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## Welcoming....

### Our New Patron Members



Dr. Chandrika Anand



Dr. Jayabharathi Vaddi



Dr. Sulbha Arora



Dr. Tanuja Sanjay Joshi

### Our New Associate Members

Ms. Avanti Deshpande  
Ms. Lima Hazarika

Ms. Sheenam Kalra  
Ms. Sivaranjani Ganapathy

### Our New Life Members

Dr. Bhavya Rao  
Dr. Dipti Sohoni  
Dr. Gaurika Aggrawal  
Dr. Joylene D Almeida

Dr. Manisha Anurag Garg  
Dr. Neera Gupta  
Dr. Nina Mansukhani  
Dr. Shahla Yazdani Abraham

## Benefits of being a Member of the PCOS Society, India

- Reduced registration fees for all academic activities.
- Certificate for Courses which you have participated for.
- Opportunity to win fabulous prizes for the PCOS Quizzes contest.
- Free access to all the recorded webinars and past conference lectures online.
- Opportunity to participate as a faculty at the Annual Conference.
- 3 issues a year of the Society's Newsletter, "Pandora".
- Opportunity to contribute to the Newsletter of the Society.
- Opportunity to become a member of the Managing Committee of the society.
- Opportunity to connect with International and National Speakers at the Conferences organized by the society.

### Membership Costs

(below rates are excl 18% GST)

- Patron Membership ₹ 10000
- Life membership ₹ 5000
- Associate Membership ₹ 2500

Become a Member. Please click link below  
<https://www.pcosindia.org/TypeOfMembership.php>

## Events & Updates

**expert**

EXcellence in PCOS & Expertise  
in Reproductive Technology

**6 Modules** handcrafted by  
**Dr. Duru Shah & Dr. Madhuri Patil**

Dear Dr. Duru Shah,

Thank you so much! ... I did the expert course with great ease finding enough study time during Covid lock down period. Very compact modules and sufficient academics. Though MCQ question were little confusing to decide whether to answer as per modules or correct answers from pre-existing knowledge. But no issues otherwise.

I got the certificate too within ten days of completion.

Thank you once again to the whole team!

Warm regards!

– Dr. Ratna Vijay, Bangalore.

It was such a wonderful course, where we got an excellent presentation in all the six modules. I'm very happy to have completed the course. Thank you

– Dr. S. M. Sredevi

Dear Madam,

The course material was comprehensive, updated and highly relevant for clinical practice. A must do for everyone in this field.

With regards

– Dr Ruchica Goel, Bareilly, UP

Madam I had completed The PCOS Online Expert Course in the lockdown period. It had helped a lot from basics to practical approach for the practising gynecologists.

Thanks a million to the whole team of PCOS Society for the support and effort put in for the course.

– Dr. Satyam Pancholi, Gujarat

Supported through an educational grant  
**Sun Pharma**

<https://www.pcosindia.org/expert-course.php>

## Editorial

### Executive Committee

**Dr. Duru Shah**  
Founder President

**Dr. Shashank Joshi**  
**Dr. Madhuri Patil**  
Vice Presidents

**Dr. Piya Thakkar**  
Honorary Secretary

**Dr. Sangeeta Agrawal**  
Joint Honorary Secretary

**Dr. Uday Thanawala**  
Honorary Treasurer

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**Dr. Kanthi Bansal**

**Dr. Lipika Moharana**

**Dr. Mirudhubashini Govindarajan**

**Dr. Nirja Chawla**

**Dr. Padma Rekha Jirge**

**Dr. Payal Bhargava**

**Dr. Ratnabali Chakravorty**

**Dr. Rita Bakshi**

**Ms. Ruby Sound**

**Dr. Sabahat Rasool**

**Dr. Sandhya Saharan**

**Dr. Sarita Bhalerao**

**Dr. Shobhana Patted**

**Dr. Sudhaa Sharma**

**Dr. Sujata Kar**



**Dr. Duru Shah**

MD, FRCOG, FCPS, FICS, FICOG, FICMCH, DGO, DFP  
Director, Gynaecworld  
The Center for Women's Fertility & Health, Mumbai  
**President, The PCOS Society, India**  
**Chief Editor, Pandora**

It's been 4 long months of nothing but COVID! It's been a once in a lifetime situation in our lives which has affected everyone globally; everyone is behind masks, so we see no smiles! There is no hug, as we are 6 feet apart! There are no outdoor activities as we are locked down, and so are the gyms! It's a peculiar situation, the lean at home are getting obese and the obese are getting lean, as they have no domestic help. Very busy couples who were undergoing treatment for infertility, are suddenly becoming pregnant spontaneously! All travel has stopped, so no live conferences, instead millions of free digital programs and webinars, saving a lot of money for registration, travel and accommodation at live conferences! ... Times are truly changing...

In view of the changing times, we too have to adapt ourselves in order to make the most of e-learning and make it more interesting. The PCOS Society of India has been conducting regular webinars through the past four years with the lectures archived on our website, enriching our website with a fantastic library of Pcos related talks by the "who's who" from the world of PCOS! We too have opened up our website so that many can take advantage of these brilliant lectures.

This year we have envisaged new programs, which are simultaneously exciting, educative and engaging. I am happy to announce the launch of 3 new programs this year.

The first program is "**PCOS Quizzes**", a weekly educational quiz with credit points towards an ultimate "Live Quiz" after 16 weeks, in order to get fabulous awards during the Finale! The program starts on **15<sup>th</sup> August 2020 and ends on 15<sup>th</sup> December 2020**. Every Sunday up to December 2020. Everyone can participate in the weekly quizzes though the live quiz will be open only to those below 40 years on the day we end the program

The second program is the "**Reaching Out Program**" where we will be reaching out to women having PCOS. We plan to have Youtube videos on different aspects of Pcos, in order to educate them on their disorder. You are free to utilize these videos with your patients. These will be available to you on our Youtube Channel. Starts from **August 2020**...

The third program is "**PCOS Science Live**". This once a month, one hour session will interview an author who has published his/her original research in a high impact journal. It will entail an interview with the author of the paper, to learn from him or her, about how he got inspired to do the research, how he proceeded, what difficulties and challenges he faced and how did he reach the ultimate paper published in the prize journal! Starts from **5<sup>th</sup> September 2020**...

Our **Annual Conference** this year was originally scheduled for August 2020, which due to COVID has been converted to a Virtual Conference on **21<sup>st</sup> and 22<sup>nd</sup> November 2020**... There are four **Virtual workshops** will be held individually on different days.

