the different reproductive plans they may delineate. In addition, a stronger effort needs to be put into sexual and reproductive education so that young people grow up understanding not only how to prevent undesired pregnancy, but also how to protect their fertility. This implies a higher awareness and knowledge of the factors (e.g., age) and behaviors (e.g., unprotected sexual encounters leading to sexually transmitted diseases [STDs], smoking) that compromise reproductive health.

Although infertility specialists typically do not have direct contact with individuals and couples at these early stages of their reproductive pathways, they can integrate and/or disseminate initiatives to deliver perinatal advice and increase fertility awareness. For instance, simple measures would include providing links in their web sites for other important stakeholders in the field, such as patient advocacy groups, family planning associations, or scientific societies, that offer reliable information about these issues. In addition, fertility clinics could easily make existing tools for reproductive decision making (e.g., My Fertility Choices web site, My Reproductive Life Plan, Your fertility web site) (62–64) and evaluation of fertility status (e.g., FertiSTAT) (65) available for the general public, with leaflets or the Internet.

**Offer Interventions to Address Unhealthy Lifestyle Factors**

Strategies for addressing unhealthy lifestyles should be recommended to all planning a family. In fertility care it is considered good practice to offer lifestyle interventions for patients reporting unhealthy lifestyles (66). A recent study showed that 7% of women attending tertiary fertility care present a body mass index (BMI) lower than 18.5 and 25% present with a BMI higher than 25, 11% smoke more than five cigarettes a day, and 20% practice sport in excess (defined taking in consideration the energy consumption involved). In addition, 18% of men smoke more than five cigarettes a day and more than half have a BMI higher than 25 (67). Although the detrimental effects of smoking and having a low weight or being overweight on fertility is well established, excessive sporting activity is has only recently been considered a potential detrimental factor (58, 68, 69). These data suggest that a considerable number of patients may benefit from lifestyle interventions, including specific populations, for instance obese patients with polycystic ovary syndrome (PCOS) or anovulatory infertility (70). However, the efficacy of existing interventions in increasing PRs has not yet been established. For instance, interventions for overweight and obese infertile women have limited success, which seems to be related with the dropout rates observed (estimated to be of 24%) (71). Some psychological interventions integrate strategies to target lifestyle factors, for instance by providing information about nutrition and exercise, but it is not yet clear whether increases in PR are due to the lifestyle component or other components (72). Overall more research needs to be done in the implementation of lifestyle interventions for infertile patients undergoing treatment.

A related issue concerns the high prevalence of eating disorders observed in infertile women patients. A US-based study with 82 women starting IUI showed that 20.7% met criteria for a past or current eating disorder (more than five times the US prevalence rate) (73) and that 76.4% of these patients did not disclose their eating disorder history to their fertility health care provider (74), although these factors may affect their fertility. Fertility staff needs to be informed about their patients’ eating disorders so that appropriate care and/or referrals may be provided.
By taking steps to optimize personal factors that impact fertility, the negative burden of poor prognosis would be reduced. Negative treatment prognosis is highly distressing for patients (75) and many discontinue treatment prematurely due to perceived low chances of success, even when medical recommendations are to continue (2).

Support Patients in Adjusting to Unmet Parenthood Goals

Finally, promoting optimal treatment experiences implies not only creating the optimal treatment conditions to meet parenthood goals but also supporting patients when treatment leads to unmet goals. Around one-third of couples will not reach parenthood even after undergoing all recommended fertility treatment (76). With increasing parenthood delay this number is likely to increase. Those couples who persevere in their desire for children after treatment have poorer long-term emotional adjustment and use more mental health care, similar to those who achieve parenthood but still wish for more children (77, 78). Receiving good medical guidance during the treatment process and being able to comply with it helps couples adjust, but this is not enough for some couples who need additional support to overcome their grief and to refocus their life on other meaningful goals (77, 78). At a minimum, a closure psychological consultation should be offered for all patients ending the recommended and/or subsidized treatment without achieving pregnancy. Couples who still manifest a strong wish for children or exhibit low possibilities to refocus their lives should be advised to seek additional psychological support (77, 78).

In conclusion, optimal IVF for 2020 should include a way of minimizing the psychological burden of assisted reproductive technology (ART) and enhancing the delivery of treatment for patients and staff. It should also ensure now that the future 2020 young adults know what “achieving parenthood” actually entails in the context of the many desired goals of adulthood, later age of first births, and, consequently, longer exposure to risk factors (e.g., smoking) that affect fertility.

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