

Eating Disorders: recognition and treatment

Appendix Q – Health economic profiles

NICE Guideline

Methods, evidence and recommendations

December 2016

Draft for Consultation

*Commissioned by the National Institute for
Health and Care Excellence*

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1 **Appendix Q: Health economic profiles**

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1 Abbreviations

BMI	body mass index
CBT	cognitive behavioural therapy
CI	confidence interval
DALY	disability adjusted life year
EBW	expected body weight
ICER	incremental cost effectiveness ratio
MAEDS	Multiaxial Assessment of Eating Disorder Symptoms Scale
MRAOS	Morgan–Russell Average Outcome Scale
NHS	National Health Service
PPP	purchasing power parity
PSS	Personal Social Services
QALY	quality adjusted life year
RCT	randomised controlled trial
SD	standard deviation
TAU	treatment as usual
WTP	willingness to pay
IBW	ideal body weight
LDX	lisdexamfetamine dimesylate
LYG	life years gained

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Q.1.1 Organisation and delivery of services

Q.1.1.2 Coordination of care

Q.1.1.13 Clinical / economic question: inpatient psychiatric treatment versus specialist outpatient treatment or general out-patient treatment in people with AN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Byford and colleagues (2007) AND Gowers and colleagues (2010) UK	Minor limitations ²	Directly applicable ³	Cost-effectiveness analysis at 2 years and cost-analysis 3-5 years Time horizon: costs over 2 years and 3-5 years; outcomes at 2 years Measures of outcome: MRAOS score Interventions: general outpatient, specialist outpatient, inpatient care	At 2 years versus inpatient care: Specialist outpatient: -£10,207 General outpatient: -£8,203 At 3-5 years versus inpatient care: Specialist outpatient: £435 General outpatient: -£132	At 2 years versus inpatient care: Specialist outpatient: 0.09 General outpatient: 0.00	Specialist outpatient treatment dominant at 2 years	None of the cost differences were statistically significant Differences in MRAOS scores were not statistically different At WTP of £0/additional point of improvement on MRAOS scale, the probability of specialist outpatient treatment being cost effective is 78%, in-patient treatment it is 16%, and general outpatient treatment it is 6% Findings were robust to changes in the discount rate and assumptions underpinning analyses of missing data, also exclusion of education cost had no impact on the conclusions.

- 5 1. Costs uplifted to 2014/15 UK pounds using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 6 2. Time horizon 2 and 5 years (at 5 years only cost analysis reported); not clear how well MRAOS captures symptoms and quality of life
- 7 associated with eating disorders; based on a single RCT (N=172); statistical analyses, deterministic and PSA were conducted; outcomes
- 8 reported only at year 2
- 9 3. UK study; public sector (health, social care and education); outcome measure was MRAOS

Q.1.1.21 Clinical / economic question: day treatment versus inpatient care in people with AN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Herpertz-Dahlmann and colleagues (2014) Germany	Minor limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: 1 year Measure of outcome: BMI	-£8,001	0.46	Day treatment dominant	95% CI for cost difference was -£12,667 to -£3,334, p = 0.002 Difference in outcomes statistically significant (p < 0.0001)

- 2 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 3
- 4 2. Time horizon 1 year; hasn't considered HRQoL outcomes; conducted alongside an RCT (N=172); the unit costs of resources from local sources (hospital tariffs); statistical analyses conducted
- 5
- 6 3. German study; health care provider perspective; outcome measure was improvement in BMI

Q.1.1.37 Clinical / economic question: day treatment versus inpatient care in adults with AN or sub-threshold AN or BN or sub-threshold BN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Williamson and colleagues (2001) US	Potentially serious limitations ²	Partially applicable ³	Cost analysis Time horizon: 1 year	-£9,614			Reduction in costs was statistically significant, p < 0.02

- 8 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 9
- 10 2. Time horizon 12 months; small observational cohort study (N=51); unit costs of resources from local sources; statistical analyses conducted
- 11 3. US study; health care provider perspective (treatment and admission costs only)

Q.1.1.41 Clinical / economic question: adequate care model versus SC in people with AN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Crow & Nyman (2004) US	Potentially serious limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: lifetime Measures of outcome: LYS	£73,404	2.75	£26,691	None reported

- 2 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and UK PPS hospital & community health services
3 (HCHS) index (Curtis, 2015).
4 2. Time horizon was lifetime; hasn't considered wider ED symptoms and QoL outcomes; the estimates of baseline outcomes and relative
5 intervention effects based on published studies, and authors' assumptions; the estimates of resource use based on charge data; the unit costs
6 of resources from local sources; statistical analysis or sensitivity analysis was not conducted
7 3. US study; health care provider perspective; outcome measure was LYS

