## **Polycystic Ovary Syndrome**

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#### **KEYWORDS**

- Polycystic ovary syndrome Subtypes/phenotypes Diagnosis Management
- Treatment Women's health Hyperandrogenism Anovulation

#### **KEY POINTS**

- Polycystic ovary syndrome (PCOS) is the most commonly occurring endocrine disorder among women with wide-reaching consequences that affect every aspect of a woman's life, including her reproductive, mental, cardiovascular, and metabolic health.
- Current understanding of PCOS outside of obstetrics and gynecology is limited, and it is
  often these providers who are tasked with the management of the vast metabolic and cardiovascular sequelae of the syndrome.
- There are several diagnostic criteria for PCOS, but all conclude that hyperandrogenism and ovulatory dysfunction are key components of the disorder.
- Treatment is focused on symptom relief and should be patient centered and undertaken in a multidisciplinary fashion to minimize the long-term risks of the syndrome.

#### **BACKGROUND AND INTRODUCTION**

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women with a world-wide incidence estimated to be in the range of 4% to 12%.<sup>1,2</sup> Since the establishment of a more standardized diagnostic criteria in 1990, and with the ongoing revision of said criteria, the incidence of PCOS has been increasing in the United States and is now predicted to be closer to 18%.<sup>3,4</sup> Although there are several criteria from various specialty societies present for evaluation and characterization of PCOS, they are all in agreement that certain factors be present, including biochemical or clinical hyperandrogenism and ovulatory dysfunction, such as chronic oligo-ovulation or anovulation.<sup>3</sup> Polycystic ovaries have also been associated with the syndrome but are no longer required for diagnosis, and similarly the presence of insulin resistance and hyperinsulinemia is common among women with PCOS but are again not required for diagnosis.<sup>5</sup> Further, because PCOS is a syndrome encompassing a constellation of symptoms, there is no single diagnostic test available for the diagnosis of the disorder and there is neither a single consequence nor organ system

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affected by the disorder. Although traditionally viewed through the lens of a reproductive disorder, evidence emerging since the late 1990s has supported that PCOS places women at an increased risk for the development of cardiovascular and metabolic disorders, thus, making PCOS a significant contributor to women's health issues across multiple specialties and in all stages of life<sup>6</sup> and leading some to suggest the disorder be renamed to "metabolic reproductive syndrome" (Sheila E. Laredo, MD, PhD, University of Toronto).<sup>7</sup>

The fact that PCOS is recognized mainly within the obstetrics and gynecology specialty and is poorly understood by those in other specialties and in primary care has led to major barriers to effective and comprehensive health care for women, as they are often racing from one provider to the next for their care. In one population-based study, it was demonstrated that 68% of women meeting the diagnostic criteria for PCOS remained undiagnosed8; these are women who are at high risk for the development of diabetes, cardiovascular disease, and metabolic disorders, which are managed outside of the obstetrics and gynecology specialty. Women who rely on internists and family practitioners for long-term risk reduction interventions and yet the practitioners they rely on are likely unfamiliar with their syndrome and how to screen for and manage it appropriately. The most effective management of the complex reproductive, cardiovascular, and metabolic sequelae these women face will come from collaboration of providers across a wide range of specialties who will each contribute their expertise, but for now we can aim to increase education among various specialties of the diagnostic criteria for PCOS and basic management strategies so that all providers are at least minimally comfortable in generating a diagnosis and beginning the treatment process.

#### DEFINING POLYCYSTIC OVARY SYNDROME

Historically, PCOS has been characterized by a constellation of symptoms and clinical features, including hyperandrogenism (acne, hirsutism, hyperinsulinemia), menstrual irregularities (cycle length >35 days, oligo-ovulation or anovulation), and/or polycystic ovaries. Keeping in line with these general clinical features, there have been several proposed diagnostic criteria for PCOS as described in **Table 1**.<sup>3,9,10</sup>

Although the use of such classification systems has been beneficial to some degree for strengthening our understanding of the syndrome, it has, at the same time, created

Table 1 Proposed diagnostic criteria for polycystic ovarian syndrome			
Criteria	NIH 1990	Rotterdam	AE-PCOS
Hyperandrogenism Clinical: acne, hirsutism, alopecia (Ferriman-Gallwey score >8) Biochemical: elevated total/free testosterone	+	+/-	+
Oligo-ovulation/anovulation ≤6–9 menstrual cycles per year Cycle length >35 d Day 21 progesterone documenting anovulation	+	+/-	+/-
Polycystic ovaries 12+ antral follicles 2–9 mm in a single ovary Total ovarian volume >10 mL		+/-	+/-

Abbreviations: AE-PCOS, Androgen Excess and Polycystic Ovary Syndrome Society; NIH, National Institutes of Health.

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