### Appendix H: Parameter distributions used in the probabilistic sensitivity analysis

**Parameters used in estimating the cost-effectiveness of screening for coeliac disease in patients meeting IBS diagnostic criteria**

| Model parameter description | Point estimate | Probability distribution | Distribution parameters | Source |
|---|---|---|---|---|
| Age (years) | 35 | Fixed | N/A | Assumption |
| Male: Female | 1:2 | Fixed | N/A | Assumption |
| Life-expectancy (IBS or diagnosed coeliac disease) | 45.7LYs | Fixed | N/A | Estimated from life-tables |
| Prevalence of coeliac disease | 3.3% | Beta | $\alpha=4$, $\beta=119$ | Saunders (2003) |
| IBS utility | 0.675 | Beta | $\alpha=360$, $\beta=173$ (estimated from mean and sem) | Akehurst (2002) |
| Utility gain (GFD) | 0 | Fixed | N/A | N/A |
| Sens of antibody test (IgA EMA) | 98% | Beta | $\alpha=45$, $\beta=1$ (estimated from mean and 95%CI) | Dretzke (2004) |
| Spec of antibody test (IgA EMA) | 98% | Beta | $\alpha=45$, $\beta=1$ (estimated from mean and 95%CI) | Dretzke (2004) |
| Prob EGD biopsy complication | 0.2% | Beta | $\alpha=3$, $\beta=1511$ (estimated from mean and 95%CI) | Mein (2004) |
| Prob death if complication | 5% | Beta | $\alpha=6$, $\beta=107$ (estimated from mean and 95%CI) | Mein (2004) |
| Cost of IBS care and coeliac care excluding GFD | £172 | Normal | Mean = £172 SD = £66 | Akehurst (2002) |
| Cost of antibody test | £12 | Normal | Mean = £12 SD = £0.94 | Dretzke (2004) |
| Cost EGD with biopsy | £463 | Normal | Mean = £463 SD = £105 | (Department of Health 2006) |
| Cost of EGD complication | £597 | Normal | Mean = £597 SD = £163 | (Department of Health 2006) |
| Discount rate for costs and QALYs | 3.5% | Fixed | N/A | NICE (2007) |
| Ratio of cumulative survival for undiagnosed coeliac disease compared to diagnosed coeliac disease or IBS | Year 1: 0.998 Year 2: 0.983 Year 3: 0.978 | Beta | Y1: $\alpha=377$, $\beta=1$ Y2: $\alpha=630$, $\beta=11$ Y3: $\alpha=560$, $\beta=13$ (estimated from mean and 95%CI) | Corrao (2001) |

| Prevalence of diagnosed coeliac disease | 0.26% | Beta | α=21, β=8211 (estimated from mean and 95%CI) | Fowell (2006) |
|---|---|---|---|---|
| Total cost of GFD prescriptions | £21,205,706 | Fixed | N/A | NHS Health and Social Care Information Centre (2006) |

**Parameters used in estimating the cost-effectiveness of long-term maintenance treatments and behavioural therapies in the management of IBS**

| Model parameter description | Point estimate | Probability Distribution | Distribution parameters | Source |
|---|---|---|---|---|
| **Response rate for comparator arm** | | | | |
| No treatment | 45% | Beta | α=30, β=37 | Mearin (2004) |
| Usual care in people with refractory IBS | 25% | Beta | α=44, β=129 | Comparator arms of RCTs in behavioural therapies |
| Lower response rate for sensitivity analysis | 9% | beta | α=4, β=40 | Mean across four CBT trials |
| **Intervention cost for behavioural therapies** | | | | |
| CBT | £375 | normal | Mean= £375 SD = £106 | Fitted against maximum and minimum costs from RCTs |
| Psychotherapy | £472 | normal | Mean = £472, SD = £83 | Fitted against maximum and minimum costs from RCTs |
| Hypnotherapy | £171 | normal | Mean = £171, SD = £34 | Fitted against maximum and minimum costs from RCTs |
| Cost saving due to resource use reduction for behavioural therapies | £4.08 | normal | Mean =4.08 SD = 2.06 | Creed (2003) |
| **Effectiveness of behavioural therapies (RR of response to intervention)** | | | | |
| CBT | 6.11 | lognormal | Mean = 1.81, SD = 0.49 (for lnRR) | Meta-analysis of RCT evidence for improvement in global symptoms |
| Psychotherapy | 3.08 | lognormal | Mean = 1.12, SD = 0.29 (for lnRR) | Guthrie (1991) |
| Hypnotherapy (NB: OR not RR) | 3.85 | lognormal | Mean = 1.81, SD = 0.49 (for lnRR) | Meta-analysis of RCT evidence for improvement in global symptoms |
| Psychotherapy (15 months follow-up) | 1.68 | lognormal | Mean = 0.51, SD = 0.20 (for lnRR) | Svedlund (1983) |

| CBT (1 year follow-up data) | Normal distribution fitted to global symptom score at baseline, end of treatment and 6 months | | | |
|---|---|---|---|---|
| **Effectiveness of long-term maintenance therapies (RR of response to intervention)** | | | | |
| Antispasmodics | 1.32 | lognormal | Mean = 0.51, SD = 0.20 (for lnRR) | Meta-analysis of RCT evidence for improvement in global symptoms |
| Laxatives (PEG) | 1.61 | lognormal | Mean = 0.48 SD = 0.22 | Meta-analysis of RCT evidence for no use of other laxatives |
| Laxatives (other) | 1.34 | lognormal | Mean = 0.29 SD = 0.14 | Meta-analysis of RCT evidence for no improved bowel habit |
| Antimotility | 2.00 | lognormal | Mean = 0.69 SD = 0.28 | Meta-analysis of RCT evidence for improvement in global symptoms |
| Tricyclics | 1.31 | lognormal | Mean = 0.27 SD = 0.12 | Meta-analysis of RCT evidence for improvement in global symptoms |
| SSRI | 1.80 | lognormal | Mean = 0.59 SD = 0.13 | Meta-analysis of RCT evidence for improvement in global symptoms |
| **Other parameters** | | | | |
| Utility gain associated with a response to treatment | 0.071 | Beta | $\alpha$=4.63, $\beta$=60.3 (estimated from mean and sem) | Mearin (2004) |
| Dose response for SSRIs up to 40mg (sensitivity analysis) | 10mg – 23% 20mg – 43% 40mg – 33% | Dirichlet | (7,13,10) | Tabas (2004) |
| Discounting rate for costs and benefits | 3.5% | Fixed | N/A | NICE (2007), |
| Cost for GP appointment to initiate intervention / review medication | £18 | Fixed | N/A | Netten (2006) |