

Costs and benefits of iodine supplementation for pregnant women in a mildly to moderately iodine-deficient population

Monahan, Mark; Boelaert, Kristien; Jolly, Catherine; Chan, Shiaoynng; Barton, Pelham; Roberts, Tracy

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Tables

Table 1

Parameter list - assuming worst case scenario, (i.e. being least favourable to iodine supplementation)	Data	Sources
Probability of a pregnant woman being iodine deficient	67.43%	Bath and colleagues ⁵ Vanderpump and colleagues ⁴² showed a similar proportion of iodine deficiency in 14/15 year old girls in the UK (68%)
Iodine Deficiency		
Proportion of iodine deficient women who are mildly/moderately iodine deficient (Urinary Iodine-to-Creatinine ratio (UIC) 50 to 149µg/l)	0.89	Bath and colleagues ⁵
Proportion of iodine deficient women who are severely iodine deficient (UIC <50µg/l)	0.11	Bath and colleagues ⁵
IQ Gain		
IQ gain from supplementation in previously mildly iodine deficient women	2.20	Bath and colleagues ⁵
IQ gain from supplementation in previously severely iodine deficient women	3.00	Bath and colleagues ⁵
Iodine supplementation		
Duration of iodine supplementation in weeks with successful pregnancy and lactation	78	Model assumption
Duration of iodine supplementation in weeks with early pregnancy loss	23	Model assumption
Duration of iodine supplementation in weeks with late pregnancy loss	47	Model assumption
Pregnancy complications		
Baseline pregnancy risk of early pregnancy loss	20.00%	Royal College of Obstetricians and Gynaecologists ⁴³
Baseline pregnancy risk of stillbirth	0.47% of total births	UK stillbirth rate ⁴⁴
Baseline pregnancy risk of preterm birth	7.14% of live births	UK preterm birth rate ⁴⁵
Baseline pregnancy risk of pre-eclampsia	8.00%	Duley ⁴⁶
Pre-eclampsia cost	£11370.00	Meads and colleagues ⁴⁷

Discount rate for costs	3.50%	NICE guide to the methods of technology appraisal ²⁵
For a small minority of women who may develop thyroid dysfunction as a result of iodine supplementation (assumption based on non-pregnant population iodine supplementation programmes which include the elderly)		
Incremental incidence of thyroid dysfunction from iodine supplementation	0.25%	European Commission ²⁷
IQ loss from overt & subclinical hypothyroidism	7.00	Haddow and colleagues ¹⁸
IQ loss from isolated hypothyroxinemia	7.00	Model assumption based on equivalent neurodevelopmental test scores in Subclinical Hypothyroidism and Isolated Hypothyroxinemia groups ²⁸
Incidence of early pregnancy loss from overt hyperthyroidism	26.00%	Momotani & Ito ⁴⁸
Odds ratio of stillbirth from overt hyperthyroidism*	8.42 95% CI (2.01-35.20)	Aggarawal and colleagues ⁴⁹
Odds ratio of preterm birth from overt hyperthyroidism	16.50 95% CI (2.09-130.02)	Millar and colleagues ⁵⁰
Odds ratio of pre-eclampsia from overt hyperthyroidism*	3.94 95% CI (2.47-6.29)	Aggarawal and colleagues ⁴⁹
Incidence of early pregnancy loss from overt hypothyroidism	30.00%	Glinoe ⁵¹
Odds ratio for stillbirth from Overt Hypothyroidism	9.69 95% CI (2.92-32.16)	Allan and colleagues ⁵²
Odds ratio for Preterm Birth from Overt Hypothyroidism	15.55 95% CI (3.62-66.81)	Ajmani and colleagues ⁵³
Incidence of pre-eclampsia from Overt Hypothyroidism	44.00%	Davis and colleagues ⁵⁴
Odds ratio for early pregnancy loss from subclinical hypothyroidism	1.88 95% CI (1.13-3.15)	Wang and colleagues ⁵⁵
Odds ratio of stillbirth from subclinical hypothyroidism	3.29 95% CI (1.32-8.21)	Allan and colleagues ⁵²

Odds ratio for preterm birth from subclinical hypothyroidism	5.60 95% CI (2.30-13.58)	Ajmani and colleagues ⁵³
Odds ratio for pre-eclampsia from subclinical hypothyroidism	3.39 95% CI (1.40-8.15)	Ajmani and colleagues ⁵³
Odds ratio for preterm birth from isolated hypothyroxinemia*	2.54 95% CI (1.42-4.54)	Korevaar and colleagues ⁵⁶
* Adjusted Odds ratio		

Table 2

Results summary table and sensitivity analysis scenarios			
	Cost saving Analysis 1 (NHS perspective)	Cost saving Analysis 2 (Societal perspective)	IQ points gained
Base case results	£199	£4476	1.22
Sensitivity analysis scenarios			
IQ gain for severe iodine deficiency same as mild/moderate iodine deficiency	£189	£4302	1.18
1 IQ point gain from iodine supplementation	£46	£1900	0.53
No IQ gain for mild/moderate iodine deficiency	-£42	£540	0.17
Prevalence of iodine deficiency halved	£59	£2178	0.61
Doubled early pregnancy loss	£145	£3352	0.92
Doubled cost of iodine tablets	£148	£4452	1.22
Doubled discount rate	£144	£1608	1.22
No thyroid dysfunction	£229	£4495	1.23
Health costs halved Analysis 1 only	£60		1.22
Value of an IQ point halved Analysis 2 only		£2409	1.22
No real wage growth Analysis 2 only		£3239	1.22
Willingness to pay figure for an additional IQ point used Analysis 2 only		£1832	1.22
Exclusion of public sector costs Analysis 2 only		£3953	1.22