

Treatment of Attention-Deficit/Hyperactivity Disorder (ADHD)

Modelling the cost-effectiveness of a modified-release preparation of **Methylphenidate** from the perspective of the National Health Service (NHS) in the United Kingdom (UK)

Michael Schlander¹, Kristen Migliacchio-Walle², and Jaime Caro²
¹Ludwigshafen & Witten/Herdecke, Germany; ²Dorval, QC, Canada

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COST-EFFECTIVENESS OF MPH OROS

Methylphenidate (MPH) OROS (o.a.d.) and MPH IR (t.i.d.)
versus Non-Drug Treatment (NDT) Only
for Treatment of Attention-Deficit/Hyperactivity Disorder¹

Executive Summary



↪ Efficacy

- ↪ IOWA Conners Inattention / Overactivity (I/O) Scale (Teacher and Parent Ratings)
- ↪ Effect Sizes according to Meta-Analysis of three Randomized Clinical Trials

↪ Effectiveness

- ↪ Efficacy Data combined with treatment Compliance assumptions (Systematic Reviews)

↪ Costing

- ↪ Utilization Data according to Shared Care Protocols (Regional Health Authorities)
- ↪ Unit Costs from the UK National Health Service (NHS) Perspective (BNF, PSSRU)

↪ Incremental Cost-Effectiveness Ratios (ICERs)

- ↪ ICERs of MPH OROS (vs. MPH IR) and MPH IR (vs. NDT) only of similar magnitude²
- ↪ Extended Dominance of MPH OROS over MPH IR over a broad range of assumptions

¹in children age 6-12; ²note that NICE (Guidance issued October 2000) recommended MPH IR (alone or "desirably") combined with specific psychological treatment for severe ADHD (hyperkinetic disorder)

COST-EFFECTIVENESS OF MPH OROS

Existing economic studies of ADHD treatment

Cost-Effectiveness of MPH IR

↪ CCOHTA (Canada, 1998)¹

- ↪ Assumed daily dose MPH IR: 2 x 10mg
- ↪ MPH IR dominated, with an ICER* of **CAN-\$ 498 / ES** (basis CTRS, WMD)
(*ICER versus a hypothetical "Do Nothing" alternative)

↪ NICE (England, 2000)²

- ↪ Assumed daily dose MPH IR: 3 x 10mg
- ↪ Cost / QALY estimated at **£ 9,200 - £ 14,600**

↪ MTA Study (USA, 2004)³

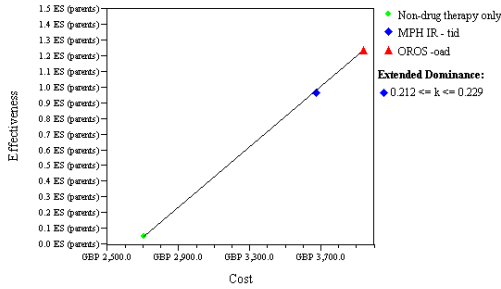
- ↪ Medication Management (MPH 37.7mg/d, t.i.d.) versus Community Care⁴:
US-\$ 352 / patient "normalized" (SNAP-IV score <1); or ~ **3,000 US-\$ / QALY**
- ↪ Combination Treatment (MPH 31.2 mg/d, t.i.d.) versus Behavioral Treatment Only:
US-\$ 2,468 / patient "normalized" (SNAP-IV score <1); or ~ **21,000 US-\$ / QALY**

¹Zupanec et al. (1998): a six-point or one standard deviation (weighted mean difference was considered clinically relevant, CAN-\$ (1997)).
²Lord & S. Pausley (2000) and A. Gilmore & R. Milroy (2001): NHS perspective, one-year time horizon. £ (1997); ³Jensen et al. (2004); M. Schlander et al. (2004): societal perspective, one-year time horizon, US-\$ (2000). *Note that most Community Care patients received MPH, mean total daily dose / day at study completion: 22 6mg, averaging 2.3 doses per day (vs 3.0 doses per day for MTA-treated subjects) - cf. MTA (1999)

COST-EFFECTIVENESS OF MPH OROS

Economic evaluation from the perspective of the UK National Health Service (NHS)

