

CADTH Reference List

Dexamethasone Intravitreal Implant for Macular Edema Following Central Retinal Vein Occlusion

July 2022

Authors: Candice Madakadze, Mê-Linh Lê, Aleksandra Grobelna

Cite As: *Dexamethasone Intravitreal Implant for Macular Edema Following Central Retinal Vein Occlusion*. (CADTH reference list). Ottawa: CADTH; 2022 July.

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Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

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Key Messages

- One non-randomized study was identified regarding the clinical effectiveness of dexamethasone intravitreal implant versus no treatment for the treatment of macular edema following central retinal vein occlusion.
- One randomized controlled trial was identified regarding the clinical effectiveness of dexamethasone intravitreal implant versus alternative interventions for the treatment of macular edema following central retinal vein occlusion.
- No economic evaluations were identified regarding the cost-effectiveness of dexamethasone intravitreal implant versus no treatment or placebo for the treatment of macular edema following central retinal vein occlusion.
- No economic evaluations were identified regarding the cost-effectiveness of dexamethasone intravitreal implant versus alternative interventions for the treatment of macular edema following central retinal vein occlusion.
- One evidence-based guideline was identified regarding the use of dexamethasone intravitreal implant for macular edema following central retinal vein occlusion.

Research Questions

1. What is the clinical effectiveness of dexamethasone intravitreal implant versus no treatment or placebo for the treatment of macular edema following central retinal vein occlusion?
2. What is the clinical effectiveness of dexamethasone intravitreal implant versus alternative interventions for the treatment of macular edema following central retinal vein occlusion?
3. What is the cost-effectiveness of dexamethasone intravitreal implant versus no treatment or placebo for the treatment of macular edema following central retinal vein occlusion?
4. What is the cost-effectiveness of dexamethasone intravitreal implant versus alternative interventions for the treatment of macular edema following central retinal vein occlusion?
5. What are the evidence-based guidelines regarding the use of dexamethasone intravitreal implant for macular edema following central retinal vein occlusion?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources, including Ovid, MEDLINE, Embase, the Cochrane Database of Systematic Reviews, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy consisted of both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were intravitreal dexamethasone, macular edema, and central retinal vein occlusion. A broader guideline search was also completed using the search concepts of macular edema and central retinal vein occlusion. The search was limited to English-language

Table 1: Selection Criteria

Criteria	Description
Population	Adults with macular edema following central retinal vein occlusion
Intervention	Dexamethasone intravitreal implant (e.g., Ozurdex)
Comparator	Q1 and Q3: No treatment, placebo Q2 and Q4: Laser photocoagulation therapy, triamcinolone acetonide, anti-VEGF drugs (e.g., bevacizumab, ranibizumab, aflibercept) Q5: Not applicable
Outcomes	Q1 and Q2: Clinical effectiveness (e.g., best corrected visual acuity, intraocular pressure, central foveal thickness, safety [e.g., adverse events, vision loss]) Q3 and Q4: Cost-effectiveness (e.g., cost per quality-adjusted life-year gained, incremental cost-effectiveness ratio) Q5: Recommendations regarding the use of dexamethasone intravitreal implant for the treatment of macular edema following central retinal vein occlusion
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies, economic evaluations, evidence-based guidelines

Q = question; VEGF = vascular endothelial growth factor.

documents published between January 1, 2012, and June 23, 2022. Internet links were provided, if available.

Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in [Table 1](#). Full texts of study publications were not reviewed. Open-access, full-text versions of evidence-based guidelines were reviewed when available.

