

### OBJECTIVE

Alberta clinicians optimize laboratory testing for investigation of suspected hirsutism

### TARGET POPULATION

Women with moderate, severe or rapidly developing hirsutism

### EXCLUSIONS

None

## RECOMMENDATIONS

- X NO laboratory investigation is required for mild hirsutism
- ✓ Refer to endocrinologist for severe or rapidly developing hirsutism
- ✓ Consider testing for total testosterone, DHEAS and androstenedione (drawn after 10 a.m.)
- X DO NOT test for LH, FSH, estradiol, progesterone, DHEA to diagnose hirsutism in absence of menstrual disorders

## BACKGROUND

Hirsutism is a common and often distressing condition occurring in about 5% of women<sup>1,2</sup> and can be considered abnormal when it is associated with menstrual disturbances and infertility.<sup>3</sup> The principal mechanism in most cases of hirsutism is androgen excess.<sup>2</sup>

Androgen-sensitive areas of terminal hair growth include the face, chest, areola, linea alba, lower back, buttock, and inner thigh. Ninety-five percent of women with hirsutism have benign conditions such as familial or racial factors, drugs, or polycystic ovarian syndrome.<sup>4</sup>

Other more serious causes include late-onset congenital adrenal hyperplasia, Cushing's syndrome, benign or malignant tumours of the ovary or adrenal glands.<sup>5</sup> A severe degree of hirsutism combined with virilization (clitoromegaly, temporal balding, deepening of the voice, decreased breast size) often suggests a potentially serious disorder.<sup>5</sup> Tumours are suspect when there is sudden onset and rapid progression or virilization.<sup>5,6</sup>

Depending on the number of steroids analyzed, at least one androgen will be elevated in more than 90% of cases.<sup>7</sup> Unfortunately, no single androgen or metabolite is sufficient for diagnosis.<sup>7-10</sup> The androgen source is usually pure ovarian or mixed adrenal and ovarian, or may be purely adrenal in 12% of cases.<sup>7</sup> Dehydroepiandrosterone sulfate (DHEAS) is at least 90% adrenal in origin,<sup>10,11</sup> but other androgens are not specific for the ovary or the adrenal glands.<sup>7</sup> A combination of testosterone and androstenedione, which are primarily ovarian origin, will be elevated in over 75% of women with hirsutism. Dehydroepiandrosterone or other androgens or androgen metabolites add little to this

detection rate.<sup>7,8,10</sup> Other tests used to assess hyperandrogenism include free testosterone and sex hormone-binding globulin levels.<sup>12</sup>

It should be noted that while these tests may detect mild cases of hirsutism, the values associated with mild hirsutism usually overlap with normal range and not useful for diagnosing more serious conditions listed previously.<sup>13</sup> Ninety percent of androgen-producing tumours have testosterone levels above 5 nmol/L.<sup>5,6,14</sup>

Because androgen excess is the principal pathophysiological event in hirsutism, serum LH, FSH, estrogen and progesterone are not used to assess hirsutism if menses is normal. LH, FSH and prolactin may be useful to evaluate hirsutism accompanied by menstrual disturbance or to diagnose polycystic ovarian disease,<sup>2,8,14</sup> (see the TOP CPG “[Investigation of Amenorrhea \[without Hirsutism\] and Menopause](#)”).

## REFERENCES

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### ***SUGGESTED CITATION***

Toward Optimized Practice (TOP) Endocrine Working Group. 2008 January. Laboratory endocrine testing: gonadal disorders: hirsutism clinical practice guideline. Edmonton, AB: Toward Optimized Practice. Available from: <http://www.topalbertadoctors.org>

For more information see [www.topalbertadoctors.org](http://www.topalbertadoctors.org)

### ***GUIDELINE COMMITTEE***

The committee consisted of representatives of family medicine, general medicine, medical biochemistry, pathology, internal medicine, endocrinology, laboratory technologists and the public.

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