I would like to thank **Prof. Alessandro Genazzani, Prof. Andrea Genazzani, Ms. Ruby Sound, Dr. Sudhaa Sharma & Dr. Neha Mahajan**, for their excellent scientific contributions to this Newsletter, which I am confident you all will enjoy reading. Don't miss to checkout the low calorie recipes provided by our nutritionist, which you can offer to your patients. I also take this opportunity to thank our collaborators **Sun Pharma Laboratories Ltd** and **Torrent Pharmaceuticals Ltd**. who have very generously supported our endeavor in these difficult times!

Wishing you all the best of health and happiness.

With warm regards,

**Duru Shah**

Founder President,  
The PCOS Society of India

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[www.pcosindia.org](http://www.pcosindia.org)

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# Events & Updates

## Live Webinar on Insulin Resistance in PCOS

17<sup>th</sup> May, 2020



**LIVE WEBINAR ON INSULIN RESISTANCE IN PCOS**

**SUNDAY | 17<sup>th</sup> MAY 2020 | 04.30 TO 06.00 PM**

**Dr. Mirudhubashini Govindarajan**  
FRCS(C) FICOG  
Member of the managing committee- The PCOS Society of India  
Clinical Director, Womens Center, Coimbatore  
Teaching Faculty at University Teaching Hospitals in Winnipeg, Canada

**Dr. Anantharaman R.**  
MD; DM Endo  
Co-Founder and Consultant Endocrinologist at  
Magna Clinics for Obesity Diabetes and  
Endocrinology Ex faculty of St John's  
Medical College Hospital

Supported by 

## Live Webinar on Intermittent Fasting

8<sup>th</sup> August, 2020



**PCOS SOCIETY INDIA**

**Dr. Jignesh Shah** President IMS  
**Dr. Anita Shah** Secretary IMS  
**Dr. Ambuja Choranur** President Elect, IMS  
**Dr. Duru Shah** President PCOS  
**Dr. Piya Thakkar** Secretary PCOS

The digital education committee of the Indian Menopause Society, FOGSI & PCOS society of India invite you to a meeting you would love to attend.

**Date : Saturday, 8<sup>th</sup> August 2020 / Time 6.00 pm -7.30 pm**

**Chairpersons**  
**Dr. Jang & Dilawari** Director, Gynaecology & Reproductive Medicine, Sir J.J. Hospital, Mumbai  
**Dr. Neelam Aggarwal** Professor, Obst & Gynaecology, PGIMER, Chandigarh  
**Dr. Piya Thakkar** Consultant, Endocrinology, Borivali Hospital

**Moderator**  
**Dr. Niija Chawla** Founder President, Changanacherry Menopause & Endocrinology Soc. Kerala, India  
Vice President, Northern India, Chapter of PCOS

**Speakers**  
**Topic: SIs on PCOS & Menopause**  
**Dr. Kanthi Bansal** Director, SSI Health Foundation, Ahmedabad  
President, Gujarat Chapter SSI (2017-2019)

**Topic: Intermittent Fasting & the Why Who How?**  
**Dr. Subrat Acharya** PhD - Channarayana, IIT Bombay  
President, AIMS, Shubhashinika, Chairman, Academic Committee

**Topic: SIs on Weight loss diets, Gluten, Milk/Vegan/Vegetarianism, Fatty Liver, Copper & Indian Childhood Cirrhosis**  
**Dr. Madhumita Premkumar** Assistant Professor, Reproductive Medicine, PGIMER, Chandigarh

To view the recorded webinars visit our website: <https://www.pcosindia.org/recorded-presentations.php>



Reaching out programme Instagram Live Sessions...  
Every Friday between 4 to 5 pm

### JOIN THE INSTAGRAM LIVE SESSION WITH



**Session with Dr. Shilpa Joshi**

Director, Mumbai Diet and Health Centre & Practicing Dietician

**TOPIC**  
**PCOS Diet during Lockdown**

23<sup>rd</sup> July, 2020  
04.00 pm



**Dr. Rupali Pavaskar**  
Dermatologist & Trichologist

in discussion with



**Dr. Sandhya Saharan**  
Consultant Obstetrician & Gynaecologist

**TOPIC**  
**How do I manage my Acne and Facial Hair?**

31<sup>st</sup> July, 2020  
04.00 pm



**Dr. Sangeeta Agrawal**  
Consultant Obstetrician & Gynaecologist

in discussion with



**Dr. Uday Thanawala**  
Consultant Obstetrician & Gynaecologist

**TOPIC**  
**PCOS & Pregnancy**

07<sup>th</sup> August, 2020  
04.00 pm



**Mr. Jagat Singh**  
Fitness Expert Associated with ISSA (International Sports Science Association) since 2006

in discussion with



**Dr. Duru Shah**  
Consultant Obstetrician & Gynaecologist

**TOPIC**  
**Exercise in Lockdown**

14<sup>th</sup> August, 2020  
04.00 pm

Follow us on



<https://www.instagram.com/pcossocietyindia/>

# PCOS: Considerations about Therapeutic Strategies and Choices from Fertile Life to Menopause



**Prof. Alessandro Genazzani**

- Chief, Section of Gynecological Endocrinology Center, Department of Obstetrics and Gynecology, University of Modena and Reggio Emilia, Italy



**Prof. Andrea Genazzani**

- President, International Society of Gynecological Endocrinology (ISGE)
- Department of Obstetrics and Gynecology, University of Pisa, Italy,

## Introduction

Polycystic ovary syndrome (PCOS) is a very frequent endocrine disorder in women since it occurs in as many as 8-10% of women of reproductive age<sup>1,2</sup>. PCOS is characterized by multiple heterogeneity<sup>3</sup>.

Diagnostic criteria proposed by the NIH for PCOS were the presence of hyperandrogenism and chronic anovulation with clear exclusion of related ovulatory or other androgen excess disorders (i.e. hyperprolactinemia, thyroid diseases, androgen-secreting tumours and adrenal dysfunction/hyperplasia)<sup>4</sup> but these criteria did not include the presence of polycystic ovaries on ultrasound examination since it was observed that polycystic ovaries could also be present in healthy eumenorrheic women<sup>5</sup>. Later the diagnostic criteria were expanded and PCOS was considered as present when at least two of three features were diagnostic oligo or anovulation, clinical/ biochemical hyperandrogenism and polycystic ovaries as assessed by ultrasound examination<sup>6</sup>. This evolution permitted to include those women with PCOS who were affected by hyperandrogenism and ovulatory cycles, or chronic anovulation and normal androgen levels.



