Health Quality Ontario

Let's make our health system healthier

Cervical Artificial Disc Replacement Versus Fusion for Cervical Degenerative Disc Disease: Health Quality Ontario Recommendation

FINAL RECOMMENDATION

- Health Quality Ontario, under the guidance of the Ontario Health Technology Advisory Committee, recommends publicly funding cervical artificial disc replacement for cervical degenerative disc disease

RATIONALE FOR THE RECOMMENDATION

The Ontario Health Technology Advisory Committee has reviewed the findings of the health technology assessment[1] and concluded that cervical artificial disc replacement is likely to be effective and safe and offers some advantages over anterior cervical discectomy and fusion (often simply called "fusion"), including shorter recovery time, reduced need for re-operation, and maintenance of more normal spinal movement. Cervical artificial disc replacement also appears to be reasonably good value for money.

Committee members considered the lived experience of people with cervical degenerative disc disease who described their preferences for the social, clinical, and safety benefits of cervical artificial disc replacement. Based on these considerations, Health Quality Ontario decided to recommend public funding for cervical artificial disc replacement.

Public Comment: Held October 1 to 22, 2018.

Ontario
Health Quality Ontario

Decision Determinants for Cervical Artificial Disc Replacement Versus Fusion for Cervical Degenerative Disc Disease

Decision Criteria	Subcriteria	Decision Determinants Considerations
Overall clinical benefit How likely is the health technology/intervention to result in high, moderate, or low overall benefit?	**Effectiveness** How effective is the health technology/ intervention likely to be (taking into account any variability)?	In people with cervical degenerative disc disease, C-ADR is an effective alternative to fusion and can decrease pain and improve symptom-related disability and health-related quality of life. C-ADR allows the neck to move more normally than fusion and likely result in better outcomes in terms of recovery, return to work, technical failures, and need for re-operation at the original surgery site.
	Safety How safe is the health technology/ intervention likely to be?	C-ADR and fusion have good safety profiles; surgery-related major adverse events are uncommon.
	Burden of illness What is the likely size of the burden of illness pertaining to this health technology/intervention?	One American survey reported an average annual incidence rate of 83 per 100,000 people for cervical degenerative disc disease with radiculopathy (nerve root compression). This means that about 9,700 Ontario adults have symptoms of cervical nerve compression, although the majority would not be candidates for C-ADR.
	Need How large is the need for this health technology/intervention?	People with symptoms related to cervical nerve or cord compression have serious functional disabilities, including disabling pain in the neck and/or arm, weakness, paresthesia (numbness in the arms or legs), tingling in the arms or hands, and loss of balance and coordination.
Consistency with expected societal and ethical values[a] How likely is adoption of the health technology/intervention to be congruent with societal and ethical values?	**Societal values** How likely is adoption of the health technology/intervention to be congruent with expected societal values?	Participants reported a desire for increased access to surgical options for cervical degenerative disc disease and greater autonomy in decision-making. They perceived C-ADR as safe, effective, and consistent with the societal value to provide treatment that is safe and effective.
	Ethical values How likely is adoption of the health technology/intervention to be congruent with expected ethical values?	Because C-ADR is no worse than fusion in terms of effectiveness and because C-ADR is associated with some better outcomes than fusion, C-ADR appears to be an ethical option for treating cervical degenerative disc disease.
Value for money How efficient is the health technology/ intervention likely to be?	**Economic evaluation** How efficient is the health technology/ intervention likely to be?	C-ADR appears to be cost-effective compared with fusion for both one-level (best estimate of $11,607/QALY) and two-level degeneration (best estimate of $16,782/QALY). Various sensitivity and scenario analyses confirm the robustness of these estimates.

Decision Criteria	Subcriteria	Decision Determinants Considerations
Feasibility of adoption into health system How feasible is it to adopt the health technology/intervention into the Ontario health care system?	**Economic feasibility** How economically feasible is the health technology/intervention?	Over the next five years, the best estimates of the total budget impact of publicly funding C-ADR are $916,326 for one-level procedures and $705,628 for two-level procedures. For one-level procedures, the estimated net budget impact increases from $7,243 (18 procedures) in the first year to $395,623 (196 procedures) in the fifth year. For two-level procedures, the estimated net budget impact increases from $5,460 (7 procedures) in the first year to $283,689 (76 procedures) in the fifth year.
	Organizational feasibility How organizationally feasible is it to implement the health technology/ intervention?	The cost of training and specialized instruments needed for C-ADR procedures are included in the cost of providing C-ADR surgery.

Abbreviations: C-ADR, cervical artificial disc replacement; QALY, quality-adjusted life-year.

[a]Anticipated or assumed common ethical and societal values held in regard to the target condition, target population, or treatment options. Unless there is evidence from scientific sources to corroborate the true nature of ethical and societal values, expected values are considered.

REFERENCE

1) Health Quality Ontario. Cervical artificial disc replacement versus fusion for cervical degenerative disc disease: a health technology assessment. Ont Health Technol Assess Ser [Internet]. 2019 Feb;19(3): 1–223. Available from: http://www.hqontario.ca/evidence-to-improve-care/journal-ontario-health-technology-assessment-series

Disclaimer

About Health Quality Ontario

About the Ontario Health Technology Advisory Committee

How to Obtain Recommendation Reports From Health Quality Ontario

Health Quality Ontario
130 Bloor Street West, 10th Floor
Toronto, Ontario
M5S 1N5
Tel: 416-323-6868
Toll Free: 1-866-623-6868
Fax: 416-323-9261
Email: EvidenceInfo@hqontario.ca
www.hqontario.ca

ISBN 978-1-4868-3116-6 (PDF)

Citation

Health Quality Ontario. Cervical artificial disc replacement versus fusion for cervical degenerative disc disease: Health Quality Ontario recommendation [Internet]. Toronto (ON): Queen's Printer for Ontario; 2019 February. 4 pp. Available from: http://www.hqontario.ca/evidence-to-improve-care/recommendations-and-reports/OHTAC/cervical-disc