Q.1.1.58 Clinical / economic question: best practice model versus SC in people with AN, BN, BED and EDNOS

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Deloitte Access Economics (2014) Australia	Potentially serious limitations ²	Partially applicable ³	Cost-effectiveness and cost-benefit analysis Time horizon: 10 years Measures of outcome: DALYs and monetary valuation of DALYs	- £28,077	-1.29 Monetised DALYs: - £93,591	Interventi on dominant CBA: savings of £121,799	None reported

- 9 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and UK PPS hospital & community health services
10 (HCHS) index (Curtis, 2015).
11 2. Time horizon was 10 years; the estimates of baseline outcomes and relative intervention effects based on systematic review of RCTs, other
12 published sources, and authors' assumptions; the estimates of resource derived from published studies; the source of unit costs of resources
13 unclear; statistical analysis or sensitivity analysis was not conducted
14 3. Australian study; societal perspective; outcome measure was DALY which was also monetised

Q.1.21 Stepped care

Q.1.2.12 Clinical / economic question: stepped care model versus standard care in people with BN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Crow and colleagues (2013) US	Potentially serious limitations ²	Minor limitations ³	Cost-effectiveness analysis Time horizon: 1 year Measures of outcome: percent of service users abstinent	-£401	8%	Stepped care model dominant	Bootstrapping indicated that stepped care was both less expensive and more effective than CBT in 81% of replications The results were robust to changes in assumptions pertaining to the unit cost estimates (that is, instead of using Medicare rates actual fees were used)
Pohjolainen and colleagues (2010) Finland	Potentially serious limitations ⁴	Partially applicable ⁵	Cost-utility analysis Time horizon: 10 years (costs over 6 month follow-up, outcomes 10 years) Measures of outcome: QALYs	£3,926	0.241	£16,289	Sensitivity analyses: Using discount rate of 5% for QALYs gained resulted in an ICER of £19,434/QALY, and using 3% resulted in an ICER of £17,605/QALY Using upper and lower 95% CI for QALYs of 0.339 and 0.113 resulted in an ICER of £11,581 and £34,741 per QALY, respectively Using upper and lower 95% CI for costs of £5,208 and £4,647 resulted in an ICER of £21,609 and £19,283 per QALY Using upper 95% CI for costs and lower 95% CI for QALYs resulted in and ICER of £46,085 Best case analysis using mean values for costs (£3,926) and QALYs gained (2.729 – highest estimate of QALYs gained)

Economic evidence profile

							<p>assuming that with 'no treatment' HRQoL will not improve) resulted in an ICER of £1,438</p> <p>Best case analysis using mean values for costs (£3,926) and QALYs gained (0.897 – highest estimate of QALYs gained assuming that with 'no treatment' HRQoL will not improve and QALY gain discounted at 5%) resulted in an ICER of £4,376</p>
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- 1 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and UK PPS local authorities' adults and children's
- 2 services pay and prices inflation index (Curtis, 2015).
- 3 2. Time horizon 12 months; hasn't considered wider ED symptoms and HRQoL outcomes; based on RCT (N=293); unit costs of resources from
- 4 national sources and data from published studies; statistical and sensitivity analyses conducted
- 5 3. US study; health care provider perspective; outcome measure was rate of abstinence
- 6 4. Time horizon 10 years for outcomes and 6 months for costs; based on observational cohort study (N=72); the estimates of relative intervention
- 7 effects from observational cohort study, published studies and authors' assumptions; unit costs of resources from local sources; statistical
- 8 analyses and deterministic sensitivity analysis conducted; costs between 6 months and 10 years were assumed to be the same between the
- 9 groups
- 10 5. Finnish study; health care provider perspective; outcomes discounted at an annual rate of 3% and 5% as part of sensitivity analysis; QALYs
- 11 estimated but HRQoL measured using 15D instrument with valuations obtained from the Finnish general public

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Q.2₁ Treatment and management of people with anorexia nervosa

Q.2.12 Interventions to help parents or carers of children or young people

Q.2.1.13 Clinical / economic question: family-based treatment versus systemic family therapy in people with AN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Agras and colleagues (2014) US	Potentially serious limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: end of treatment (36 weeks) Outcomes: percent of service users in remission	- £6,847	8%	Family therapy dominant	Improvement in outcomes was not statistically significant

- 4 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 5
- 6 2. Time horizon end of intervention (36 weeks); hasn't considered HRQoL outcomes; analysis conducted along RCT (N=158); the unit costs of
- 7 resources from a mix of national and local sources; statistical analyses conducted on outcomes only
- 8 3. US study; health care provider perspective; outcome measure was remission rate defined as ≥95% of IBW

