

# How Will the New Global Polycystic Ovary Syndrome Guideline Change Our Clinical Practice?

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**ABSTRACT:** Polycystic ovary syndrome (PCOS) is a far reaching condition that has a number of reproductive and general health implications. There has been much debate in recent years about the diagnosis and definition of PCOS and a plethora of studies assessing its management, ranging from the psychosocial aspects of the conditions, to the treatment of hyperandrogenism, anovulatory infertility, and the long-term metabolic and reproductive consequences. There has been a need to synthesise the evidence and produce an international consensus guideline for all aspects of the management of PCOS and this was achieved with the publication of the *International evidence-based guideline for the assessment and management of polycystic ovary syndrome*. The guideline is broadly categorised into 5 sections, which focus on diagnosis, holistic management and safe, effective fertility treatment. This article summarises the key points of the guidance and brings the management of PCOS up to date for the 21st century.

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## Introduction

The *International evidence-based guideline for the assessment and management of polycystic ovary syndrome (PCOS)*, published in July 2018, brings together a wide collaboration of international societies, consumer organisations, and women directly affected by PCOS.<sup>1</sup> Borne out of the need for rigorous evidence-based processes that can translate into high-quality patient care; the guideline's mission was to prioritise clinical questions and promote consistent evidence-based care, improving the quality of life for women with PCOS. The guideline itself provides a combination of 166 recommendations and clinical practice points, broadly categorised into 5 sections, which focus on diagnosis, holistic management and safe, effective fertility treatment. The question remains as to whether this guideline will now be fully adopted into specialist management of this complex condition which often spans many medical specialties at once. This article will address each of the 5 categories, evaluating each recommendation that may orchestrate change in our current clinical practice.

## Screening, Diagnostic Assessment, Risk Assessment, and Life Stage

### *Irregular cycle and ovulatory dysfunction*

Ovulatory dysfunction with irregular menstrual cycles is a major component of PCOS. Menstrual irregularity is common through adolescence and is recognised as a sign of pubertal transition, with maturation of the hypothalamic-pituitary axis. The difficulties of defining normal age-related change from that of PCOS in these years are difficult. Historically, young women have felt a lack of education and dissatisfaction in time taken to diagnosis, delaying targeted therapies. The global guideline makes clear recommendations based on gynaecological age,

regarding when cycles should be termed irregular post-menarche. With more defined criteria, this should help the conundrum of adolescent diagnosis providing aid in all clinical settings dealing with young women.

### *Biochemical hyperandrogenism*

Accurate assessment of biochemical hyperandrogenism has been handicapped by androgen selection, assay method and confounding factors of age, body mass index (BMI), and ethnicity. Where available the considered optimum assay method is to use liquid chromatography-mass spectrometry (LCMS)/mass spectrometry and extraction/chromatography immunoassays to test for total or free testosterone. Ideally samples should be taken in the morning of early follicular phase to limit cycle variation. Additional testing for androstenedione and DHEAS is unlikely to yield more in the diagnosis of PCOS. The guideline provides clarity on androgen testing but is likely to be current practice in most places and therefore not alter clinical practice.

### *Clinical hyperandrogenism*

The assessment of clinical hyperandrogenism is highly subjective and often masked by patient self-management of conditions such as hirsutism. The modified Ferriman-Gallwey score is a simple and reproducible way of grading hirsutism of which a score >4-6 defines significant hirsutism. There are also big ethnic variations in the expression of hyperandrogenism.<sup>2</sup> More than 50% of women with a score of 3-5 will have elevated androgens.<sup>3</sup> There are no reliable measures for acne. The important point raised by the guideline is that irrespective of clinician grading of clinical hyperandrogenism, it is the patient's



experience and reporting of the condition that is key. These symptoms are entwined with many of the categories discussed in this guideline including body image, self-esteem, and psychological impact of PCOS. Clinicians should remain respectful of the reported symptoms and try to incorporate this into their management planning.

