

### **Performance of Quadruple test screening according to gestational week performed**

The Fetal Anomaly Screening Programme (FASP) has advised that screening using the Quadruple test should only be offered upto 20 weeks of pregnancy <sup>1</sup>. We have evaluated our screening programme to assess whether there are any significant differences in screening performance at different gestational weeks of pregnancy.

To assess the screen-positive rate we used screening tests performed between the 4<sup>th</sup> January 2010 and 7<sup>th</sup> March 2011. A total of 17,130 Quadruple tests were performed.

Table 1 shows the gestational week at which women were screened, the number of women screened, the number of women who screened positive, the screen-positive rate (with 95% confidence interval), the median age of the women screened and the expected false-positive rate.

**Table 1: Screen-positive rate at each gestational week of screening**

Week	Median day	Number screened	Number screen-positives	Screen-positive rate (%) [95%CI]	Median age of women screened	Expected False-positive rate (%)
14	101	2,265	128	5.6 [4.7-6.6]	30	5.3
15	109	3,828	192	5.0 [4.3-5.7]	29	4.7
16	115	4,907	241	4.9 [4.3-5.5]	29	4.5
17	121	2,465	113	4.6 [3.8-5.4]	29	4.6
18	129	1,251	54	4.3 [3.2-5.4]	29	4.4
19	136	838	32	3.8 [2.5-5.1]	28	4.1
20	143	772	39	5.1 [3.5-6.6]	28	4.2
21	150	543	28	5.2 [3.3-7.0]	28	4.2
22	156	261	8	3.1 [1.0-5.2]	28	4.6
<b>All</b>	<b>115</b>	<b>17,130</b>	<b>835</b>	<b>4.9 [4.6-5.2]</b>	<b>29</b>	<b>4.6</b>

To assess the detection rate we used all cases of Down's syndrome ascertained between April 1996 and March 2011 using the Quadruple test in the routine NHS population.. Table 2 shows the observed Detection rate (with 95% confidence interval) of the quadruple test according to gestational week that the test was performed.

**Table 2: Detection rate at each gestational week of screening**

Week	Number of cases	Observed Detection rate (%)
14	17	94 [83-100]
15	82	74 [65-84]
16	149	78 [72-85]
17	53	75 [64-87]
18	15	80 [60-100]
19	13	46 [19-73]
20	2	100 [0-100]
21	7	86 [60-100]
22	5	60 [17-100]
<b>All</b>	<b>342</b>	<b>76 [72-81]</b>

Table 3 shows the median MoM among affected pregnancies for each marker according to the gestational age when the test was performed. The data includes women screened using both the Quadruple test and Integrated test from the routine and private screening programmes between April 1996 and December 2010. The median MoM values for inhibin-A at weeks 20-22 will have been underestimated as the majority of affected pregnancies at these gestations were reported before the regression equation type was changed from a quadratic to cubic equation in July 2008<sup>2</sup>.

**Table 3: Median marker MoM among affected pregnancies at each gestational week of screening**

Week	n	AFP	uE3	Free $\beta$ -hCG	Total hCG	Inhibin
14	21	0.76	0.65	2.915	-	2.03
15	113	0.75	0.72	2.32	2.62	1.92
16	169	0.76	0.76	2.30	1.95	2.15
17	60	0.82	0.735	2.48	3.41	2.16
18	16	0.72	0.725	2.315	2.115	1.715
19	16	0.935	0.73	2.475	-	1.82
20	5	0.77	0.80	2.01	-	1.34
21	8	0.77	0.595	3.05	-	1.535
22	5	1.1	0.61	2.535	-	0.93
<b>Overall</b>	<b>413</b>	<b>0.77</b>	<b>0.72</b>	<b>2.35</b>	<b>2.1</b>	<b>1.99</b>
<b>SURUSS</b>	<b>87</b>	<b>0.74</b>	<b>0.70</b>	<b>2.66</b>	<b>2.05</b>	<b>2.18</b>

Screening for Down's syndrome beyond 20 weeks and 0 days does not adversely affect the performance of the quadruple test. Although it is not recommended to encourage screening to take place at such late gestations, if a woman presents for her first screening test for Down's syndrome between 20 weeks and 1 day and 22 weeks and 6 days the quadruple test can still be provided.

#### References

1 <http://fetalanomaly.screening.nhs.uk/standardsandpolicies> ; Model of best practice 2007-2010 – Down's syndrome screening. Last accessed 25<sup>th</sup> July 2011

2 Nicholas J Wald, Wayne J Huttly and Jon P Bestwick (2008). Inhibin concentrations between 14 and 22 weeks of pregnancy *Prenat Diagn* 2008;**28**:360-361