Patient and caregiver involvement in a multicentre clustered hemodialysis trial

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Nearly 23 000 Canadians (about 3 million people worldwide) are currently living with kidney failure and receive maintenance hemodialysis to sustain life.[1] Patients with kidney failure often require three- to four-hour hemodialysis treatments thrice weekly to clear toxins adequately from their blood and to remove excess fluid. When fluid is removed from the body during hemodialysis (about 1–3 L per session), systolic blood pressure often drops by 20–30 mm Hg.[2] In a six-month period, about 75% of patients receiving hemodialysis will experience at least one episode of intradialytic hypotension.[3] These drops in blood pressure are unpleasant for patients (they can lead to muscle cramping, fatigue and nausea) and can cause ischemic injury to the heart and brain.[4–6] Small studies suggest temperature-reduced dialysis lowers the risk of intradialytic hypotension by up to 70% compared with standard-temperature dialysis (36.5°C).[6] This may reduce the risk of cardiovascular events and death.[6–8]

It is important to understand the effects of interventions that have the potential to reduce the frequency of drops in blood pressure during hemodialysis, as these frequent hypotensive events are associated with morbidity and mortality.[5] The needs of patients also require attention, as it has been previously reported that 80% of clinical hemodialysis research does not address the top research priorities of patients.[9] Patients receiving hemodialysis have expressed a strong desire to have healthier hearts, as suggested by the following statement: "What are the best ways to promote heart health, including the management of my blood pressure?"[10] To understand this better, we developed the Major Outcomes with Personalized Dialysate Temperature (MyTEMP) cluster randomized trial (ClinicalTrials.gov NCT02628366).

This pragmatic trial aims to determine whether patients cared for in hemodialysis centres and randomly assigned to personalized reduced-temperature hemodialysis have better outcomes when compared with patients cared for in hemodialysis centres using a standard dialysate temperature of 36.5°C (non-personalized). High-priority outcomes for patients, that could be affected by the MyTEMP intervention, were chosen based on evidence. In the intervention arm, a nurse measures the patient's body temperature before the start of each hemodialysis session and sets the dialysis temperature at 0.5°C to 0.9°C below the patient's predialysis body temperature. The randomly assigned treatment (personalized or standard temperature) is delivered by dialysis nurses as it would in routine care. Eighty-four hemodialysis centres in Ontario, which currently care for about 7500 patients, are participating in the MyTEMP trial.

The trial met all Tri-Council Policy Statement (TCPS-2) criteria to waive traditional patient-consent methods where patients typically opt in to a trial. Problems did arise in this process, as local ethic boards had various perspectives on the intervention's minimal risk (a TCPS-2 criterion for waived patient consent). This was resolved through the presentation of results from pilot studies and systematic reviews, and the argument that reduced dialysate temperature may have occurred in usual care before MyTEMP's implementation. As a waiver for patient consent was granted, MyTEMP was implemented by garnering approval from a unit's medical director to alter the dialysate temperature for all patients; however, both patients and physicians reserve the right to alter the dialysate temperature from this allocated protocol. This method of altered patient consent was granted for all MyTEMP participating sites through various research ethics boards (both local and centralized) across the province.

KEY POINTS

- A personalized lower dialysate temperature may reduce patients' symptoms related to dialysis and improve cardiovascular outcomes.
- The Major Outcomes with Personalized Dialysate Temperature (MyTEMP) clinical trial aims to determine whether patients cared for in hemodialysis centres and randomly assigned to personalized reduced-temperature hemodialysis have better outcomes than patients cared for in hemodialysis centres using a standard dialysate temperature.
- Discussions with a patient-caregiver partner, as well as insight from the patient and family advisory councils, have led to additional outcomes for analysis and the development of a substudy that focuses on patient symptomology.
- Given that most patients receiving hemodialysis have poor quality of life and life expectancy, their time commitment to patient partnership may be limited; it is important to consider these challenges in scheduling meetings, and in orienting patients who participate on the research team.

We developed and are continuing to conduct MyTEMP guided by patient advice. During the initial study design period of MyTEMP, we presented the trial concept (summary, design, outcomes and follow-up) to several renal patient and family advisory councils (PFACs) across Ontario for open discussion. Through this open dialogue, we obtained input on the trial outcomes of interest and the acceptability of altered methods of patient consent. All PFACs were supportive of the trial design and provided suggestions for other outcomes related to the intervention (e.g., major falls and fractures). The suggestions made by the PFACs were incorporated into the research study. The PFACs also helped improve the readability of a study letter that is provided to patients by each centre's health care team to inform them about MyTEMP, which includes details about how patients can opt out of the trial intervention if they desire to do so. To date, about 90% of patients have adhered to the randomly allocated therapy. MyTEMP researchers have also routinely corresponded with a caregiver partner associated with our research team. Using insights from the caregiver partner's experience, as well as those early conversations with the PFACs, the MyTEMP team is developing a patient-reported outcome substudy designed to assess outcomes that are highly relevant to patients, and which may be biologically affected by the dialysate temperature (e.g., time to recover from dialysis, pain and tiredness). Patient partners will help inform substudy data collection, the overall trial data analysis, and the knowledge translation strategy to increase the overall impact of MyTEMP.

Hemodialysis-related studies with patient engagement do have unique challenges. Trials, such as MyTEMP, typically require several years of development and follow-up. Patients receiving hemodialysis have a poor prognosis. In some cases, a patient engaged in the project may become too ill to participate or may die. The study team has since developed strategies to address illness and death for patients who are routinely involved in research studies. Strategies include meeting dates that align with the patient's dialysis treatment schedule, and to involve several patients to ensure at least one is available to meet on designated meeting dates. In addition, our patient-caregiver partner serves as a patient liaison, applying her skills as a facilitator and community coordinator. She orients patients to the project, prepares them for meetings, and helps identify and resolve any barriers patients may have participating in the research process.

The new evidence created with MyTEMP has the potential to provide benefits to patient care, survival and well-being (if the hypothesis holds true). It is also giving the renal community valuable experience in leading practices in patient partnership, to best address the existing challenges to producing meaningful research for physicians and patients.

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More information on this project is available at www.ossu.ca/IMPACTAwards.

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