### *Ultrasound and polycystic ovarian morphology*

Since the original Rotterdam criteria definition of polycystic ovarian morphology (PCOM),<sup>4</sup> there have been many challenges to the optimum diagnostic features involving follicle number and volume.<sup>5</sup> With advanced technology, many have called for the criteria to keep pace; with critics of ultrasound suggesting that over reliance on ultrasound has led to over-diagnosis. This is most clear in the adolescent population for whom many will have a 'PCOM' ovary. The global guideline suggests after conducting a systematic review that when using transvaginal ultrasound transducers, with a frequency bandwidth that includes 8MHz, a follicle number per ovary of  $\geq 20$  should be used for PCOM. When older technology or a transabdominal approach, an ovarian volume of  $>10\text{mL}$  is preferred. Focussed training should occur for those regularly conducting these investigations to ensure reliability and reproducibility. Ultrasound should not be used for diagnosis in the adolescent years or more specifically within the 8 years after menarche. If adopted, this strategy is likely to alter clinical practice significantly. Many ultrasound reports do not quantify PCOM accurately and change in recommendations will take time to disseminate and action. The tightening of diagnostic criteria should reduce worry for patients, who often feel labelled by incidental findings on investigations that are unlikely to yield clinical effect.

### *Anti-Müllerian hormone*

Anti-Müllerian hormone (AMH) correlates with features of PCOS, mainly PCOM.<sup>6</sup> The test has been plagued with assay instability leading many to question its validity as a test. Although much literature exists to support its use in PCOS and offer an alternative to ultrasound morphology and other serum testing, this guideline believes that it should not yet be used in the diagnosis of PCOS.

### *Ethnic variation*

The manifestations of PCOS across ethnicity are diverse and varied. Metabolic features predominate in South Asian and indigenous Australians. Hirsutism is more significant in Hispanic and Middle Eastern populations. Increased BMI and metabolic features are more common in those of African descent. The guideline features the relevant effect of ethnicity under the individual categories and should influence clinical practice localised to the demographics in which people practice.

### *Menopause life stage*

The phenotypic presentation of PCOS with age alters, with a precise definition yet to be defined for that post-menopause. Symptoms of oligo-anovulation often abate but androgenic symptoms may persist. Use of age-related reference ranges for diagnostic features are recommended; with the diagnosis of PCOS in an older population having potential to focus screening on factors which present with age such as cardiovascular disease (CVD), diabetes, and cancer. It is important to remember that rapid onset of androgenic symptoms should always be evaluated for androgen-secreting tumours.

### *Cardiovascular disease*

The collective increase in risk factors for CVD with PCOS, warrant screening for known additional risk factors including sedentary lifestyle, smoking, dyslipidemia, hypertension, and impaired glucose tolerance. Although the actual CVD risk remains unclear in PCOS, highlighting these factors reminds clinicians to think broadly regarding long-term health and not just their individual topic such as fertility. These guidelines appear to be directed at primary care who carry out the majority of screening and should remind all to acknowledge PCOS within a risk assessment.

### *Gestational diabetes, impaired glucose tolerance, and type 2 diabetes*

There is no doubt that the risk of gestational diabetes (GDM), impaired glucose tolerance (IGT), and type 2 diabetes is increased in PCOS and exacerbated by obesity.<sup>7</sup> Ethnicity has a huge influence on outcome, with many in a high-risk south Asian population developing diabetes by their early 40s unlike a Caucasian European cohort.<sup>8</sup> Previous prescriptive guidelines have had limited uptake on when and how to screen women with PCOS. This is compounded by the controversies surrounding which screening tool to adopt, cost implications, and patient convenience. The current guidelines have undergone rigorous review and are for the first time based on absolute risk of diabetes in PCOS. Use of the oral glucose tolerance test (OGTT), fasting glucose, or HbA1C all have their individual merits, with the OGTT outperforming the other two options. The guideline recommends that all women with PCOS be screened at least at initial consultation and on a minimum 3-year interval thereafter with the simple tests of hyperglycaemia of HbA1C or fasting glucose. For women deemed 'high-risk' which includes those with a BMI  $>25\text{ kg/m}^2$  or  $>23$  in the Asian population, an OGTT is recommended. Furthermore, there is clear recommendation to perform a pre-conception OGTT and also repeat it at 28 weeks of gestation. These recommendations will have significant impact on service provision. All groups involved in the production of this guideline fully endorsed the proposed screening methods, acknowledging the

feasibility, acceptability, and financial implication posed to current practice. Many obstetric units will only plan an OGTT for those with multiple risk factors and not purely PCOS alone. Despite the challenge in implementation, there should be no diversion from implementing evidence into practice.

### *Obstructive sleep apnoea*

Obstructive sleep apnoea has been connected with PCOS and its metabolic component, not purely caused by obesity. Limited quality of evidence to suggest treatment improves metabolic outcomes does not warrant screening for all. For those women who are symptomatic for snoring and daytime somnolence, screening and onward referral may be beneficial to improve the psychological coping strategies for the condition.