After assessing this, we then have to clarify that PCOS is completely different from PCO. PCO means polycystic ovary and refers only to the morphological aspect of the ovary at ultrasound examination, that's it. Indeed, PCOS can be found in many other disendocrinopathies such as hyperprolactinemia, thyroid dysfunction, stress-induced amenorrhea.

As a major feature, in this last decade, a new parameter has been introduced and taken in account to better approach not only the diagnosis but mainly the therapeutic choice, that is insulin resistance (IR).

## Endocrine profile of PCOS

PCOS is characterized by higher plasma concentrations of ovarian and adrenal androgens, increased luteinizing hormone (LH) levels, high estrogen levels (especially estrone) due to extra glandular conversion from androgens, lower levels of sex hormone-binding globulin (SHBG) and higher levels of prolactin and insulin, the latter often in presence of overweight or obesity. **PCOS typically shows elevated LH and normal or relatively low FSH secretion so that almost 50-60% of PCOS patients show a high LH:FSH ratio (>2.5)<sup>7-9</sup>, an exaggerated LH response to gonadotropin-releasing hormone (GnRH) stimulation test<sup>7,8</sup>**

**and a higher frequency of LH pulsatile release<sup>4,7,8,10</sup> that is at the basis of a higher stimulation on theca cells and an excess of androgen secretion as well as impaired follicular development<sup>4</sup>.**

Hyperandrogenism is classical of the syndrome, although it is not constant<sup>7</sup> and it is mainly of ovarian production with an adrenal contribution, since a certain percentage of PCOS patients might show a mild steroidogenetic defect in adrenal glands (such as for 21-hydroxylase) or just a higher adrenal hyperactivation due to stress<sup>11</sup>. **Androstenedione and testosterone are the best markers of ovarian androgen secretion, while dehydroepiandrosterone sulphate (DHEAS) is the best marker of adrenal secretion.** Most testosterone is derived from peripheral conversion of androstenedione and from direct ovarian production. In addition, adrenal glands contribute in part to testosterone although in hyperandrogenic PCOS the main source of androgens usually comes from the ovaries. **Since cytochrome p450c17 is the androgen-forming enzyme in both the adrenal glands and the ovaries, whatever changes or increases its activity triggers the pathogenic mechanism underlying hyperandrogenism in PCOS<sup>4</sup>.** In addition, in the presence of 5 $\alpha$ -reductase, which can be highly expressed in the skin of PCOS patients<sup>12</sup>, testosterone is converted within the cell to the more biologically potent androgen: namely dihydrotestosterone, thus inducing hirsutism<sup>12</sup>. Additionally, plasma levels of estrone, a weak estrogen with biological activity 100 times less than estradiol, are increased as a result of peripheral conversion of androstenedione by aromatase activity – more active in PCOS than in healthy controls – while estradiol levels are normal or low because of the frequent anovulatory cycles. **All this results in a chronic hyperestrogenic state with the reversal of the estrone: estradiol ratio that might predispose to endometrial proliferation and to a possible increased risk for endometrial cancer<sup>13,14</sup>.** In addition, normally less than 3% of testosterone circulates as unbound in the serum. In fact, most circulating androgens are bound to SHBG, thus being biologically inactive. Any condition that decreases the levels of SHBG (such as excess of circulating androgens), reducing SHBG hepatic synthesis, induces a relative excess of free circulating androgens. **In PCOS, hirsutism usually occurs with decreased SHBG levels and obesity<sup>4</sup>.**



## Insulin Resistance (IR) and compensatory Hyperinsulinism

The presence of increased insulin plasma level is a very frequent feature in PCOS patients, especially in those that show overweight or obesity. **Indeed, overweight/obesity, depending on the geographical location, might be present in up from 50 to 70% of patients with PCOS.** Another relevant feature is the presence of familial diabetes [i.e. in first grade relatives (parents and/or grandparents)] being this a risk factor not only for the occurrence of IR but mainly for the high percentage of risk of occurrence of gestational diabetes and diabetes in late adulthood<sup>15</sup>.

Such familial factors have always to be evaluated through a quite detailed anamnestic investigation. In fact a risk factor of IR occurrence is not the presence of a familial diabetes only, but also the fact that the PCOS patients might be born as small for gestational age (SGA) and / or as after a IUGR (Intra Uterine Growth Retardation) or may be born after a pregnancy during which a gestational diabetes occurred<sup>16,17</sup>.

Such kind of background(s) might predispose, at a higher grade, to the occurrence of insulin resistance due to specific genetic factors related to the familial predisposition to diabetes and also due to specific epigenetic factors that might be able to trigger the onset of a compensatory hyperinsulinemia<sup>17</sup>.

**It is clear that the presence of a familial diabetes predisposes to a less efficient post-receptor signalling driven by inositols not only for the insulin signal but also for FSH (on granulosa cells) and for TSH (on thyroid cells)<sup>15,18</sup>. Also alpha lipoic acid (ALA), a potent insulin sensitizer produced by mitochondria, is impaired in case of diabetes or simply of predisposition to diabetes<sup>19,20</sup>.**

In addition, androgen excess may both directly and indirectly induce alterations in glucose metabolism, ultimately being an additional cause for abnormal insulin sensitivity. Androgens may directly inhibit peripheral and hepatic insulin action. In fact, testosterone could induce insulin resistance in women with PCOS by acting on the post-binding signal, in particular by reducing the number and efficiency of glucose transport proteins, such as the type 4 glucose transporter (GLUT-4), especially in muscle and fat tissues<sup>21</sup>. **In addition, it has also been reported that women with central obesity, typical of obese PCOS, have higher free androgen levels and exhibit significantly higher levels of insulin insensitivity compared with weight-matched controls and show increased free fatty acids<sup>4</sup>.**

## How to manage and what to do in PCOS?

The real target in PCOS patients is to teach them be aware of the great risk they have with such a disease. The real risk is not the anovulation or hyperandrogenism or hyperinsulinemia but the maintenance of such a combination for a long time (quite often many years!) so that their biology is epigenetically induced to try to find "alternatives" to such a functional discomfort. The compensatory hyperinsulinemia is one such biological solution and is for sure a quite risky one since it is well known that is a predisposing factor for metabolic syndrome in young as well as in adult or aged women.