Q.3₉ Treatment and management of people with bulimia nervosa

Q.3.10 Psychological interventions with or without a pharmacological intervention in people with BN or EDNOS sub-syndromal variants of BN

Q.3.1.12 Clinical / economic question: CBT ED individual versus guided self-help ED

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Crow and colleagues (2009)	Minor limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: 1 year	£832	6.2%	£13,411/additional abstinent participant	Bootstrapping indicated that in 78.9% of iterations guided self-help ED was less effective but also less costly than CBT-ED

Economic evidence profile							
US			Outcomes: percent of service users abstinent from binge eating and purging				individual, while in 21.1% guided self-help ED was both more effective and costly. Full clinical prices for treatment (as opposed to reimbursement rates) ICER of CBT-ED individual: £12,967 Assuming 2008 gasoline price (as opposed to 2005 prices) the ICER of CBT-ED individual £14,085 Assuming built in video camera (no additional charges for telemedicine component) the ICER of CBT-ED individual £15,498

1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
2. Time horizon 1 year; hasn't considered HRQoL outcomes; conducted alongside RCT (N=128); statistical analyses conducted
3. US study; health care provider (plus travel costs) perspective; outcome measure used was abstinence from binge eating and purging

Q.3.1.25 Clinical / economic question: psychological interventions for people with BN

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Guideline economic analysis UK	Potentially serious limitations ²	Directly applicable ³	Cost-utility analysis Time horizon: 1 year and 4 months Outcomes: QALYs Interventions: wait list, self-help with support, CBT-ED individual	Versus wait list: Self-help with support: £19,391 CBT-ED individual: £124,629	Versus wait list: Self-help with support: 2.24 CBT-ED individual: 2.30	£8,646 (self-help with support vs. wait list) £54,200 (CBT-ED individual vs. wait list) £1,860,504 (CBT-ED individual vs. self-help with support)	At a cost per QALY of £20,000 the probability of wait list being cost effective is 0.20, self-help with support 0.80, and CBT-ED individual it is <0.1 The results were sensitive to the probability of remission associated with self-help and utility values. Also, extending the time horizon to 5 years reduces the ICER of CBT-ED individual versus wait list to £8,505.

- 1 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 2
- 3 2. Time horizon 1.4 years however the secondary analysis was undertaken where the time horizon was extended to 5 years; effectiveness derived from the network meta-analysis of RCT; cost data based on the GC expert opinion; deterministic and probabilistic sensitivity analyses conducted
- 4
- 5
- 6 3. UK study; NHS and PSS perspective; outcome measure QALYs (SF-36 converted to EQ-5D using an algorithm)

Q.3.27 Interventions to help parents or carers of children or young people

Q.3.2.18 Clinical / economic question: family therapy versus guided self-help ED in people with BN or EDNOS

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Schmidt and colleagues (2007) UK	Minor limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: end of treatment (6 months) and 12 months Outcomes: percent abstinent from binge-eating and vomiting	NHS & PSS perspective at: 6 months: -£645 12 months: -£724 Societal perspective: 6 months: -£459 12 months: -£472	At 6 months bingeing: -17% No difference in outcomes at 12 months or vomiting at 6 months	At 6-months from NHS and PSS perspective guided self-help ED £3,796 per additional abstinent individual At 6 months from societal perspective guided self-help ED £2,696 per additional abstinent individual At 12 month follow-up FT is the dominant option using combined outcome measure	Significance for NHS and PSS costs was not reported; differences in societal costs were not significant Difference in the proportion abstinent from bingeing at the end of treatment p=0.03; all other outcomes were not significant

- 9 1. Costs uplifted to 2014/15 UK pounds using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
- 10 2. Time horizon end of treatment (6 months) and 12 months; hasn't considered HRQoL outcomes; conducted alongside RCT (N=85 baseline, N=63 at 6 months, N=54 at 12 months); statistical analyses were not reported for costs from NHS & PSS perspective
- 11
- 12 3. UK study; societal, and NHS & PSS perspectives; no QALYs measured, as outcome measure was abstinence from binge-eating and vomiting, difficult to judge cost effectiveness
- 13

Q.4.1 Treatment and management of people with binge eating disorder

Q.4.1.2 Psychological interventions

Q.4.1.13 Clinical / economic question: CBT guided self-help versus treatment as usual in people with BED

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Lynch and colleagues (2010) US	Minor limitations ²	Partially applicable ³	Cost-effectiveness analysis Time horizon: 12 months Outcomes: binge-free days and QALYs	£213 (health care perspective) £326 (health care, social care, plus out of pocket expenses)	25.2, 0.069 QALYs	CBT-GSH Dominant	Bootstrapping indicated that CBT-GSH had better outcomes and lower costs (health care, social care, plus out of pocket expenses) in the 69% of observations when compared with TAU At WTP of £31/additional binge free day, the probability that the intervention is cost effective is 90%; at WTP of £76, the probability is 98%.

