

Tackling adherence to treatment on several fronts

March 27 2018



Dr. Bethany Foster, a pediatric nephrologist and scientist at the Research Institute of the McGill University Health Centre (RI-MUHC) and the Montreal Children's Hospital of the MUH. Credit: McGill University Health Centre

Learning to become self-sufficient and responsible is part of life's journey through the teen and young adult years. Mistakes are often made, and lessons are learned. However, for young kidney-graft patients, any mistake or failure in keeping to their strict immunosuppressive

therapy can lead to tragic results. In fact, low-adherence to medication remains a major contributor to the high level of organ rejection in this age group.

Transplant specialists and researchers from eight leading pediatric medical centres across Canada and the United States have united to help make a difference. Led by Dr. Bethany Foster, a pediatric nephrologist and scientist at the Research Institute of the McGill University Health Centre (RI-MUHC) and the Montreal Children's Hospital of the MUHC, the team conducted a clinical trial named TAKE-IT aimed at testing a new intervention to improve [adherence](#) to treatment among adolescent kidney transplant recipients. Their results are published today online in *The American Journal of Kidney Diseases (AJKD)*.

"Missing your anti-rejection medicine, even only a few times, can lead to graft failure," says Dr. Foster, corresponding author of the study, who is also a researcher from the Child Health and Human Development Program at the RI-MUHC and a professor of Medicine at McGill University. "Given the shortage of organs available for transplant, every failure is not only a loss for the patient but also a loss for the transplant community."

Medication non-adherence is a major problem in the 15 to 30 per cent of children in North America who have a chronic illness, resulting in significant morbidity and mortality. It is also believed to be responsible for millions of dollars in potentially avoidable healthcare costs.

TAKE-IT: Multiplying tactics to help young patients follow treatment

The TAKE-IT intervention used a combination of electronic medication monitoring and meetings with a personal coach every three months to

encourage and develop adherence behaviour. The researchers followed 169 adolescent and young adult kidney transplant recipients (aged 11 to 24 years old) for a year. Participants used the SimpleMed electronic pillbox, developed by the medical company Vaica, to monitor their medication-taking. The cohort of [patients](#) was divided into two groups. The first group (81 patients) could customize the monitoring system to send them digital nudges like emails or text messages if they did not take their medicine on time. They also received coaching from people who were not part of or did not interact with the clinical team. Members of the second group, known as the control group (88 patients), didn't receive electronic messaging or adherence coaching.

Results of the trial show that the young [kidney transplant recipients](#) who used the digital health medication management and adherence solution in combination with coaching had a 66 per cent higher adherence to the anti-rejection medicine. Better adherence is likely to lead to better graft survival.

Reactions to the intervention program varied. "Some people loved it and didn't want to give the pillbox back, but others hated it and stopped using it for reasons such as the pillbox being unwieldy. Based on this feedback, the device is being re-designed," Dr. Foster says. "Most teens, however, liked meeting with the coach."

"These results are exciting because they show that a multidisciplinary approach can really help teens and young adults stick to their treatment plan, which is so important for their continued well-being," adds study co-author, Dr. Lorraine Bell, who is the director of the MUHC Pediatric Renal Transplant Program and the director of the Pediatric Transition to Adult Care Project at the Montreal Children's Hospital of the MUHC. "The coaching has a big impact as it does in sports and other activities - the encouragement and personal connection is important, because it's not easy to be a teen or young adult with a chronic health condition."

Dr. Bell also emphasizes that remembering to take meds can be difficult when a lot of other things are happening in the lives of these young patients, and points out the benefit of text message and email reminders for a population who grew up using cellphones.

"This is one of the largest clinical trials on adherence to daily medication ever conducted in the kidney transplant population. Identifying an approach that is effective in promoting adherence in patients with chronic conditions is a major advance," says Dr. Foster. "Better adherence will lead to healthier patients and is likely to save healthcare dollars by preventing serious complications that would need treatment or hospitalization."

The TAKE-IT trial was launched in 2011. It is currently being followed up by a large-scale, five-year study (called TAKE-IT TOO) in which study investigators will collaborate with Vaica, and with patients, parents and healthcare professionals to design a portable medication monitoring and adherence support system specifically for young people, to adapt the TAKE-IT intervention for use in clinical practice, and to test the new device and intervention in a pilot trial.

More information: Bethany J. Foster et al. A Randomized Trial of a Multicomponent Intervention to Promote Medication Adherence: The Teen Adherence in Kidney Transplant Effectiveness of Intervention Trial (TAKE-IT), *American Journal of Kidney Diseases* (2018). [DOI: 10.1053/j.ajkd.2017.12.012](https://doi.org/10.1053/j.ajkd.2017.12.012)

Provided by McGill University Health Centre

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