**The main solution is to take care of feeding, to take care of the choice of food, to exercise and, in case if pregnancy is not an actual desire, a good choice of estro-progestin pill to overcome**

Continued to page 08

# Upcoming Events

## PCOS Science Live – 5<sup>th</sup> September 2020



**Prof. Duru Shah**  
 Founder President PCOS Society of India  
 Director Gynaecworld: The Centre for Women's Health & Fertility, Mumbai



### PCOS SCIENCE LIVE

A WEBINAR SERIES

Prof. Duru Shah will be in conversation with Prof. Pravin N. Mhatre, on his research paper 'Role of Progenitor Cell-Producing Normal Vagina by Metaplasia in Laparoscopic Peritoneal Vaginoplasty.'  
 Prof. Mhatre has performed the world's first successful Ovarian Transplant and laid the foundation for the first Ovarian Bank in 2005.

5 SEPT 2020, SAT 7-8 PM

[REGISTER](#)

[www.pcosindia.org](http://www.pcosindia.org)



**Prof. Pravin N. Mhatre**  
 Professor Emeritus at G.S. Medical College, KEM Hospital & B.J. Wadia Hospital for Children in Mumbai

## Virtual Workshops

**Workshop I**  
 Saturday, 29<sup>th</sup> August 2020 | 4.00 - 8.00 pm

### Ovulation Induction in PCOS – Overcoming Challenges

**Moderators: Duru Shah and Madhuri Patil**

Welcome by Duru Shah

#### 4.00-5.00 pm – Session 1: Better Pretreatment

- 4.00 pm ■ Impact of treatment in the pre-stimulation phase  
**Gautam Khastgir**
- 4.30 pm ■ Optimising controlled ovarian stimulation protocols  
**Sadhana Desai**

#### 5.00-6.00 pm – Session 2: Better Stimulation

- 5.00 pm ■ Versatility of LH activity for COH in high responders  
**Jatin Shah**
- 5.30 pm ■ Poor response to ovulation induction – How should it be addressed?  
**Ricardo Azziz USA**

#### 6.00-7.00 pm – Session 3: Better Luteal Phase Support

- 6.00 pm ■ Individualized Luteal Phase Support (ILPS)  
**Sonia Malik**
- 6.30 pm ■ The impact of adjuvant treatments in luteal phase  
**Kanthi Bansal**
- 7.00 pm ■ **Open forum**

**Workshop II**  
 Saturday, 19<sup>th</sup> September 2020 | 4.00 - 8.00 pm

### Improving pregnancy success in PCOS

**Moderators: Duru Shah and Madhuri Patil**

Welcome by Duru Shah

#### 4.00-5.00 pm – Session 1: Increasing efficiency and preventing complications

- 4.00 pm ■ COS in hypogonadotropic hypogonadism with PCOM  
**Louise Hull**, Australia
- 4.30 am ■ Ovarian drilling – Current evidence  
**Sujata Kar**

#### 5.00- 6.00 pm – Session 2: Optimizing Pregnancy Rates

- 5.00 pm ■ Factors affecting ART success: Obesity, androgens, insulin, LH  
**Anuja Dokras**, USA
- 5.30 pm ■ "PCOS & ART – Preventing Complications"  
**Duru Shah**

#### 6.00-7.00 – Session 3: Improving LBR

- 6.00 pm ■ Factors affecting implantation  
**Madhuri Patil**
- 6.30 pm ■ Overcoming Implantation failure – Freeze all Policy  
**Fady Sharara**, USA
- 7.00pm ■ PCOS and clinical pregnancy loss  
**Padma Rekha Jirge**
- 7.30 pm ■ **Open forum**

## International Faculty

**REGISTRATION FREE!**  
 Registration Mandatory

**REGISTER HERE!**



**Anuja Dokras**  
 MD, PhD



**Fady Sharara**  
 MD



**Louise Hull**  
 PhD



**Ricardo Azziz**  
 MD, MPH, MBA

For Workshop Registration [https://www.pcosindia.org/upcoming\\_events.php](https://www.pcosindia.org/upcoming_events.php)

## 5<sup>th</sup> International Annual Virtual Conference

THE INTERNATIONAL CONFERENCE  
**PCOS-  
BEST OPTIONS  
FOR BEST  
OUTCOMES**

**21<sup>st</sup> and 22<sup>nd</sup> November 2020**

Dear Friends and Colleagues,

Greetings from "The PCOS Society of India"

It gives us great pleasure in inviting you to participate in the First Virtual Conference "PCOS – Best Options for Best Outcomes" organized by "The PCOS Society of India" to be held on **21<sup>st</sup> & 22<sup>nd</sup> November 2020**.

It will be a state of the art meeting which will incorporate the latest advances and evidence based data with special emphasis on the challenges in the Indian context.

The Meeting will provide a platform for clinicians to exchange information and multidisciplinary treatment strategies in PCOS. Eminent International and National speakers from different disciplines of Medicine who manage PCOS patients, will be invited to add a lot of value to the understanding of this very complicated Syndrome.

Invited International speakers:

**Ajay Kumar**  
**Anuja Dokras**  
**Clare Boothroyd**  
**Enrico Carmina**  
**Ricardo Azziz**  
**Scott Nelson**

**Alessandro Genazzani**  
**Ariel Weissman**  
**Elisabet-Stener-Victorin**  
**Helena Teede**  
**Richard Anderson**  
**Susan Davis**

We look forward to a fantastic experience of learning and translating our knowledge into clinical practice.

With warm regards,



*Duru Shah*

**Dr. Duru Shah**  
Congress President



*Madhuri Patil*

**Dr. Madhuri Patil**  
Organizing Chairperson

**REGISTRATION FREE!**  
Registration Mandatory

**REGISTER  
HERE!**

## Virtual Conference

**Day 1 – 21<sup>st</sup> November 2020**

**3.00-9.00 pm**

### 3.00-4.30 pm – Session 1: Recent Advances in PCOS

- 3.00 pm ■ Gut dysbiosis: do the gut bacteria protect us from PCOS?
- 3.30 pm ■ Kisspeptin: the new hormone from the brain, does it affect PCOS?
- 4.00 pm ■ LH suppression: can we manage without Agonists and Antagonists?