Results

One non-randomized study² was identified regarding the clinical effectiveness of dexamethasone intravitreal implant versus no treatment or placebo for the treatment of macular edema following central retinal vein occlusion. One randomized controlled trial¹ was identified regarding the clinical effectiveness of dexamethasone intravitreal implant versus alternative interventions for the treatment of macular edema following central retinal vein occlusion. No relevant economic evaluations regarding cost-effectiveness were identified regarding dexamethasone intravitreal implant versus no treatment, placebo, or alternative interventions for the treatment of macular edema following central retinal vein occlusion. One evidence-based guideline³ was identified regarding the use of dexamethasone intravitreal implant for macular edema following central retinal vein occlusion. No relevant health technology assessments or systematic reviews were identified.

Additional references of potential interest that did not meet the inclusion criteria are provided in [Appendix 1](#).

References

Health Technology Assessments

No literature identified.

Systematic Reviews

No literature identified.

Randomized Controlled Trials

1. Hoerauf H, Feltgen N, Weiss C, et al. Clinical efficacy and safety of ranibizumab versus dexamethasone for central retinal vein occlusion (COMRADE C): a European label study. *Am J Ophthalmol.* 2016;169:258-267. [PubMed](#)

Non-Randomized Studies

2. Querques G, Lattanzio R, Querques L, et al. Impact of intravitreal dexamethasone implant (Ozurdex) on macular morphology and function. *Retina.* 2014;34(2):330-341. [PubMed](#)

Economic Evaluations

No literature identified.

Guidelines and Recommendations

3. National Institute for Health and Care Excellence. Dexamethasone intravitreal implant for the treatment of macular oedema secondary to retinal vein occlusion. (*Technology appraisal guidance TA229*) 2011; <https://www.nice.org.uk/guidance/ta229>. Accessed 2022 Jun 27. Refer to Section 1.1 (p. 4)

Appendix 1: References of Potential Interest

Systematic Reviews

Mixed Population – Retinal Vein Occlusion

- Hu Q, Li H, Xu W, Du Y, Ma C, He J. Comparison between Ozurdex and intravitreal anti-vascular endothelial growth factor treatment for retinal vein occlusion-related macular edema: A systematic review and meta-analysis of randomized controlled trials. *Indian J Ophthalmol*. 2019;67(11):1800-1809. [PubMed](#)

Population Age Not Specified

- Qian T, Zhao M, Wan Y, Li M, Xu X. Comparison of the efficacy and safety of drug therapies for macular edema secondary to central retinal vein occlusion. *BMJ Open*. 2018;8(12):e022700. [PubMed](#)

Randomized Controlled Trials

Population Age Not Specified

- Mishra SK, Gupta A, Patyal S, et al. Intravitreal dexamethasone implant versus triamcinolone acetonide for macular oedema of central retinal vein occlusion: quantifying efficacy and safety. *Int J Retina Vitreous*. 2018;4:13. [PubMed](#)
- Gado AS, Macky TA. Dexamethasone intravitreal implant versus bevacizumab for central retinal vein occlusion-related macular oedema: a prospective randomized comparison. *Clin Experiment Ophthalmol*. 2014;42(7):650-655. [PubMed](#)