### *Endometrial cancer*

Women with PCOS have a 2- to 6-fold increased risk of endometrial cancer before menopause.<sup>9</sup> The increased risk stems from unopposed oestrogen from anovulatory cycles stimulating the endometrium. Obesity, type 2 diabetes, and the metabolic syndrome are also associated with increased risk. The pragmatic recommendation to stay vigilant for the condition and consider investigation where symptoms suggest concern, cements common practice among gynaecologists. Furthermore, the pragmatic approach to protect the endometrium in amenorrhoeic women may involve either the use of the combined oral contraceptive pills (COCP), progestin-induced withdrawal bleeds at least once every 3 months, or a progestagen-releasing intrauterine system.

## **Prevalence, Screening, Diagnostic Assessment, and Treatment of Emotional Wellbeing**

### *Quality of life*

Those with PCOS have a lower health-related quality of life (HRQoL) than their peers. Studies using non-specific QoL tools to quantify effects have repeatedly shown the impact of PCOS through reduced scores compared with non-PCOS matched women.<sup>10</sup> Criticism of these generic tools is the lack of relevance for some aspects questioned including pain scores and mobility. Specific tools addressing key concerns including hirsutism, fertility, and menstrual disturbance now exist in the form of the polycystic ovary syndrome questionnaire (PCOSQ) and modified polycystic ovary syndrome questionnaire (MPCOSQ).<sup>11</sup> These highlight key domains that patients consider important including hirsutism, infertility, and menstrual problems. It is recognised that there are differences across life stage, ethnicity, and culture.<sup>12</sup> The importance of recognising the impact of symptoms on the individual patient is crucial for developing both close rapport and supportive long-term care. Adoption of these tools, which may be unfamiliar to many, into mainstream clinical care is likely to be a major change in

clinical practice. Consideration of use at particular key stages of care for women including initial consultation and changing life stages could provide reliable feedback on patient outcomes and help guide further management to improve their overall care.

### *Depressive and anxiety symptoms, screening, and treatment*

The recognition of the psychological impact of PCOS remains limited worldwide. Depressive symptoms appear to be doubled in the PCOS population compared with weight matched controls (36.6% in PCOS vs 14.2% in controls).<sup>13</sup> Similarly, anxiety scores are higher in women with PCOS. The cause for these symptoms is multifactorial, with the complex interplay of symptoms and effects contributing to this chronic condition. The global guideline takes an educated view that it is the responsibility of all health care professionals engaging with this population to screen for and action management for those displaying symptoms. Simple strategies are suggested to guide questioning on symptoms to help broaden the clinician's approach. The entry of such guidance into mainstream recommendation should aid a significant change in clinical practice, improving patient satisfaction in their care.

### *Psychosexual function*

There is a perceived reduction in psychosexual function in women with PCOS. The interlinked feelings of femininity, sexuality, and body image contribute to a highly emotive subject for which there are recognised tools to assess a woman's individual psychosexual function. The guideline addresses the challenges that the health professional faces in attempting to address this subject with emphasis on cultural acceptability. In doing so there is a considerable shift in favour of taking a holistic outlook on managing women with PCOS that will challenge current clinical practice.

### *Body image*

It is unsurprising that many women with PCOS have lower satisfaction with their body image and lower self-esteem, given the symptoms related to the condition. Hirsutism, excess weight, and acne are all interlinked with the populist view of body image and are independently related to feelings of self-worth, mental health, and QoL. Although no form of reliable screening is available, the guideline suggests that health professionals should be aware of the impact on body image and attempt to tailor care to the individual in question.

### *Eating disorders and disordered eating*

Disordered eating and formal eating disorder diagnoses are more common in PCOS. The ability to screen for such conditions may not be routine in many clinicians' practice. The use of the SCOFF

screening tool can provide guidance for practice. The awareness of the problem by clinician's and the broaching of concern with individuals about their eating practice can help guide women into psychological help where needed, which in turn will have a sequential effect on all the parameters mentioned in this category. While this is unlikely to effect a huge change in clinical practice, raising awareness will foster the holistic practice of medicine directed at PCOS.

