

**Reporting Title:** Estrogens, E1+E2, fractionated, S**Performing Location:** Mayo Clinic Laboratories - Rochester Superior Drive**Specimen Requirements:****Supplies:** Sarstedt Aliquot Tube 5 mL (T914)**Collection Container/Tube:** Red top (Serum gel/SST is **not** acceptable)**Submission Container/Tube:** Plastic vial**Specimen Volume:** 1.2 mL**Collection Instructions:** Within 2 hours of collection, centrifuge and aliquot serum in plastic vial.**Forms:**If not ordering electronically, complete, print, and send [General Test Request](#) (T239) with the specimen.

Specimen Type	Temperature	Time	Special Container
Serum Red	Refrigerated (preferred)	28 days	
	Ambient	28 days	
	Frozen	28 days	

**Result Codes:**

Result ID	Reporting Name	Type	Unit	LOINC®
81418	Estrone, S	Numeric	pg/mL	2258-2
81816	Estradiol, Mass Spectrometry, S	Numeric	pg/mL	2243-4

LOINC® and CPT codes are provided by the performing laboratory.

**Supplemental Report:**

No

**Components:**

Test Id	Reporting Name	CPT Units	CPT Code	Always Performed	Available Separately
E1	Estrone, S	1	82679	Yes	Yes
EEST	Estradiol, Mass Spectrometry, S	1	82670	Yes	Yes

**CPT Code Information:**

82671-Estrogens, fractionated

82670-Estradiol (If appropriate)

82679-Estrone (If appropriate)

**Reference Values:**

ESTRONE (E1)

**CHILDREN\***

1 to14 days: Estrone levels in newborns are very elevated at birth but will fall to prepubertal levels within a few days.

**Males**

Tanner stages#	Mean age	Reference range
Stage I (>14 days and prepubertal)	7.1 years	Undetectable-16 pg/mL
Stage II	11.5 years	Undetectable-22 pg/mL
Stage III	13.6 years	10-25 pg/mL
Stage IV	15.1 years	10-46 pg/mL
Stage V	18 years	10-60 pg/mL

#Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for boys at a median age of 11.5 (+/- 2) years. For boys there is no proven relationship between puberty onset and body weight or ethnic origin. Progression through Tanner stages is variable. Tanner stage V (adult) should be reached by age 18.

**Females**

Tanner stages#	Mean age	Reference range
Stage I (>14 days and prepubertal)	7.1 years	Undetectable-29 pg/mL
Stage II	10.5 years	10-33 pg/mL
Stage III	11.6 years	15-43 pg/mL
Stage IV	12.3 years	16-77 pg/mL
Stage V	14.5 years	17-200 pg/mL

#Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for girls at a median age of 10.5 (+/- 2) years. There is evidence that it may occur up to 1 year earlier in obese girls and in African American girls. Progression through Tanner stages is variable. Tanner stage V (adult) should be reached by age 18.

\*The reference ranges for children are based on the published literature,(1,2) cross-correlation of our assay with assays used to generate the literature data and on our data for young adults.

**ADULTS**

Males: 10-60 pg/mL

Females

Premenopausal: 17-200 pg/mL

Postmenopausal: 7-40 pg/mL

Conversion factor

E1: pg/mL x 3.704=pmol/L (molecular weight=270)

**ESTRADIOL (E2)**

**CHILDREN\***

1 to14 days: Estradiol levels in newborns are very elevated at birth but will fall to prepubertal levels within a few days.

**Males**

Tanner stages#	Mean age	Reference range
Stage I (>14 days and prepubertal)	7.1 years	Undetectable-13 pg/mL

Stage II	12.1 years	Undetectable-16 pg/mL
Stage III	13.6 years	Undetectable-26 pg/mL
Stage IV	15.1 years	Undetectable-38 pg/mL
Stage V	18 years	10-40 pg/mL

#Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for boys at a median age of 11.5 (+/- 2) years. For boys there is no proven relationship between puberty onset and body weight or ethnic origin. Progression through Tanner stages is variable. Tanner stage V (adult) should be reached by age 18.

## Females

Tanner stages#	Mean age	Reference range
Stage I (>14 days and prepubertal)	7.1 years	Undetectable-20 pg/mL
Stage II	10.5 years	Undetectable-24 pg/mL
Stage III	11.6 years	Undetectable-60 pg/mL
Stage IV	12.3 years	15-85 pg/mL
Stage V	14.5 years	15-350 pg/mL**

#Puberty onset (transition from Tanner stage I to Tanner stage II) occurs for girls at a median age of 10.5 (+/- 2) years. There is evidence that it may occur up to 1 year earlier in obese girls and in African American girls. Progression through Tanner stages is variable. Tanner stage V (adult) should be reached by age 18.

\*The reference ranges for children are based on the published literature,(1,2) cross-correlation of our assay with assays used to generate the literature data and on our data for young adults.

## ADULTS

Males: 10-40 pg/mL

Females

Premenopausal: 15-350 pg/mL\*\*

Postmenopausal: <10 pg/mL

\*\*E2 levels vary widely through the menstrual cycle.

Conversion factor

E2: pg/mL x 3.676=pmol/L (molecular weight=272)

For International System of Units (SI) conversion for Reference Values, see

<https://www.mayocliniclabs.com/order-tests/si-unit-conversion.html>