### 4.30-6.00 pm – Session 2: Managing PCOS with Metformin

- 4.30 pm ■ Obesity
- 5.00 pm ■ Fertility treatment
- 5.30 pm ■ Menstrual Dysfunction

### 6.00-7.00 pm – Session 3: Tackling Insulin Resistance – Emerging Evidence in PCOS

- 6.00pm ■ Inositols
- 6.30 pm ■ Bariatric surgery

### 7.00 pm Keynote address – Does PCOS begin in the fetus?

### 7.30- 9.00 pm – Session 4: Role of "AMH" in PCOS

- 7.30 pm ■ Predicting fertility outcome in PCOS women
- 8.00 pm ■ Role of AMH in assessing hyperandrogenemia
- 8.30 pm ■ PCOM Check: A Novel Approach to diagnose Women with PCOS

### 9.00 pm Conference resumes on Day 2

**Day 2 – 22<sup>nd</sup> November 2020**

**3.00-9.00 pm**

### 3.00-4.30 pm – Session 5: Endocrine disorders and PCOS

- 3.00 pm ■ Does Hyperandrogenic PCOS increase libido?
- 3.30 pm ■ Hypothyroidism and PCOS: is it a common combination?
- 4.00 pm ■ Androgenic PCOS: is there a beneficial effect on female bone?

### 4.30-6.00 pm – Session 6: Dealing with co-morbidities in PCOS

- 4.30 pm ■ Cardiovascular risk
- 5.00 pm ■ Diabetes
- 5.30 pm ■ Sleep Apnea

### 6.00 pm Keynote address – PCOS and Non-Classical Congenital Adrenal Hyperplasia: distinctions and commonalities

### 6.45-8.45 pm – Session 7: Dermatological manifestations – top trends in Management

- 6.45 pm ■ Acanthosis nigricans and skin tags
- 7.15 pm ■ Androgenic Alopecia
- 7:45 pm ■ Is hirsutism a marker of metabolic dysfunction?

### 8.45 pm Valedictory

**For Registration visit our website  
[www.pcosindia.org/upcoming\\_events.php](http://www.pcosindia.org/upcoming_events.php)**

## PCOS: Considerations about Therapeutic Strategies and Choices from Fertile Life to Menopause

Continued from page 05

**the hyper-androgenism that most of PCOS patients have.** So, the putative question to a PCOS patient is: are you trying to be pregnant? if the answer is NO, all the solutions can be proposed, mainly a contraceptive pill, if the answer is YES, then contraception is entirely skipped and all integrative/anti-hyperinsulinemic treatment might be proposed together with a drastic life-style change especially when overweight/obesity is present!

What is relevant to say is the fact that whatever is the biological situation that triggers PCOS and mainly the IR, the real risk is to maintain such abnormal condition up to the perimenopausal period when a lot of biological changes will occur, first of all is the physiological increase of the insulin resistance. **It is quite clear that a PCOS patient has to improve her metabolic health years before the occurrence of the perimenopausal transition. If not doing so, an increased risk of metabolic syndrome and of all cardio-vascular risks up to death will take place.**

Estrogen-progestin preparations and PCOS Generally speaking, we can say that all combined estrogen-progestogen preparations are able to solve more or less the clinical complaints of any PCOS patient. This is due to the fact that such preparations block the ovary and suppress androgen production and improve SHBG synthesis thus reducing the circulating free androgens that are biologically effective on the target tissues such as skin, sebaceous glands and hair follicles<sup>22,23</sup>.

Since it is well known that the estrogenic compound of the contraceptive pill (i.e. ethinyl estradiol) has only an ovario-static activity (no direct anti androgenic effect), the anti androgenic action has to be modulated by the progestogen compound. At present there are four progestogens with specific antiandrogenic activity: cyproterone acetate, dienogest, drospirenone and chlormadinone acetate<sup>22</sup>. **Cyproterone acetate is the progestogen with the highest anti-androgenic activity** though being able to induce a relative higher rate of side effects such as cephalgia, but all the others are able to induce similar positive effects<sup>23</sup>. **The contraceptive pill administration is not only able to improve the clinical signs of the androgenisation but also to normalize the ovarian size and morphology, typically impaired in PCOS patients**<sup>24</sup>. As additional effect, estrogen-progestogen preparations protect from both follicular and corpus luteum cysts occurrence<sup>23</sup>.

The efficacy of contraceptive preparations on the signs of hyperandrogenism (i.e. acne, hirsutism, seborrhoea and alopecia) is determined as function of time since the biological evolution of the skin and of all its annexes is more or less 110-120 days. This means that the youngest cells of the epithelium of the skin become old and superficial in more or less 4 months. **Whichever is the contraceptive pill administered, the minimum treatment interval has to be 4-5 months, eventually up to 12 months, at least. Better results are obtained when such pills are administered for longer interval and/or coupled with anti-androgen compounds such as flutamide<sup>25</sup> or finasteride.**

Most of the clinicians agree on the fact that treatment of dysendocrinopathy of PCOS support greatly the psycho-emotional recovery of almost all the PCOS patients. Moreover, the use of the contraceptive pill, also for a long time, protects the patient from being victim of the recrudescence of the hyperandrogenism and of its induced diseases, mainly chronic anovulation and infertility. In fact, the use of estrogen-progestogen preparation has

been reported to improve the chance of conception<sup>26</sup> and there is no difference in this kind of beneficial protective effect on ovarian function between progestin-only pill and combined oral contraceptives. After 12 months of discontinuation of the treatment to conceive, the conception rate was 95-99% in those using the pill versus 70-81% conception rate for those patients using depot medroxyprogesterone acetate (DMPA) injections or Norplant (levonorgestrel implants)<sup>26</sup>.

If the rationale is correct and all the data we have in regards of PCOS are true<sup>27</sup>, environmental and genetical factors are able to induce the starting of the PCOS disease and will mark as "affected" that patient up to the menopause. This means that predisposition to all the clinical problems will be quiescent up to the moment the patient is on treatment and will appear aging (more or less evident) soon after the discontinuation.

### No contraception but let's overcome dysmetabolism!

One of the main complaints of PCOS patients is the lack of ovulation and thus a consistent reduction of fertility. Obviously, the therapeutic use of the contraceptive pill is usually discarded but not so often. Indeed it might be proposed to use the pill for a certain amount of months during which lifestyle, i.e. diet and physical activity, are applied together with specific insulin sensitizers, such as metformin<sup>2</sup> and / or inositols and alpha lipoic acid<sup>19, 28-32</sup>. **The reduction of body weight is essential feature for a good chance not only to recover a normal ovulatory function but also, if pregnancy starts, to have a controlled body mass that does not triggers a greater pregnant-induced insulin resistance that can trigger gestational diabetes.**

Lots of studies have demonstrated that a correct lifestyle together with a correct treatment based on metformin and/or inositols and ALA greatly improves the chance of pregnancy, also while undergoing fertility programs<sup>33,34</sup>. The clinical relevance of all these treatments is that they are all able to positively modulate the impaired and frequent compensatory hyperinsulinemia of PCOS patients, in particular in those that show a normal BMI<sup>31</sup> but the application of a correct lifestyle is the substrate for the best achievement of the desired result<sup>35</sup>.