#### *Information resources, models of care, cultural, and linguistic considerations*

Throughout their life, patients with PCOS will access care from many varying specialities with often little collaboration between them. Reported dissatisfaction with information and method of information provision is high.<sup>14</sup> Placing this into context, there is a strong connection between PCOS and different ethnic groups for whom English is not the first language; yet English is the predominant language in which information is provided. Provision of support by other than written methods is recognised to be beneficial. Highlighting the deficiencies in our current clinical practice, this guideline should alert many to methods to engage patients in their treatment which should ultimately lead to improved health parameters. Accepting that longer consultations, involvement of family members, and the use of non-written information for low literacy patients are likely to reform some common clinical practices. Furthermore, the global reach of this guideline requires it – and associated patient information resources – to be translated into as many languages as possible.

### **Lifestyle**

#### *Effectiveness of lifestyle interventions*

Globally, women report that excess weight contributes to significant distress in PCOS; yet they feel that information surrounding healthy lifestyle is inadequate.<sup>15</sup> Evidence suggests that lifestyle intervention including weight management, behaviour, and exercise all contribute to improve aspects of PCOS.<sup>16</sup> Realistic goal setting in partnership with the patient yields the best long-term outcome. Detailed recommendations from the guideline are likely to go beyond current clinical practice for many, stressing the importance of providing time and resource to enable these women to help themselves. The time and financial implication of this sort of holistic care does need addressing.

#### *Behavioural interventions*

Behavioural interventions in conjunction with diet and exercise have been shown to achieve better results than diet or exercise alone.<sup>17</sup> The strategies adopted include problem solving, goal setting, and relapse prevention, leading to a more sustained outcome. Emphasis on self-management with support of

friends and family is reinforced in this guideline. Providing access to this sort of intervention is likely to be one of the hardest points to achieve from the global guideline. Brief consultation times and skill base available to provide this level of care may limit implementation, but our current generation of health professionals is increasingly better trained in these areas. Patient skills in behaviour change are fundamental to enable self-management of chronic disease in the modern era of clinical care.

#### *Dietary interventions*

There is no clear evidence to support one dietary intervention over another for those with PCOS. Studies looking at general overweight populations confirm no advantage of different diet plans.<sup>18</sup> Individualised approaches taking into account culture and dietary preferences that reduce energy intake by 500–750 kcal/day are advocated by this guideline. It provides pragmatic advice that should already be current practice, for well-informed practitioners.

#### *Exercise interventions*

For those with PCOS, as for any population, there is clear benefit from regular sustained exercise on metabolic, reproductive, and psychological health. Evidence suggests that those with PCOS lead a more sedentary lifestyle.<sup>19</sup> Clear prescriptive recommendations are laid out in the global guideline stipulating amount and type of exercise that concurs with the UK's national recommendations. The goal to achieve 150 min/week of moderate- to high-intensity exercise (more for adolescents) has been in place for a long time prior to confirmation in this guideline. This message should be broadcast widely, to prevent women feeling that little advice is given to help them. There should be no barriers to patients as exercise intervention does not need to be costly. This recommendation should not be new information but rather verification of current practice.

#### *Obesity and weight assessment*

Longitudinal studies confirm that for those with PCOS, weight gain is more rapid and exceeds that of non-PCOS counterparts.<sup>20</sup> Obesity as outlined in much of this paper is causative or connective to many of the issues surrounding PCOS. Respectful and adequate discussion needs to take place as to why weight is an issue and how best to address excess weight. Physical monitoring of weight, although useful, may be difficult in time constrained service provision but advice to do so takes limited time. This is likely to be a more difficult aspect for negotiating into current practice but nonetheless is strongly recommended for all patients not just those with PCOS. Promotion of healthy lifestyle and weight gain prevention is fundamental in providing good clinical care for this population.

## Pharmacological Treatment for Non-Fertility Indications

### *Combined oral contraceptive pills*

Much literature of varying quality exists for the use of the COCP in both the adult and adolescent population. For both populations, there is a clear recommendation to consider the COCP for management of hyperandrogenism and irregular menstrual cycles, including for those adolescents who are deemed 'at risk' but have yet to be given a defined diagnosis of PCOS. There is not enough evidence to stratify the 'best' COCP to use despite a common approach to use the lowest effective oestrogen dosage. It has been made clear to limit dependence on 35 µg ethinylloestradiol plus cyproterone acetate due to an increased risk of thromboembolic events, and therefore, these agents should not be viewed as the first-line COCP of choice. Consideration to the addition of metformin to the first-line use of the COCP is suggested for those who do not achieve their goals on COCP and lifestyle changes alone. Those who have metabolic features are overweight and from high-risk ethnic groups may do best from the combined approach. The overriding instruction is to include the woman in the best choice of medication for her individual case which may involve a combination of therapies, for which she needs to be aware of the risks and benefits. The 'cocktail' approach of treatment may yield significant change in practice for clinicians used to maintaining monotherapy prescribing.