Non-Randomized Studies

Population Age Not Specified

- De Salles MC, Epstein D. Real-life study of the use of anti-VEGF therapy versus dexamethasone implant for treatment of macular edema in retinal vein occlusion. *Graefes Arch Clin Exp Ophthalmol*. 2021;259(9):2653-2660. [PubMed](#)
- Gale R, Gill C, Pikoula M, et al. Multicentre study of 4626 patients assesses the effectiveness, safety and burden of two categories of treatments for central retinal vein occlusion: intravitreal anti-vascular endothelial growth factor injections and intravitreal Ozurdex injections. *Br J Ophthalmol*. 2021;105(11):1571-1576. [PubMed](#)
- Yap TE, Husein S, Miralles de Imperial-Ollero JA, Colizzi B, Cordeiro MF, Younis S. The efficacy of dexamethasone implants following anti-VEGF failure for macular oedema in retinal vein occlusion. *Eur J Ophthalmol*. 2021;31(6):3214-3222. [PubMed](#)
- Yucel OE, Birinci H, Sullu Y. The short-term efficacy of intravitreal ranibizumab, aflibercept and dexamethasone implant in the treatment of macular edema due to non-ischemic central retinal vein occlusion. *Int Ophthalmol*. 2019;39(4):891-901. [PubMed](#)
- Bulut MN, Calli U, Akcay G, Kivrak U, Bulut K, Ozerturk Y. Effects of dexamethasone implant on multifocal electroretinography in central retinal vein occlusion. *J*. 2018;13(1):23-28. [PubMed](#)
- Feltgen N, Hattenbach LO, Bertelmann T, et al. Comparison of ranibizumab versus dexamethasone for macular oedema following retinal vein occlusion: 1-year results of the COMRADE extension study. *Acta Ophthalmol (Oxf)*. 2018;96(8):e933-e941. [PubMed](#)
- Winterhalter S, Eckert A, Vom Brocke GA, et al. Real-life clinical data for dexamethasone and ranibizumab in the treatment of branch or central retinal vein occlusion over a period of six months. *Graefes Arch Clin Exp Ophthalmol*. 2018;256(2):267-279. [PubMed](#)
- Battaglia Parodi M, Iacono P, Scaramuzzi M, Bandello F. Outer retinal layer changes after dexamethasone implant for central retinal vein occlusion. *Retina*. 2017;37(10):1888-1895. [PubMed](#)
- Chatziralli I, Theodosiadis G, Kabanarou SA, et al. Ranibizumab versus dexamethasone implant for central retinal vein occlusion: the RANIDEX study. *Graefes Arch Clin Exp Ophthalmol*. 2017;255(10):1899-1905. [PubMed](#)
- Gu X, Yu X, Song S, Dai H. Intravitreal dexamethasone implant versus intravitreal ranibizumab for the treatment of macular edema secondary to retinal vein occlusion in a Chinese population. *Ophthalmic Res*. 2017;58(1):8-14. [PubMed](#)
- Battaglia Parodi M, Iacono P, Sacconi R, Parravano M, Varano M, Bandello F. Dexamethasone implant for macular edema secondary to central retinal vein occlusion in patients younger than 50 years. *Retina*. 2015;35(7):1381-1386. [PubMed](#)
- Parodi MB, Iacono P, Petruzzi G, Parravano M, Varano M, Bandello F. Dexamethasone implant for macular edema secondary to ischemic retinal vein occlusions. *Retina*. 2015;35(7):1387-1392. [PubMed](#)
- Parodi MB, Iacono P, Sacconi R, Parravano M, Varano M, Bandello F. Dexamethasone implant for macular edema secondary to central retinal vein occlusion in patients younger than 50 years. *Retina*. 2015;35(7):1381-1386. [PubMed](#)
- Coscas G, Augustin A, Bandello F, et al. Retreatment with Ozurdex for macular edema secondary to retinal vein occlusion. *Eur J Ophthalmol*. 2014;24(1):1-9. [PubMed](#)
- Nghiem-Bufferet S, Fajnkuchen F, Buffet M, et al. Intravitreal ranibizumab and/or dexamethasone implant for macular edema secondary to retinal vein occlusion. *Ophthalmologica*. 2014;232(4):216-222. [PubMed](#)
- Parodi MB, Iacono P, De Benedetto U, Cascavilla M, Bandello F. Rebound effect after intravitreal dexamethasone implant for the treatment of macular edema secondary to central retinal vein occlusion. *J Ocul Pharmacol Ther*. 2012;28(6):566-568. [PubMed](#)