### Long-term consideration for PCOS!

Since during the perimenopausal and post-menopausal transition there is a relevant modification of the endocrine profile in all women, those who have been PCOS during fertile life are more predisposed to having severe symptoms such as those related to behaviour, mood, sleep, anxiety, as well as those related to metabolism, in particular insulin resistance and compensatory hyperinsulinemia. Menopausal transition induces, as a natural event, an insulin resistance that together with the hypoestrogenism and the lack of progesterone causes a greater tendency to gain body weight. There are convincing data that this metabolic link has to be considered as relevant when

discussing about menopause with our ex-PCOS perimenopausal patients<sup>36</sup>.

Substantially the menopausal transition might worsen a previously not perfect metabolic condition. Since both estrogens and progesterone are able to modulate the glucose metabolism, as soon as the perimenopausal modifications of the ovarian function take place and within few months/years menopause begins<sup>37,38</sup>, abnormalities of the metabolic pathways may be more relevant than expected if during fertile life abnormal metabolic function(s) were present, such as insulin resistance with overweight or obesity.

Though it cannot be generalized, the use of hormone replacement therapy is crucial and important for one thousand aims at the moment of the menopausal transition, being clear that the patient has no contraindications to it. It is relevant to maintain an adequate steroidal milieu so that biological pathways and in particular the metabolic ones, are not crushed by the overlapping phenomena of menopause plus aging<sup>39</sup>.

**In conclusion lifestyle, good and healthy feeding and the right amount of physical exercise are relevant in PCOS patients during fertile life, with or without the use of oral contraceptives, but when fertile life finishes and menopausal transition takes place all of the above need to be coupled with an adequate hormone replacement therapy to counteract the higher risk for PCOS-menopausal women to face higher rate diseases mainly cardiovascular-diseases and dismetabolic/diabetes risks.**

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# Managing Obesity with Nutritional Modification in PCOS



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PCOS is a complex endocrine disorder with at least 50% of women being overweight or obese. Insulin resistance (IR) is present in women with PCOS independent of body mass. Thus, reduction in IR is the principal goal of PCOS treatment. According to the American Society for Reproductive Medicine (ASRM) 2018 Guidelines, the first-line treatment of PCOS is lifestyle intervention, including diet control and exercise. Weight loss of 5-10% leads to amelioration of IR, ovulatory function and decreased free testosterone levels. Hence, diet modification is a critical therapeutic modality for weight reduction.

## Negative Energy Balance

Caloric restriction is recommended along with exercise for weight reduction. **A daily calorie deficit of 200 kcal/day prevents weight gain and promotes weight loss in the longer term. A deficit of 500 kcal/day may help to lose 0.5 kg/week.** This negative energy balance leads to weight loss, fat loss and hence amelioration of menstrual cycle and insulin sensitivity, irrespective of the macronutrient composition of diet.



## Carbohydrates

Carbohydrate distribution may be a significant component for glucose metabolism and IR. The typical Indian Diet is carbohydrate rich (>60-65% total calories). A low-carbohydrate diet (LCD) refers to reducing the carbohydrates and correspondingly increasing proteins and/or fats. LCD helps to effectively decrease body weight, improve IR, reduce total Cholesterol and LDL-C and facilitate the treatment of infertility in obese PCOS patients. Particularly the lowfat/ low-CHO (<35% fat, <45% CHO) for the long-term (> 4 weeks) can significantly increase FSH and SHBG levels and decrease testosterone levels. The goal should be to limit carbohydrates to less than 50-55 % of total calorie intake.

## Fibre

As per ICMR 2010, the suggested intake of dietary fibre is 25-40 gms/day. Studies with fenugreek seeds containing more soluble fibre has shown to be effective in reducing blood glucose and cholesterol levels. Supplements like psyllium, gum karaya and gum acacia have shown reduction in body weight. Consumption of fibre before meals may help reduce appetite and blunt the post meal glycemic excursion.

## GI, Glycemic load

The glycemic load of a diet is defined as the amount of carbohydrate multiplied by the glycemic index (GI). Foods with a high GI deliver carbohydrate

rapidly following ingestion. Glycemic load can be decreased by decreasing the amount of carbohydrate (by replacing with MUFA and/or protein) or by consuming foods of lower GI. **Studies suggest that Low-GI diet have a threefold greater improvement in insulin sensitivity and improved menstrual regularity and better emotional scores in obese PCOS women.** Foods rich in fibre, protein and fats are low in GI. It is advisable to consume complex carbohydrates that are low in GI such as whole grains, oats with bran or Rolled Oats, whole pulses and legumes, unpolished rice or brown rice, barley, millets, whole fruits and vegetables. All refined foods like maida, bakery items like breads, pav etc., white rice, instant quick cooking oats, fruit juices, must be restricted. Simple sugars such as table sugar, jaggery, honey, sago, starchy root vegetables, soft drinks must be avoided.

## Protein

Proteins play a key role in increasing satiety and postprandial thermo-genesis, decreasing abdominal fat and preserving fat-free mass. Milk & Milk products (curd, cheese, paneer, etc), pulses, legumes, soya, eggs, lean chicken, non-organ lean cuts of meat, nuts are the dietary sources of protein. A high protein, low-carbohydrate diet (40% protein, 30% carbohydrate, 30% fat) decreased more body weight, fat mass, waist circumference and glucose concentrations compared to a low-protein, high-carbohydrate diet (15% protein, 55% carbohydrate, 30% fat) diets. **The results of a trial indicate that increase in dietary protein or reduction in GI values while reducing carbohydrate content was sufficient to minimize weight regain and promote further weight loss in obese patients after a successful weight-loss diet.**

## Fats

Dietary fat should account for no more than 30% of the calorie content of the diet, with < 10 % saturated fats (butter, ghee, mayonnaise). The replacement of dietary carbohydrate with MUFA and / or PUFA in a reduced energy diet may offer additional health benefits in the management of PCOS. Include MUFA rich foods such as olives, peanuts, avocado, almonds.