### *Metformin*

Despite the wealth of literature on metformin use in PCOS, there remains some uncertainty of the exact merits of metformin in treating biochemical and physical manifestations of the condition. On balance, the mild side effect profile is counterbalanced by an improvement in metabolic features and BMI, particularly in the overweight and high-risk groups. If so desired, metformin can be offered to women on this basis. With the changing tide of thought on metformin in constant flux, many people may still regularly prescribe this medication and is likely to reflect the majority of clinical practice. As long as women are fully counselled on its effects, this low-cost treatment looks here to stay.

### *Anti-obesity pharmacological agents*

There is minimal evidence for the use of pharmacological anti-obesity agents in reproductive aged woman. Evidence in other obese populations suggests that there may be a role<sup>21</sup> for medical therapy alongside effective lifestyle and exercise intervention. These agents should not be taken by those wishing to conceive.

### *Anti-androgen pharmacological agents*

Anti-androgens such as flutamide, finasteride, and spironolactone have been suggested as a treatment for clinical hyperandrogenism

in PCOS. A paucity of evidence looking at these agents alone or in comparison with the COCP (traditional first-line treatment) leaves their true efficacy unclear. The guideline acknowledges the potential for use in those who do not tolerate the COCP, although reliable contraception is also required because of concerns about teratogenicity.

### *Inositol*

Inositol is a nutritional supplement that has a role in insulin signal transduction. Limited evidence is available regarding its role in modifying metabolic and biochemical components of PCOS. Recent data<sup>22</sup> suggest that menstrual cyclicity and ovulation may be improved. While the guideline suggests caution in use due to limited benefit, there is only a low side effect profile and low cost related to this treatment.

## Assessment and Treatment of Infertility

### *Assessment of factors that may affect fertility, treatment response, and pregnancy outcomes*

It is widely accepted that optimised health parameters before pregnancy lead to improved pregnancy outcomes, with no exception for those with PCOS<sup>23</sup> Obesity (particularly central adiposity) is perhaps the most important modifiable factor that impacts on fertility and successful pregnancy in those with PCOS. The onward trajectory in pregnancy is hampered for those with PCOS with an increase in GDM, pregnancy-induced hypertension, and prematurity.<sup>24</sup> This highlights once again the need for optimisation of detrimental modifiable risk factors recommended in the global guideline. These recommendations are unlikely to stray far from or alter current practice, particularly in health care settings such as the United Kingdom where provision of fertility services is curtailed by extremes of weight. Furthermore, it could be suggested that clinics not addressing weight management before active fertility treatment are negligent in maintaining safe patient care.

There is often debate on the optimum time to assess tubal function in couples with ovulatory dysfunction alone. While the risks of tubal patency checking, with less invasive procedures such as hysterosalpingography or more recently hysterosalpingo-contrast-sonography are minimal, the risk of false-positive results is present. The broad suggestion to discuss optimum timing of testing with the low-risk woman will allow the individual clinic to maintain its status quo and current testing regimen and therefore alter little in clinical practice.

### *Ovulation induction*

The aromatase inhibitor (AI), letrozole, is the recommended first-line treatment for those with PCOS requiring ovulation induction (OI). The pharmacological action of letrozole prevents the conversion of androgens to oestrogens with

subsequent ovarian-pituitary feedback initiating the release of follicle stimulating hormone (FSH). A blemished reputation from an unpublished abstract<sup>25</sup> led to more than a decade of research attempting to refute or substantiate evidence of an increased congenital abnormality rate in infants born through letrozole use. Multiple studies<sup>26</sup> and a recent meta-analysis<sup>27</sup> suggest no statistical increase in any abnormalities. The former group<sup>26</sup> compared natural cycle vs letrozole-induced cycles suggesting no difference in risk (natural cycle 1.5% vs letrozole 1.9%, aOR, 1.24, 95% confidence interval [CI], 0.64-2.40,  $P = .52$ ).

