

17 β -oestradiol (plasma)

Description	17 β -oestradiol (also known as estradiol (American spelling) and E2) is the principal female sex hormone and is responsible for the development and maintenance of female sex organs and secondary sexual features.
Indication	<p>Females: 17β-oestradiol is principally measured in the assessment of ovarian function. It can be used in the investigation of oligo-/amenorrhoea, infertility and also to assess menopausal status. In patients receiving assisted reproductive therapy, 17β-oestradiol levels are used to monitor ovarian response to induction therapy. 17β-oestradiol may also be measured to monitor adequacy of treatment in patients receiving hormone replacement therapy.</p> <p>Males: 17β-oestradiol measurement may be indicated in the investigation of gynaecomastia.</p>
Additional Info	<p>Sources:</p> <p>Females: 17β-oestradiol is principally synthesized and secreted by the ovary, from the granulosa cells of the ovarian follicles and corpus luteum. High activity of aromatase enzyme rapidly converts androstenedione and testosterone to oestradiol. During pregnancy, 17β-oestradiol is also produced by the placenta. In addition, very small amounts are produced by the adrenal glands.</p> <p>Males: Only small amounts of 17β-oestradiol are synthesized by the testes due to the lack of significant aromatase activity.</p> <p>Transport: More than 97% 17β-oestradiol circulates bound to plasma proteins. It binds with high affinity to SHBG and non-specifically to albumin. Only 2-3% is free and is considered to be the bioactive fraction. Like most laboratories we measure and report total oestradiol levels.</p> <p>Menstrual cycle: Levels of 17β-oestradiol are low in the early follicular phase, however, selection of a dominant follicle at day 7 causes 17β-oestradiol levels to rise. Increasing 17β-oestradiol levels feedback to the anterior pituitary to simultaneously suppress FSH secretion and stimulate LH secretion. As secretion of LH peaks, levels of 17β-oestradiol fall, with ovulation occurring 24-36 hours after the follicular phase peak of 17β-oestradiol. Levels rise again during the luteal phase, peaking approximately 8 days post-ovulation, as 17β-</p>

	oestradiol has a role in the regression of the corpus luteum. Unless fertilisation occurs, 17 β -oestradiol levels will fall again to signal the start of a new cycle.
Concurrent Tests	FSH, LH, Prolactin.
Dietary Requirements	N/A
Interpretation	<p><u>Females:</u> 17β-oestradiol results should be interpreted with respect to the day of the menstrual cycle, menopausal status and the levels of circulating FSH and LH.</p> <p>A link to specific fertility hormone reference ranges is provided on the 17β-oestradiol page of the laboratory handbook.</p> <p>17β-oestradiol may be increased in the mid-cycle, during pregnancy, in patients receiving HRT and in patients with ovarian hyperfunction (either natural or drug induced in patients receiving assisted reproductive therapy).</p> <p>17β-oestradiol may be low after the menopause and in primary ovarian failure due to other causes. Levels may also be low in patients on the oral contraceptive pill and in patients with hypothalamic or pituitary hypofunction (with low FSH and LH).</p> <p><u>Males:</u> 17β-oestradiol levels are usually low.</p> <p>Levels may be increased due to increased aromatase activity.</p>
Collection Conditions	<p><u>Females:</u> Please provide the date of the LMP in the clinical details of the request.</p>
Frequency of testing	As required.