

CADTH RAPID RESPONSE REPORT: REFERENCE LIST

Cabergoline or Quinagolide versus Bromocriptine for Hyperprolactinemia with or without Prolactinoma: Clinical Effectiveness, Cost-Effectiveness, and Guidelines

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Research Questions

1. What is the clinical effectiveness of cabergoline versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma?
2. What is the cost-effectiveness of cabergoline versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma?
3. What is the clinical effectiveness of quinagolide versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma?
4. What is the cost-effectiveness of quinagolide versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma?
5. What are the evidence-based guidelines regarding medication therapy for patients with hyperprolactinemia with or without prolactinoma?

Key Findings

Four systematic reviews (three with meta-analyses), one randomized controlled trial, and five non-randomized studies were identified regarding the clinical effectiveness of cabergoline versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma. One evidence-based guideline was identified regarding medication therapy for patients with hyperprolactinemia.

Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE ALL via Ovid, the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused Internet search. The search strategy was comprised of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were Cabergoline or Quinagolide and Hyperprolactinemia. Search filters were applied to limit retrieval to health technology assessments, systematic reviews, meta-analyses, or network meta-analyses, randomized controlled trials, controlled clinical trials, or any other type of clinical trial, economic studies and guidelines. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and September 11, 2019. Internet links were provided, where available.

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 all ages diagnosed with hyperprolactinemia, with or without prolactinoma
Intervention	Q1-2: Cabergoline Q3-4: Quinagolide [dopamine agonist for hyperprolactinemia with or without prolactinoma] Q5: Any medication therapy
Comparator	Q1-4: Bromocriptine Q5: No comparators
Outcomes	Q1&3: Clinical effectiveness (e.g., serum prolactin level, amenorrhea/oligomenorrhea in women, galactorrhoea, pregnancy, gonadal function, serum testosterone level, pituitary tumour mass, visual abnormalities, tumour-related headaches) Q2&4: Cost-effectiveness Q5: Guidelines
Study Designs	Health technology assessment, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines

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, non-randomized studies, economic evaluations, and evidence-based guidelines.

Four systematic reviews (three with meta-analyses),¹⁻⁴ one randomized controlled trial,⁵ and five non-randomized studies⁶⁻¹⁰ were identified regarding the clinical effectiveness of cabergoline versus bromocriptine as a first-line medication therapy for patients with hyperprolactinemia with or without prolactinoma. No systematic reviews, meta-analyses, randomized controlled trials, or non-randomized studies were identified regarding the clinical effectiveness of quinagolide versus bromocriptine. One evidence-based guideline was identified regarding medication therapy for patients with hyperprolactinemia.¹¹ No relevant health technology assessments or economic evaluations were identified.

Additional references of potential interest are provided in the appendix.

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

1. Huang HY, Lin SJ, Zhao WG, Wu ZB. Cabergoline versus bromocriptine for the treatment of giant prolactinomas: a quantitative and systematic review. *Metab Brain Dis.* 2018 06;33(3):969-976.
[PubMed: PM29546691](https://pubmed.ncbi.nlm.nih.gov/29546691/)

2. Triantafilo N, Castro-Gutierrez V, Rada G. Cabergoline or bromocriptine for prolactinoma? *Medwave*. 2016 Sep 15;16(Suppl3):e6545.
[PubMed: PM27689434](#)
3. Wang AT, Mullan RJ, Lane MA, et al. Treatment of hyperprolactinemia: a systematic review and meta-analysis. *Syst Rev*. 2012 Jul 24;1:33.
[PubMed: PM22828169](#)
4. dos Santos Nunes V, El Dib R, Boguszewski CL, Nogueira CR. Cabergoline versus bromocriptine in the treatment of hyperprolactinemia: a systematic review of randomized controlled trials and meta-analysis. *Pituitary*. 2011 Sep;14(3):259-265.
[PubMed: PM21221817](#)

Randomized Controlled Trials

5. Motazedian S, Babakhani L, Fereshtehnejad SM, Mojthahedi K. A comparison of bromocriptine & cabergoline on fertility outcome of hyperprolactinemic infertile women undergoing intrauterine insemination. *Indian J Med Res*. 2010 May;131:670-674.
[PubMed: PM20516539](#)