With the safety of the AI seemingly confirmed, that its pharmacological effectiveness has been compared with Clomiphene Citrate (CC) is also important. A recent cochrane review<sup>28</sup> clearly sides in favour of letrozole, with an improved live birth rate (odds ratio (OR) 1.68, 95% CI 1.42-1.99; 2954 participants; 13 studies) and a small number needed to treat for an additional beneficial outcome (=10). A marginal reduction in multiple pregnancy rate and reduced side effect profile further support its use as the first-line agent of choice. This shift in favour of the AI is likely to present a substantial change in clinical practice for many clinicians, but in using the evidence-based medicine approach, it should be one that is adopted to improve patient care. In many countries, the use of letrozole remains off label. Professionals need to inform women of this fact where appropriate; discussing the evidence, possible concerns and side effect profile when using the drug.

Although an AI is preferable, the ability to use CC is still an acceptable alternative within this guideline. Interestingly, once again metformin is offered as an alternative treatment, despite the inferior pregnancy outcome to other agents. The justification being as long as counselling takes place of more effective agents being available, metformin requires little monitoring, has limited risk attributed to it, plus holds a relatively mild and transient gastrointestinal side effect profile. In fact, the combination of CC with metformin for CC-resistant case is supported, particularly in the slimmer individual, by a recent Cochrane review.<sup>29</sup> This is likely to reignite older practices, with respect to the use of metformin in the primary care setting, as patients explore alternatives to costly fertility treatments

### *Gonadotrophins*

Gonadotrophins remain a second-line alternative to oral OI in specialist centres who have the ability and capacity to provide adequate monitoring of treatment with ultrasound. For those who are clomiphene resistant or exhibit the side effects of anti-oestrogen medication such as endometrial thinning, gonadotrophins provide a good chance of success. There remains no compelling evidence to use one preparation of gonadotrophin over another in OI.<sup>30</sup>

### *Laparoscopic ovarian surgery*

Laparoscopic ovarian surgery (LOS) remains an option, particularly for women with PCOS who undergo laparoscopy for other reasons. There appears little difference in clinical outcome between LOS and other OI methods.<sup>31</sup> The guideline serves to remind surgeons that full discussion of potential risks of surgery is important if considering this treatment including the potential long-term effect on ovarian function.

### *Bariatric surgery and anti-obesity agents*

The ever-increasing waist circumference of the global population has led to significant developments in methods to tackle obesity other than through lifestyle intervention. It is no surprise that the guideline now covers bariatric surgery and anti-obesity pharmacology with respect to fertility treatment. With no evidence for either in PCOS and fertility, both options should remain experimental. For women who do undergo surgery, serious consideration must be given to delay to conception until nutritional stability has been achieved after weight reduction as there are potential risks to the neonate through growth restriction and neonatal mortality.<sup>32</sup>

### *In vitro fertilisation*

The option to consider in vitro fertilisation (IVF) should only be considered third-line therapy in those with isolated PCOS. The GnRH antagonist cycle is now widely recognised as superior to the agonist cycle in reducing the risk of Ovarian Hyperstimulation Syndrome (OHSS) in women with polycystic ovaries.<sup>33</sup> With equivalent pregnancy rates, the adoption of this strategy in at least the initial cycle of IVF appears unquestionable. For the remaining clinics who continue to favour the agonist approach, this guideline provides a further persuasive argument to modify clinical practice. The option to consider the GnRH agonist trigger to further eliminate OHSS is advisable. As in the general population, there remains no firm evidence to favour one type of gonadotrophin over another.<sup>34</sup> In those who have to use a GnRH agonists for pituitary desensitisation, metformin as an adjunct also reduces the risk of OHSS. In vitro maturation (IVM) has been studied over the years as a way to eradicate OHSS. For the few clinics who have made a success of this technique, there is no reason to ignore its merit but it is unlikely to become a mainstream alternative to standard IVF.

## **Conclusions**

The global guideline has provided a well-rounded and all-inclusive synopsis of all aspects of PCOS. Recommendations made are clear and should help eliminate or reduce areas of conflict such as adolescent diagnosis, diagnostic criteria, and optimum fertility treatments. The addition of large sections addressing lifestyle and emotional well-being strengthen the importance of looking at the patient as a whole rather than a collection of

individual symptoms and problems to solve. Furthermore, the guideline group has produced a number of resources for health care professionals (<https://www.monash.edu/medicine/sphpm/mchri/pcos/resources>) and also for patients so that they themselves may be empowered to better understand and manage their condition and take control of their own health and well-being. For the well-informed clinician who regularly consults with these patients, the guideline is unlikely to change much clinical practice. For those who see women with PCOS infrequently, this guideline provides an excellent opportunity to appraise the literature for themselves and practice evidence-based medicine well.

### Author Contributions

SJ wrote the manuscript. AHB contributed to the writing and edited the final submitted version.

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