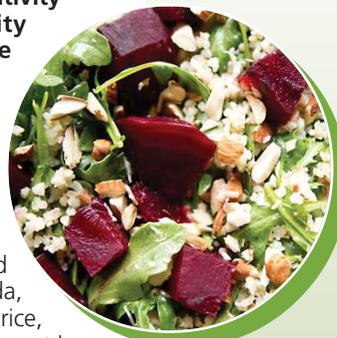
**In conclusion, weight loss is achieved by reducing calorie intake with nutrition dense food choices irrespective of diet composition.** Data suggests slight differences between diets, with greater weight loss from a MUFA-enriched diet; improved menstrual regularity from a low-GI diet; greater reductions in IR, total cholesterol and HDL cholesterol from a LCD or low-GI diet; improved quality of life from a low-GI diet; and improved depression and self-esteem from a high-protein diet.

## Suggested Reading

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## RECIPES

### GARLIC LEMON MILLET AND BEET SALAD



#### Ingredients

- 2 cups lettuce leaves, chopped
- 1 1/2 cups millet (cooked)
- 1 cup diced, boiled beets
- 2 tablespoons lemon juice
- 1 tspn olive oil
- salt- to taste
- 1 large garlic clove
- 2 tablespoons roughly chopped raw almonds

#### Method

- For salad dressing: In a bowl mix lemon juice, olive oil, salt and garlic clove.
- Boil / Pressure cook the millet with a pinch of salt. Let it cool down.
- In a serving bowl combine lettuce leaves, millet, and salad dressing. Add the boiled beet and chopped almonds.
- Servings – 2

#### Nutrition Information (per serving)

**Calories: 313 kcal | Carbohydrates: 30g | Protein: 9 g | Fat: 9 g | Fiber: 9 g | Sugar: 2 gl.**

### PANEER BESAN CHILLA



#### Ingredients

- 1 Cup Besan
- 1/2 tsp Salt
- 1 tsp Black Pepper
- 1 Onion, chopped
- 1/2 Cup Paneer, grated
- 1 Tomato
- 2 Green Chillies
- 1/2 tsp Ajwain
- 1/2 Cup Coriander Leaves
- 1 Cup Water

#### Method

- Take besan in a bowl, add salt, black pepper, onion, grated paneer, tomato, green chillies, ajwain and coriander leaves.
- Whisk all the ingredients together in the bowl along with water to make a mixture of paste consistency.
- In a pan, add oil. Then pour the mixture and spread it. Now take a pan and put some amount of the besan mixture to pan.
- Cook till it turns solid, crispy and golden brown
- Once ready, put some grated paneer, onion, black pepper and coriander leaves. Fold it and serve hot
- Servings – 2

#### Nutrition Information (per serving)

**Calories: 240 kcal | Carbohydrates: 22g | Protein: 9 g | Fat: 10 g | Fiber: 4 g |**

# PCOS and Importance of Waist Circumference in Metabolic Syndrome



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*Let's show her we care and  
won't ever blame her we swear*

*PCOS is not her sin: aware, let her aware.*

*Measure Waist Circumference and  
maintain triglyceride*

*Live your life to the fullest and with pride.*

PCOS is a complex heterogeneous disorder. In PCOS we look at the situation from womb to tomb that means it is an adult disease of fetal origin<sup>1</sup>. Previous studies have demonstrated that PCOS is associated with multiple metabolic abnormalities, including obesity, dyslipidemia, and impaired glucose tolerance, which are also components of the metabolic syndrome (MS)<sup>2</sup>. MS is a group of risk factors that identify individuals at increased risk for type 2 diabetes mellitus and atherosclerosis<sup>3,4</sup>. These risk factors include central obesity, hypertriglyceridemia, low levels of high-density lipoprotein (HDL) cholesterol, elevated blood pressure and fasting plasma glucose levels<sup>4</sup>.

The prevalence rates of MS in PCOS women vary among different countries and ethnicities as follows: 43-46% in America, 37.9% in India, 35.3% in Thailand, 28.4% in Brazil, 16.8% in China and 8.2% in Southern Italy<sup>5</sup>. These differences in prevalence rates of MS in PCOS patients in different countries may be dependent on several factors, like age, ethnicity, BMI, and race of patients as well as different approaches to define MS and PCOS<sup>6</sup>. The rise in the prevalence of PCOS is by and large a reflection of its parallel rise with increasing adiposity even amongst the less privileged communities in our country<sup>7</sup>.



The effect of obesity on the metabolic and reproductive symptoms in PCOS is likely to be mediated by insulin resistance<sup>8</sup>. Obesity, particularly central obesity, is known to increase insulin resistance<sup>9</sup>. Both obese and lean women with PCOS mostly exhibit insulin resistance, a major risk factor for the development of metabolic abnormalities such as impaired glucose tolerance (IGT) and T2DM<sup>10</sup>. IR and compensatory hyperinsulinemia also play a central role in the evolution of metabolic syndrome (MS)<sup>5</sup>.

In lean and obese PCOS the visceral obesity creates possibly the adrenal hyperandrogenism also, in addition to the ovarian one. The androgen excess in turn incites the abdominal fat deposition and with a large body of adiposity there is aromatization of androgens. This hormone milieu contributes to increase in the LH levels. High LH: FSH ratio further drives ovarian hyperandrogen secretion and establishes the polycystic nature of the ovary and increased ovarian stroma<sup>11</sup>.

**Androgen Excess Society** in a recent consensus statement has however, highlighted the primary importance of prevention of cardio metabolic complications in women with PCOS and has recommended determining the BMI, waist circumference (WC), serum lipid and glucose levels, and blood pressure in all women with PCOS<sup>12</sup>. Carrying excess fat around the middle i.e at the waist is more important of a health risk factor than if the weight is on the hip and thighs. **WC is an estimate of visceral fat, the dangerous internal fat that coats the organs.**

**Although the waist circumference and BMI are interrelated, WC provides an independent prediction of risk over and above that of BMI.** It is particularly useful in patients who are categorized as normal or over weight on BMI scale.

Despite waist circumference being one of the basic components of every definition of metabolic syndrome, the ideal site & size which can define all the metabolic risk is still a matter of debate<sup>13</sup>. The ideal waist measurement above which the risk of MS increases significantly is not well defined since it's introduction in the various definitions of the MS.