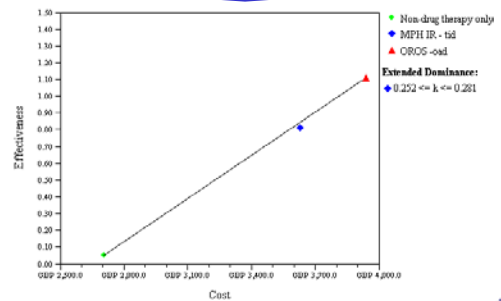
Base Case (2): Parent Ratings



COST-EFFECTIVENESS OF MPH OROS

Economic evaluation from the perspective of the UK National Health Service (NHS)

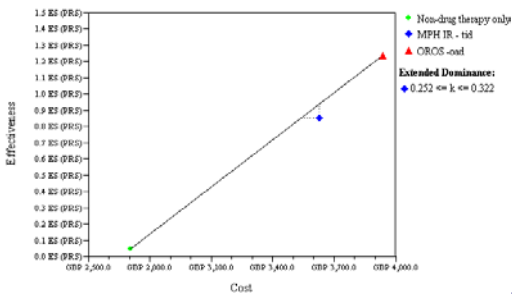
ADHD Case (1): Teacher Ratings



COST-EFFECTIVENESS OF MPH OROS

Economic evaluation from the perspective of the UK National Health Service (NHS)

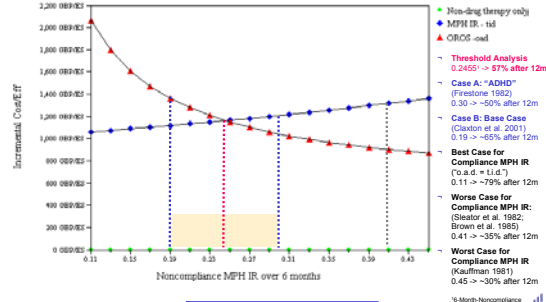
ADHD Case (2): Parent Ratings



COST-EFFECTIVENESS OF MPH OROS

Impact of compliance with MPH IR t.i.d. on incremental cost-effectiveness

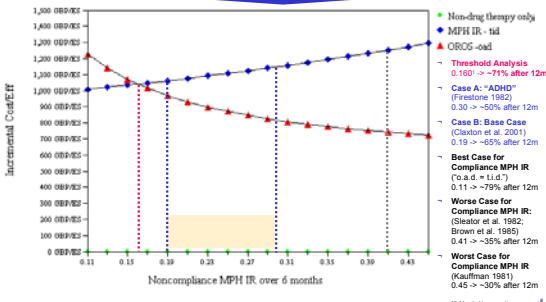
Sensitivity Analysis (1): Teacher Ratings



COST-EFFECTIVENESS OF MPH OROS

Impact of compliance with MPH IR t.i.d. on incremental cost-effectiveness

Sensitivity Analysis (2): Parent Ratings



COST-EFFECTIVENESS OF MPH OROS

Summary & Conclusions

- Methylphenidate (MPH) IR t.i.d.
 - alone or in combination with cognitive-behavioral therapy, has been shown to be an effective and cost-effective treatment for ADHD in children, with an estimated ICER of ~ £ 9,200 / QALY (from the UK NHS perspective)¹;
 - effectiveness is likely to be impaired by the negative impact of multiple daily dosing, combined with ADHD-specific factors, on treatment adherence.
- Methylphenidate OROS o.a.d.
 - can be expected to improve treatment compliance, resulting in ...
 - improved clinical effectiveness, translating into ...
 - an acceptable incremental cost-effectiveness ratio (comparable to MPH IR t.i.d., with ...
 - extended dominance over MPH IR t.i.d. under a broad range of assumptions).
- These data strongly suggest that MPH OROS will play an important role in the cost-effective management of ADHD².

¹ NICE assessment, J. Lind & S. Paisley (2000), and A. Gilmore & R. Miles (2001). For comparison, most recent estimates based on the MTA Study indicate an ICER of ~ US-\$ 21,000 / QALY from the U.S. societal perspective, for MPH OROS o.a.d. compared to MPH IR t.i.d., both in combination with cognitive-behavioral therapy, cf. P. Jensen et al. (2004), M. Schlender et al. (2004).

² Note that limitations of the present analysis include the use of DSM-IV diagnostic criteria, the comparison with MPH IR administered t.i.d. only, and the absence of direct cost/QALY calculations. Real-world data will have to confirm these estimates.