Mixed Population

24. Pang JP, Son G, Yoon YH, Kim JG, Lee JY. Combined vitrectomy with intravitreal dexamethasone implant for refractory macular edema secondary to diabetic retinopathy, retinal vein occlusion, and noninfectious posterior uveitis. *Retina*. 2020;40(1):56-65. [PubMed](#)
25. Vural E, Kadayifcilar S, Eldem B. Visual and anatomic outcomes of cases that have received dexamethasone implant treatment for venous occlusion. *Retina-Vitreus*. 2019;28(3):239-245.
26. Blanc J, Deschasse C, Kodjikian L, Dot C, Bron AM, Creuzot-Garcher C. Safety and long-term efficacy of repeated dexamethasone intravitreal implants for the treatment of cystoid macular edema secondary to retinal vein occlusion with or without a switch to anti-VEGF agents: a 3-year experience. *Graefes Arch Clin Exp Ophthalmol*. 2018;256(8):1441-1448. [PubMed](#)
27. Nagpal M, Mehrotra N, Juneja R, Jain H. Dexamethasone implant (0.7 mg) in Indian patients with macular edema: real-life scenario. *Taiwan J Ophthalmol*. 2018;8(3):141-148. [PubMed](#)
28. Pielen A, Buhler AD, Heinzelmann SU, Bohringer D, Ness T, Junker B. Switch of intravitreal therapy for macular edema secondary to retinal vein occlusion from anti-veg to dexamethasone implant and vice versa. *Journal Ophthalmol*. 2017;2017:5831682. [PubMed](#)
29. Yilmaz I, Saracoglu B, Ahmet S, Baz O, Ozkaya A, Taskapili M. Intraocular pressure changes after single dexamethasone implant injection: A real life clinical study, review of 1110 cases. *Retina-Vitreus*. 2017;26(2):99-104.
30. Alagoz N, Alagoz C, Yilmaz I, et al. Immediate intraocular pressure changes following intravitreal dexamethasone implant. *J Ocul Pharmacol Ther*. 2016;32(1):44-49. [PubMed](#)
31. Demirel S, Yanik O, Batioglu F, Ozmert E, Bas Z. Aqueous flare as an indicator of response to dexamethasone treatment in retinal vein occlusions: a pilot study. *Curr Eye Res*. 2016;41(5):700-707. [PubMed](#)
32. Glacet-Bernard A, Sellam A, Coscas F, Coscas G, Souied EH. Optical coherence tomography angiography in retinal vein occlusion treated with dexamethasone implant: a new test for follow-up evaluation. *Eur J Ophthalmol*. 2016;26(5):460-468. [PubMed](#)
33. Michalska-Malecka K, Gaborek A, Nowak M, Halat T, Pawlowska M, Spiewak D. Evaluation of the effectiveness and safety of glucocorticoids intravitreal implant therapy in macular edema due to retinal vein occlusion. *Clin Interv Aging*. 2016;11:699-705. [PubMed](#)
34. Augustin AJ, Holz FG, Haritoglou C, et al. Retrospective, observational study in patients receiving a dexamethasone intravitreal implant 0.7 mg for macular oedema secondary to retinal vein occlusion. *Ophthalmologica*. 2015;233(1):18-26. [PubMed](#)
35. Sheu SJ, Wu TT, Horng YH. Efficacy and safety of dexamethasone intravitreal implant for treatment of refractory macular edema secondary to retinal vein occlusion in Taiwan. *J Ocul Pharmacol Ther*. 2015;31(8):461-467. [PubMed](#)

Economic Evaluations

Mixed Population – Retinal Vein Occlusion

36. Kowalski JW, Hayward E, Mazzi S, et al. Economic evaluation with dexamethasone biodegradable intravitreal implant for the treatment of patients with macular edema following retinal vein occlusion in Italy. *Pharmacoeconomics - Italian Research Articles*. 2012;14(1):29-38.

Guidelines and Recommendations

Unclear Methodology

37. Sivaprasad S, Amoaku WM, Hykin P. The Royal College of Ophthalmologists Guidelines on retinal vein occlusions: executive summary. *Eye (Basingstoke)*. 2015;29(12):1633-1638. [PubMed](#)
Refer to Treatment Algorithm for CRVO (p. 1635).