- 4 1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community
5 health services (HCHS) index (Curtis, 2015).
- 6 2. Time horizon 1 year; conducted alongside RCT (N=123); the unit costs of resources from published studies, local sources and wages (to value
7 participants' time spent receiving interventions); statistical analyses (bootstrapping) conducted
- 8 3. US study; health care, social care (plus out of pocket expenses) or health care only perspectives; outcome measures include QALYs however
9 QoL weights derived from 3 expert physicians in the US

Q.4.1.20 Clinical / economic question: psychological (individual) interventions for people with BED

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Guideline economic analysis UK	Potentially serious limitations ²	Directly applicable ³	Cost-utility analysis Time horizon: 1 year and 4 months Outcomes: QALYs	Versus wait list: Self-help ED no	Versus wait list: Self-help ED no	£7,424 (self-help ED with support vs. self-help ED no support)	At a cost per QALY of £20,000 the probability of wait list being cost effective is <0.1, self-help no support 0.16, self-help with support 0.83, IPT <0.1, and behavioural weight loss <0.1.

Economic evidence profile							
			Interventions: wait list, self-help ED no support, behavioural weight loss, self-help ED with support, IPT individual	support: - £9,861 Behavioural weight loss: £159,091 Self-help ED with support: £3,994 IPT individual: £154,675	support: 3.90 Behavioural weight loss: 5.62 Self-help ED with support: 5.77 IPT individual: 6.38	£247,138 (IPT individual vs. self-help ED with support) Wait list dominated Behavioural weight loss dominated	The ICER of IPT vs. self-help ED with support was robust to changes in the cost data, effectiveness, and utility values. The ICER of self-help ED with support vs. self-help ED with no support was sensitive to the utility values and costs associated with remission health state.

1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
2. Time horizon 1.4 years; effectiveness derived from the network meta-analysis of RCT; cost data based on the GC expert opinion; deterministic and probabilistic sensitivity analyses conducted
3. UK study; NHS and PSS perspective; outcome measure QALYs (SF-36 converted to EQ-5D using an algorithm)

Q.4.1.36 Clinical / economic question: psychological (group) interventions for people with BED

Economic evidence profile							
Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/effect) ¹	Uncertainty ¹
Guideline economic analysis UK	Potentially serious limitations ²	Directly applicable ³	Cost-utility analysis Time horizon: 1 year and 4 months Outcomes: QALYs Interventions: group behavioural weight loss, IPT-ED group, CBT-ED group	Versus group behavioural weight loss: IPT-ED group: £5,821	Versus group behavioural weight loss: IPT-ED group: 1.09	£3,820 (CBT-ED group vs. group behavioural weight loss) IPT-ED group extendedly dominated	At a cost per QALY of £20,000 the probability of behavioural weight loss being cost effective is 0.04, CBT-ED group 0.74, and IPT-ED group 0.22. The conclusions were robust to changes in all model inputs.

Economic evidence profile

				CBT-ED group: £7,358	CBT-ED group: 1.93		
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1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
2. Time horizon 1.4 years; effectiveness derived from the network meta-analysis of RCT; cost data based on the GC expert opinion; deterministic and probabilistic sensitivity analyses conducted
3. UK study; NHS and PSS perspective; outcome measure QALYs (SF-36 converted to EQ-5D using an algorithm)

Q.4.26 Pharmacological interventions for people with binge eating disorder

Q.4.2.17 Clinical / economic question: lisdexamfetamine dimesylate versus no drug treatment in people with BED

Economic evidence profile

Study and country	Limitations	Applicability	Other comments	Incremental cost (£) ¹	Incremental effect	ICER (£/QALY) ¹	Uncertainty ¹
Agh and colleagues (2016) US	Minor limitations ²	Partially applicable ³	Cost-utility analysis Time horizon: 52 weeks Outcomes: QALYs	£123	0.006	£19,490	Bootstrapping indicated that at WTP of £35,285 per QALY LDX had an 82% chance of being cost-effective Deterministic sensitivity analyses indicated that the model was most sensitive to the utility of remission (that is, non-symptomatic BED)

1. Costs converted and uplifted to 2014/15 UK pounds – converted using PPP exchange rates and uplifted using UK PSS hospital & community health services (HCHS) index (Curtis, 2015).
2. Time horizon 52 weeks; effectiveness from 2 RCTs (RCT 1, N=383; RCT 2, N=390); deterministic and PSA conducted; resource use from a large survey (N=22,397); funded by manufacture
3. US study; health care provider perspective; outcome measure was QALYs estimated using EQ-5D-L, however US population norms were used