Non-Randomized Studies

6. Dogansen SC, Selcukbiricik OS, Tanrikulu S, Yarman S. Withdrawal of dopamine agonist therapy in prolactinomas: in which patients and when? *Pituitary*. 2016 Jun;19(3):303-310.
[PubMed: PM26830552](#)
7. Arduc A, Gokay F, Isik S, et al. Retrospective comparison of cabergoline and bromocriptine effects in hyperprolactinemia: a single center experience. *J Endocrinol Invest*. 2015 Apr;38(4):447-453.
[PubMed: PM25421155](#)
8. Krysiak R, Okopien B. Different effects of cabergoline and bromocriptine on metabolic and cardiovascular risk factors in patients with elevated prolactin levels. *Basic Clin Pharmacol Toxicol*. 2015 Mar;116(3):251-256.
[PubMed: PM25123447](#)
9. Malik S, Hussain SZ, Basit R, et al. Demographic characteristics, presentations and treatment outcome of patients with prolactinoma. *J Ayub Med Coll Abbottabad*. 2014 Jul-Sep;26(3):269-274.
[PubMed: PM25671924](#)
10. Bahceci M, Sismanoglu A, Ulug U. Comparison of cabergoline and bromocriptine in patients with asymptomatic incidental hyperprolactinemia undergoing ICSI-ET. *Gynecol Endocrinol*. 2010 Jul;26(7):505-508.
[PubMed: PM20459348](#)

Economic Evaluations

No literature identified.

Guidelines and Recommendations

11. Melmed S, Casanueva FF, Hoffman AR, et al. Diagnosis and treatment of hyperprolactinemia: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* 2011 Feb;96(2):273-88.
[PubMed: PM21296991](#)

Appendix — Further Information

Systematic Reviews – Alternative Outcome

12. Xia MY, Lou XH, Lin SJ, Wu ZB. Optimal timing of dopamine agonist withdrawal in patients with hyperprolactinemia: a systematic review and meta-analysis. *Endocrine*. 2018 01;59(1):50-61.
[PubMed: PM29043560](#)

Non-Randomized Studies

No Comparator

13. Araujo B, Belo S, Carvalho D. Pregnancy and tumor outcomes in women with prolactinoma. *Exp Clin Endocrinol Diabetes*. 2017 Nov;125(10):642-648.
[PubMed: PM28704852](#)
14. Vroonen L, Lancellotti P, Garcia MT, et al. Prospective, long-term study of the effect of cabergoline on valvular status in patients with prolactinoma and idiopathic hyperprolactinemia. *Endocrine*. 2017 01;55(1):239-245.
[PubMed: PM27709470](#)
15. Halperin I, Aller J, Varela C, et al. No clinically significant valvular regurgitation in long-term cabergoline treatment for prolactinoma. *Clin Endocrinol (Oxf)*. 2012 Aug;77(2):275-280.
[PubMed: PM22288503](#)

Outcomes Not Specified

16. Acharya SV, Gopal RA, Bandgar TR, Joshi SR, Menon PS, Shah NS. Clinical profile and long term follow up of children and adolescents with prolactinomas. *Pituitary*. 2009;12(3):186-189.
[PubMed: PM18946737](#)

Review Articles

17. Vilar L, Abucham J, Albuquerque JL, et al. Controversial issues in the management of hyperprolactinemia and prolactinomas - an overview by the Neuroendocrinology Department of the Brazilian Society of Endocrinology and Metabolism. *Arch Endocrinol Metab*. 2018 Mar-Apr;62(2):236-263.
[PubMed: PM29768629](#)
18. Iglesias P, Díez JJ. Macroprolactinoma: a diagnostic and therapeutic update, *QJM*. 2013 Jun;106(6):495-504.
[PubMed: PM23329574](#)
19. Valassi E, Klibanski A, Biller BM. Clinical Review#: Potential cardiac valve effects of dopamine agonists in hyperprolactinemia. *J Clin Endocrinol Metab*. 2010 Mar;95(3):1025-1033.
[PubMed: PM20130078](#)