

SECOND TRIMESTER SERUM TESTING

Down Syndrome (DS) Risk Sample Calculations (SURUSS 2003 parameters)

Age	Maternal Serum Result (MoM)				Second Trimester DS Risks 1:n (Term Risk)			
	AFP	uE3	hCG	DIA	LMP Triple	Quad	US Triple	Quad
25.5	0.50	0.60	0.70	0.60	1100 (1400)	3900 (5100)	780 (1000)	2900 (3800)
25.5	0.50	0.60	0.70	3.40	1100 (1400)	17 (22)	780 (1000)	12 (15)
25.5	0.50	1.90	0.70	0.60	770 (1000)	1400 (1800)	1100 (1500)	1900 (2500)
25.5	0.50	1.90	0.70	3.40	770 (1000)	10 (12)	1100 (1500)	16 (20)
25.5	0.50	1.90	3.80	0.60	180 (230)	400 (520)	390 (510)	740 (960)
25.5	0.50	1.90	3.80	3.40	180 (230)	26 (33)	390 (510)	63 (82)
25.5	0.60	1.30	0.60	0.40	2800 (3700)	7600 (9800)	3500 (4600)	8700 (11000)
25.5	0.60	1.30	0.60	4.40	2800 (3700)	9 (12)	3500 (4600)	13 (16)
25.5	0.60	1.30	3.30	0.40	180 (230)	370 (480)	270 (350)	470 (620)
25.5	0.60	1.30	3.30	4.40	180 (230)	10 (14)	270 (350)	18 (23)
25.5	1.80	0.60	3.80	0.60	110 (150)	390 (510)	75 (97)	220 (290)
25.5	1.80	0.60	3.80	3.40	110 (150)	71 (92)	75 (97)	48 (62)
25.5	3.80	0.50	3.30	0.40	110 (140)	190 (250)	58 (75)	81 (110)
35.5	0.50	0.60	0.70	0.60	290 (370)	1000 (1300)	210 (270)	770 (1000)
35.5	0.50	1.90	0.70	0.60	200 (270)	360 (470)	300 (390)	500 (650)
35.5	0.50	1.90	3.80	0.60	47 (61)	100 (140)	100 (130)	200 (250)
35.5	0.60	0.50	0.60	0.40	740 (970)	4200 (5400)	460 (590)	2700 (3600)
35.5	0.60	1.30	0.60	0.40	740 (960)	2000 (2600)	930 (1200)	2300 (3000)
35.5	0.80	0.30	0.70	0.40	580 (760)	3900 (5100)	260 (340)	1900 (2500)
35.5	0.80	1.20	5.10	0.40	65 (84)	100 (130)	100 (140)	130 (170)
35.5	0.80	1.20	5.10	3.70	65 (84)	17 (22)	100 (140)	29 (38)
35.5	1.80	0.60	0.70	3.40	5600 (7300)	420 (540)	4400 (5700)	330 (430)
35.5	1.80	0.60	3.80	0.60	30 (39)	100 (140)	20 (26)	58 (76)
35.5	1.80	0.60	3.80	3.40	30 (39)	19 (24)	20 (26)	13 (16)
35.5	3.80	0.50	0.60	4.40	11000 (14000)	410 (530)	7400 (9600)	280 (360)
35.5	4.10	0.30	0.70	3.70	2300 (2900)	240 (320)	980 (1300)	110 (140)

Wald NJ, Rodeck C, Hackshaw AK, Walters J, Chitty L, Mackinson AM. First and second trimester antenatal screening for Down's syndrome: the results of the Serum, Urine, and Ultrasound Screening Study (SURUSS). J Med Screen 2003;10:56-104.

