IN BRIEF A Summary of the Evidence

Dialysis Modalities for the Treatment of End-Stage Kidney Disease: A Review

Key Messages

- **For patients diagnosed with end-stage kidney disease (ESKD) deemed eligible for home therapies by their care provider, self-care home-based dialysis either with home hemodialysis (HD) or peritoneal dialysis (PD) is recommended.**
- **Patient eligibility, available capacity, reimbursement, patient preference, awareness and education about dialysis modalities, and quality of life should be considered prior to treatment assignment.**

Context

End-stage kidney disease (ESKD) occurs when kidneys have stopped working well enough for survival without dialysis or a kidney transplant. When kidney transplantation is not an option, most patients living with ESKD are treated with dialysis, which is often a life-long treatment. Hemodialysis (HD) and peritoneal dialysis (PD) are the two main types of dialysis provided under Canadian kidney care programs. Patients can have dialysis in a hospital or specialized dialysis units (in-centre), or at home. Dialysis can be administered with the assistance of a health care professional (assisted dialysis) or by the patient and/or a caregiver without the assistance of a health care professional (self-care dialysis).

Technology

Hemodialysis: The patient's blood is circulated to an external dialysis machine that filters out wastes and extra water before returning the blood to the body. It can be done in-centre (hospital, satellite units) or at home, either with assistance or by self-care. Usually, each treatment session lasts approximately three to four hours and has to be repeated several times a week. Home HD modalities include conventional (three days a week; usually three to four hours per session), short-daily (six to seven days a week; two to three hours per session), and nocturnal (during sleep).

Peritoneal Dialysis: PD uses the lining of the abdomen and a solution called dialysate to filter and clean blood. Dialysate absorbs the waste and fluid from the blood, while the abdomen lining (peritoneum) acts as a filter. PD can be done at home, either during sleep (automated PD; performed by a machine) or while awake (continuous ambulatory PD; manual exchange of solution) and with assistance or self-care. A permanent catheter in the abdomen is required.

Issue

According to Canadian Institute for Health Information data, an estimated 24,114 Canadians were being treated with dialysis in 2013, with an increasing number of patients being initiated on long-term dialysis every year. While home-based dialysis options (HD and PD) and other dialysis delivery models (i.e., self-care in-centre hemodialysis [ICHD], assisted PD and home HD) may achieve similar clinical results for eligible patients and may be less costly than conventional ICHD, the most frequently used modality in all provinces remains ICHD. Based on the potential comparable clinical effectiveness, cost savings, and the potential that non-conventional ICHD dialysis modalities may be more desirable from a patient and caregiver perspective, it is often argued that home dialysis modalities, particularly PD, may be underused among eligible patients in Canada.

Methods

CADTH conducted a health technology assessment (HTA) of the clinical effectiveness and cost-effectiveness of dialysis modalities for the treatment of ESKD. A review of the evidence on patient experiences and perspectives, ethical issues, and implementation considerations for the dialysis modalities was also included in the HTA. The Health Technology Expert Review Panel developed recommendations on the appropriate use of dialysis modalities based on the evidence presented in the HTA report.

Results

A review of the evidence in six systematic reviews and 34 primary studies found that, overall, home-based modalities appear to offer clinical benefits similar to ICHD. No consistent differences in patient health-related quality of life outcomes between home HD and ICHD or PD and ICHD were identified, and there is no clear evidence of a survival benefit with any specific dialysis modality.

CADTH

However, younger patients on home HD and PD may have better survival outcomes compared with elderly patients on these modalities.

Home-based therapies, including PD (non-assisted) and all home HD modalities, are less costly than ICHD for eligible patients, with conventional home HD being the least costly.

Patients' perspectives and experiences of specific dialysis modalities (home-based or in-centre) are affected by a range of factors. Patients want to be informed about all options available to them, and they want their treatment conditions to be least disruptive to their lives, their day-to-day activities, and their caregivers' lives.

The HTA also included a review of ethical considerations and implementation issues as they relate to the general patient population, as well as to specific groups of patients, including those living in rural or remote areas (geographical and infrastructure constraints affect freedom of treatment choice) and patients of Indigenous communities (with specific ESKD profiles and treatment needs).

Read more about CADTH and its review at:

www.cadth.ca/dialysis

Questions or comments about CADTH or this In Brief?

Learn more:
cadth.ca

Contact us:
requests@cadth.ca

Follow us on Twitter:
@CADTH_ACMTS

Subscribe to our E-Alert and *New at CADTH* newsletter:
cadth.ca/subscribe.

DISCLAIMER

The information in this document is intended to help health care decision-makers, patients, health care professionals, health systems leaders, and policy-makers make well-informed decisions and thereby improve the quality of health care services. This information should not be used as a substitute for the application of clinical judgment in respect of the care of a particular patient or other professional judgment in any decision-making process nor is it intended to replace professional medical advice. While The Canadian Agency for Drugs and Technologies in Health (CADTH) has taken care in the preparation of this document to ensure that its contents are accurate, complete, and up-to-date, CADTH does not make any guarantee to that effect. CADTH is not responsible for any errors or omissions or injury, loss, or damage arising from or as a result of the use (or misuse) of any information contained in or implied by the information in this document.

CADTH takes sole responsibility for the final form and content of this document. The views expressed herein are those of CADTH and do not necessarily reflect the views of our funders.

ABOUT CADTH

CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs and medical devices in our health care system.

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

Ce document est également disponible en français.

March 2017

CADTH Evidence Driven.

cadth.ca