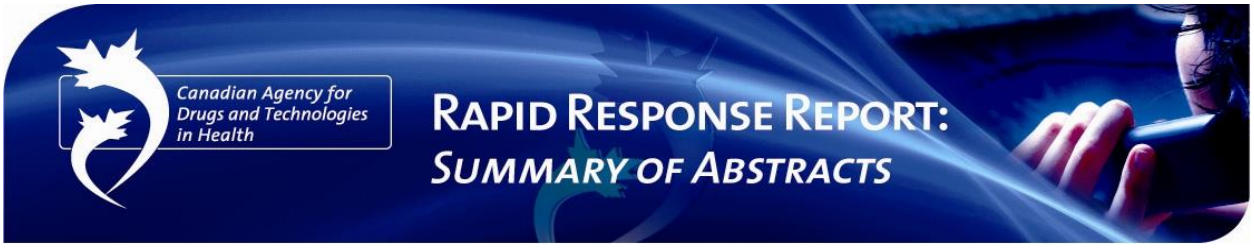

TITLE: Duration of Dosage Effect for Methylphenidate SR and Dextroamphetamine SR for Patients with Attention Deficit Hyperactivity Disorder

DATE: 01 September 2015

RESEARCH QUESTION

What is the clinical evidence for the duration of dosage effect for methylphenidate SR and dextroamphetamine SR for patients with attention deficit hyperactivity disorder?

KEY FINDINGS

One systematic review, two randomized controlled trials, and two non-randomized studies were identified regarding the duration of dosage effect for methylphenidate SR for patients with attention deficit hyperactivity disorder.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2010 and August 18, 2015. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria	
Population	Patients of any age with attention deficit hyperactivity disorder (ADHD)
Intervention	Methylphenidate SR (e.g., Ritalin SR); and dextroamphetamine SR (e.g., Dexedrine Spansule)
Comparator	None
Outcomes	Perceived duration of dosage effect
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials (RCTs) and non-randomized studies.

One systematic review, two RCTs, and two non-randomized studies were identified regarding the duration of dosage effect for methylphenidate SR for patients with attention deficit hyperactivity disorder (ADHD). No relevant health technology assessments or meta-analyses were identified. Further, no relevant evidence regarding the duration of dosage effect for dextroamphetamine SR was identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review,[1] two randomized controlled trials,[2,3] and two non-randomized studies[4,5] were identified regarding the duration of dosage effect, measured using Permanent Product Measure of Performance (PERMP) and Swanson, Kotkin, Agler, M-Flynn, and Pelham combined rating scale (SKAMP) scores, of methylphenidate SR products for patients with ADHD.

The systematic review[1] reported results from 15 RCTs in adults (n = 1) and children (n = 14). Based on PERMP mathematics scores, duration of efficacy ranged from eight hours with long-acting methylphenidates, to 14 hours with lisdexamfetamine dimesylate.[1] Most agents exhibited a 12 hour duration of efficacy.[1]

One RCT[2] reported that NWP06, a novel extended-release formulation of methylphenidate, was effective from 45 minutes onward up to 12 hours post-dose, as measured by SKAMP scores and the PERMP mathematics test in children aged six to 12 years. Another RCT[3] reported effects of osmotic-release oral system methylphenidate (Concerta) from one hour onward up to 12.5 hours post-dose as measured by SKAMP and PERMP scores in children aged nine to 12.

One prospective observational study[4] reported that Ritalin LA resulted in significantly prolonged effect duration (outcome measure not specified) compared to pre-treatment in children (mean age 10.9 years) with an insufficient response to previous ADHD medication. Another retrospective observational study[5] comparing the effects of novo-methylphenidate extended-release versus Concerta reported that 43% of pediatric patients who were switched to the bioequivalent product observed a shorter duration of effect (outcome measure not specified).

No relevant evidence regarding the duration of dosage effect for dextroamphetamine SR was identified; therefore no summary can be provided.

REFERENCES SUMMARIZED

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

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Randomized Controlled Trials

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3. Armstrong RB, Damaraju CV, Ascher S, Schwarzman L, O'Neill J, Starr HL. Time course of treatment effect of OROS® methylphenidate in children with ADHD. J Atten Disord. 2012 Nov;16(8):697-705. PubMed: PM22084448

Non-Randomized Studies

4. Haertling F, Mueller B, Bilke-Hentsch O. Effectiveness and safety of a long-acting, once-daily, two-phase release formulation of methylphenidate (Ritalin® LA) in school children under daily practice conditions. Atten Defic Hyperact Disord [Internet]. 2015 Jun [2015 Aug 27];7(2):157-64. Available from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4449385 PubMed: PM25346231

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APPENDIX – FURTHER INFORMATION:

Review Articles

6. Sugrue D, Bogner R, Ehret MJ. Methylphenidate and dexmethylphenidate formulations for children with attention-deficit/hyperactivity disorder. Am J Health Syst Pharm. 2014 Jul 15;71(14):1163-70.
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PubMed: PM23611637

9. McBurnett K, Starr HL. OROS methylphenidate hydrochloride for adult patients with attention deficit/hyperactivity disorder. Expert Opin Pharmacother. 2011 Feb;12(2):315-24.
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PubMed: PM22454805

Additional References

11. Buck ML. Options for the management of attention deficit/hyperactivity (ADHD). Pediatric Pharmacotherapy [Internet]. 2011 Mar [cited 2015 Aug 27];17(3). Available from: http://medicine.virginia.edu/clinical/departments/pediatrics/education/pharm-news/current/201103.pdf