Morris JK, Mutton DE, Alberman E. Revised estimates of the maternal age specific live birth prevalence of Down's syndrome. J Med Screen 2002;9:2

SURUSS Parameters

Ultrasound Dated

First Trimester (weeks 10 through 13)

Marker	Unaffected		Down Syndrome		truncation limit
	log x	log sd	log x	log sd	
NT (N)	0.0000	A	n(x)	0.2313	0.65-2.5
PAPP-A (P)	0.0000	0.2495	p(x)	0.2802	0.2-3.0
hCG (H1)	0.0000	0.1950	h(x)	0.2069	0.3-3.0
Free-B (F1)	0.0000	0.2651	f(x)	0.2569	0.3-5.0

A: 10 wk (0.1732), 11 wk (0.1439), 12 wk (0.1329), 13 wk (0.1329)

n(x) = 0.8554679 - 0.0064686*(ga in days)

p(x) = -1.1444+0.00965*(ga in days)

h(x) = -0.8662+0.01213*(ga in days)

f(x) = -0.3271+0.00768*(ga in days)

Second Trimester (weeks 15 through 20)

Marker	Unaffected		Down Syndrome		truncation limit
	log x	log sd	log x	log sd	
AFP (A)	0.0000	0.1399	-0.1308	0.1398	0.4-3.0
uE3 (E)	0.0000	0.1142	-0.1549	0.1238	0.4-2.0
hCG (H)	0.0000	0.2276	0.3118	0.2395	0.4-5.0
DIA (D)	0.0000	0.2078	0.3384	0.2679	0.3-5.0

Correlations

	UA	T21		UA	T21
N_P-10	-0.0429	-0.1506	P_H1	0.2198	0.1284
N_P-11	-0.0516		P_F1	0.1395	-0.0692
N_P-12	-0.0559		P_A	0.1160	0.0660
N_P-13	-0.0559		P_E	0.1213	0.3712
N_H1-10	-0.063	-0.0819	P_H	0.0624	-0.2295
N_H1-11	-0.0758		P_D	0.0237	-0.1842
N_H1-12	-0.0821				
N_H1-13	-0.0821		A_E	0.1981	-0.1093
N_F1-10	-0.0325	0.1080	A_H	0.1535	0.1920
N_F1-11	-0.0391		A_D	0.2033	0.1770
N_F1-12	-0.0423		E_H	-0.0416	-0.3808
N_F1-13	-0.0423		E_D	-0.0875	-0.3276
N_A-10	-0.0079	0.0809	H_D	0.4293	0.4197
N_A-11	-0.0095				
N_A-12	-0.0103				
N_A-13	-0.0103				
N_E-10	0.0495	0.0695			
N_E-11	0.0596				
N_E-12	0.0645				
N_E-13	0.0645				
N_H-10	-0.0549	0.0466			
N_H-11	-0.0661				
N_H-12	-0.0716				
N_H-13	-0.0716				
N_D-10	-0.0415	0.1854			
N_D-11	-0.0499				
N_D-12	-0.0540				
N_D-13	-0.0540				

SURUSS Parameters

LMP Dated

First Trimester (weeks 10 through 13)

Marker	Unaffected		Down Syndrome		truncation limit
	log x	log sd	log x	log sd	
PAPP-A (P)	0.0000	0.2670	p(x)	0.2959	0.2-3.0

$$p(x) = -1.1444 + 0.00965 * (\text{ga in days})$$

Second Trimester (weeks 15 through 20)

Marker	Unaffected		Down Syndrome		truncation limit
	log x	log sd	log x	log sd	
AFP (A)	0.0000	0.1417	-0.1308	0.1416	0.4-3.0
uE3 (E)	0.0000	0.1284	-0.1549	0.1370	0.4-2.0
hCG (H)	0.0000	0.2279	0.3118	0.2397	0.4-5.0
DIA (D)	0.0000	0.2078	0.3384	0.2679	0.3-5.0

Correlations

	UA	T21		UA	T21
P_A	0.1728	0.1211	A_E	0.2473	-0.0288
P_E	0.2776	0.4671	A_H	0.1336	0.1725
P_H	0.0214	-0.2487	A_D	0.1896	0.1661
P_D	0.0030	-0.1879	E_H	-0.1008	-0.4008
			E_D	-0.1083	-0.3182
			H_D	0.4225	0.4148