**Same doesn't fit all**, so the same cut off for WC can't be applied to all the ethnicities of the world having different genetic makeup, body fat content & distribution, environmental factors and life style which affect their susceptibility for metabolic syndrome. **For example, Asians tend to have greater body fat for the same BMI when compared with Caucasians so Asians develop hypertension, T2DM and dyslipidemia at a lower BMI<sup>14</sup>.**

This fact was realized in 2005 when IDF<sup>15</sup>, proposed different cut off for the WC for the first time, as all previous definitions had same cut off for all the ethnicities, so all the definition after IDF<sup>15</sup> have different cut offs for different ethnicities but the exact increase in the risk of CVD & T2DM is not well defined<sup>15</sup>. As there are numerous controversies regarding the ideal cut off for waist circumference, similar is the case for the ideal site for waist circumference measurement. **Different waist circumference measuring sites are taken for different studies & guidelines. There are 10 documented sites noted in literature by Guerra et al.16ie. 1.** Narrowest point between the iliac crest and the lower rib margin; **2.** Midway between the lower rib margin and the iliac crest; **3.** Narrowest point between the umbilicus and the xiphoid process; **4.** One-third of the distance between the xiphoid process and the umbilicus; **5.** Midway between the xiphoid process and the umbilicus; **6.** Widest diameter between the xiphoid process and the iliac crest; **7.** At the level of the iliac crest; **8.** At the level of the umbilicus; **9.** 2.5 cm above the umbilicus and **10.** At the lower border of the 10th rib<sup>16</sup>.

There are various studies which focus on this issue that which site corresponds better to the CV risk & metabolic syndrome. But the ideal site should be sensitive enough to point out the population at CV risk. One uniform site for waist circumference

measurement is needed to bring about uniformity in diagnosis criteria, prevalence studies & intervention outcomes.

**The scientific statement issued in 2011 by AHA advocate WC measurement at iliac crest as it is the easiest & most consistent location<sup>17</sup>.** Guerra et al. 2012<sup>16</sup> concluded that among 10 sites the best surrogate measure of abdominal fat was waist circumference measured 2.5 cm above the umbilicus. WHO & IDF guidelines recommend measurement of waist circumference at mid-point between the lowest coastal margin & superior border of iliac crest while NIH, NHLBI and NCEP/ATPIII guidelines recommend measurement at the uppermost point of the iliac crest<sup>13</sup>. **So, the WC in centimeters should be measured as narrowest circumference midway between upper border of iliac crest and lateral costal margin based on the latest harmonizing definition of the metabolic syndrome till further research.**

WC cut point lose their incremental predictive power in patients with BMI  $\geq 35$  kg/m<sup>2</sup> because the patient will exceed the cut point noted below high risk women  $\geq 88$  cm or  $\geq 35$  inch.

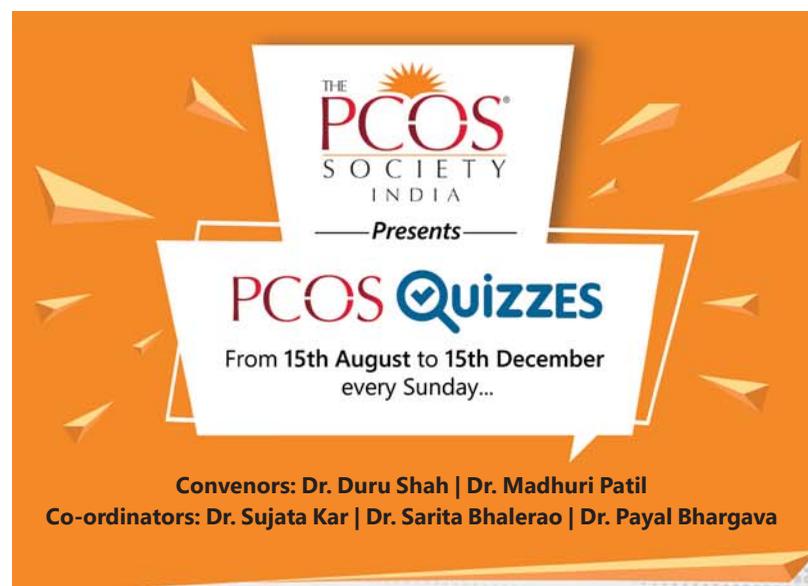
**Various studies done time to time suggest that intervention should be initiated when both WC and Triglycerides (TG) or both WC and HDL-C are abnormal rather than waiting until MS occurs to initiate intervention.**

**Furthermore, as a new indicator for evaluating cardiovascular risk, the combination of WC and TG is closely related to the severity of the metabolic disorders and coronary artery disease<sup>2</sup>.** The rationale for combining WC with TG is that WC, which is used as an index to evaluate central obesity, can approximately estimate the degree of visceral adipose tissue accumulation and the fasting serum TG level can indirectly reflect the level of LDL-C. **Simultaneous increase in WC and TG reflect an impaired ability of the body to rapidly remove and store excess triglycerides in subcutaneous adipose tissue e.g., an impaired protective function of metabolic deposition.** Therefore, the combination of WC and TG is closely related to the severity of metabolic disorders. **This implies that it is mandatory to screen all the women with PCOS for features of metabolic syndrome. So the waist circumference along with LDL-C can be used to formulate a screening policy for metabolic syndrome.**

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- President, International Society of Gynecological Endocrinology (ISGE)
- President, European Society of Gynecology (ESG)
- Editor-in-Chief, Gynecological Endocrinology
- Author of more than 836 papers in peer reviewed journals and Editor of more than 45 books



#### Prof. Alessandro Genazzani, Italy

- Chief, Section of Gynecological Endocrinology, Department of Obstetrics and Gynecology University, Modena, Italy
- Member, Editorial Board and Reviewer of 6 peer reviewed journals
- Research areas: Neuro endocrine control of reproduction, Hypothalamic dysfunction, PCOS, Obesity, Hyperinsulinism, Peri and postmenopausal dysfunction



#### Prof. Sarah L. Berga, USA

- Professor and Director, Division of Reproductive Endocrinology and Infertility, Department of Obs and Gyn, University of Utah School of Medicine, USA
- Professor and Chairman, Department of Obstetrics and Gynecology, Associate Dean Women's Health Research, Wake Forest University School of Medicine, USA.
- President, Society for Gynecological Investigation



#### Prof. Charles Sultan, France

- Professor and Faculty of Medicine, Head of Department of Hormonology, Head of Paed Endocrine Unit, Montpellier University, France
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\*A Misra et al, JAPI V VOL. 57 FEBRUARY 2009  
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