

Stool transplant shows promise for Parkinson's disease

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Credit: Pixabay/CC0 Public Domain

Parkinson's disease (PD) is a common neurodegenerative disease that affects millions worldwide. Now, a groundbreaking clinical study conducted by researchers at Ghent University Hospital, VIB, and Ghent

University has demonstrated the potential of fecal microbiota transplantation (FMT) to improve symptoms in patients with PD.

Research [published](#) in *eClinicalMedicine* provides promising evidence that FMT could be a valuable new treatment for this debilitating disorder.

Parkinson's disease is a neurodegenerative disorder that affects millions worldwide. Its prevalence is rapidly increasing due to factors like pesticide use and an aging population. Symptoms of the disease include both motoric and non-motoric symptoms.

The motoric symptoms, such as balance problems, stiffness, and the characteristic tremor, are the best known and almost always the reason for the eventual diagnosis. However, non-motor symptoms, such as loss of smell, constipation, and REM sleep disturbances, often develop up to 20 years before diagnosis in a large number of people with the disease.

The role of the microbiome

In Parkinson's disease, a protein called alpha-synuclein misfolds and clumps together. Those clumps then damage dopamine-producing nerve cells in the brain, which leads to the typical Parkinson's symptoms. Current treatments, primarily medications that replace dopamine, often have side effects and lose effectiveness over time.

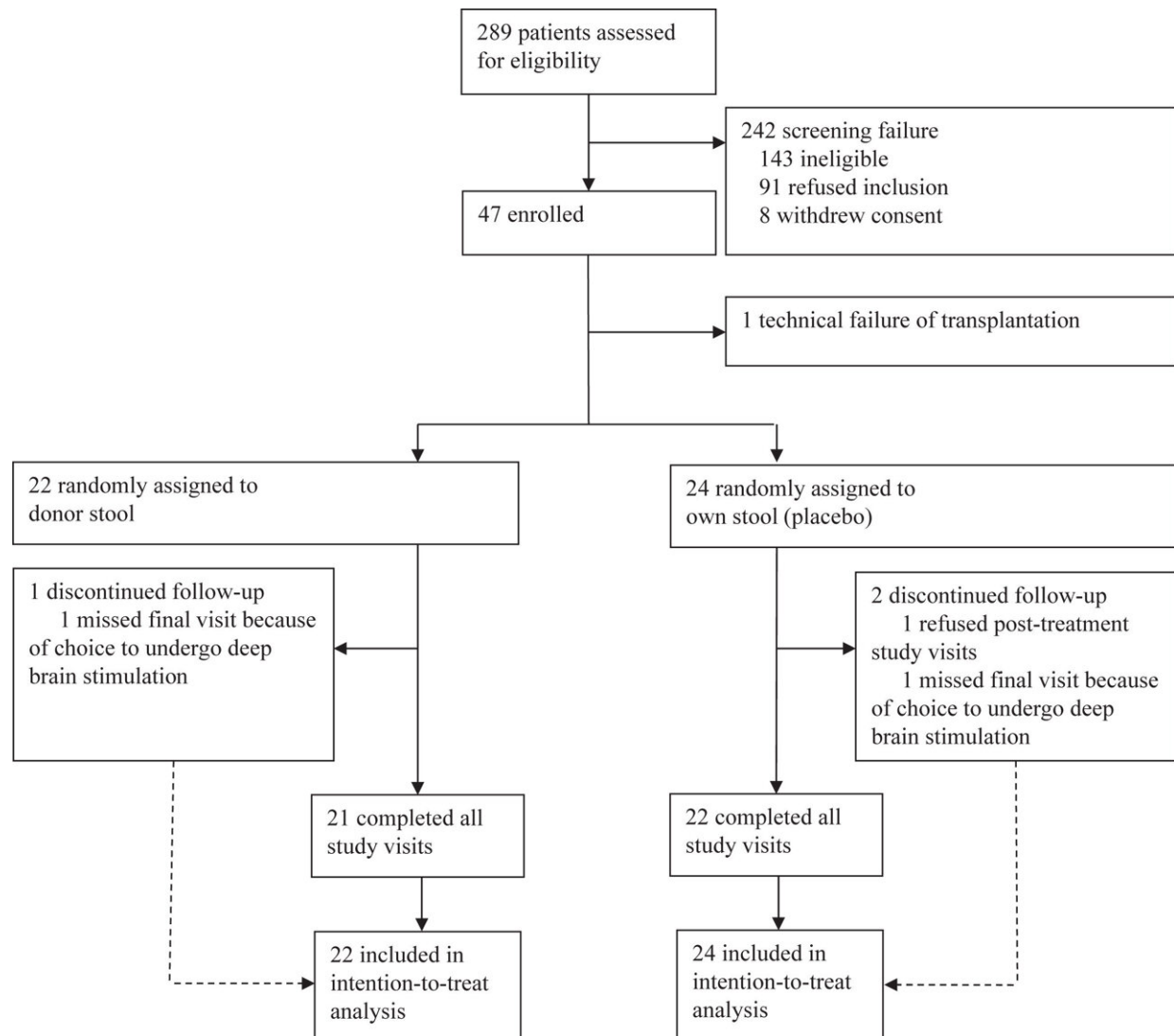
The protein clumps are believed to be formed in the gut wall at a very early stage of the disease, from which they reach the brain cells via the vagus nerve, which connects the gut and the brain. This process can be influenced by gut bacteria.

Indeed, emerging research suggests a surprising link between PD and the gut microbiome, the trillions of bacteria residing in our intestines.

Patients with Parkinson's often have an altered gut microbiome compared to healthy individuals and they often show more (intestinal) inflammation and a disrupted intestinal barrier.

That's why the neurology department at University Hospital Ghent (UZ Gent), led by Prof. Patrick Santens, joined forces with Prof. Debby Laukens of Ghent University and the team of Prof. Roosmarijn Vandenbroucke at the VIB-UGent Center for Inflammation Research. The team wanted to investigate whether a fecal microbiota transplant (FMT) with healthy gut bacteria from a donor could have a significant impact on the evolution of Parkinson's disease symptoms over one year.

The [clinical study](#) showed that after 12 months, the actively treated group showed significantly more improvement in motor symptoms compared to the placebo group.



Trial profile. Credit: *eClinicalMedicine* (2024). DOI: 10.1016/j.eclinm.2024.102563

Via the nose into the small intestine

The clinical study, named GUT-PARFECT, recruited participants with early-stage Parkinson's disease and healthy donors who donated their stool to the Gentse Stoelgangbank. All participants with Parkinson's

disease received the stool through a tube that was inserted through the nose and advanced into the small intestine to deliver the mixture directly there.

"Our results are really encouraging!" says Dr. Arnout Bruggeman, researcher at VIB-UGent-UZ Gent and first author of the study. "After twelve months, participants who received the healthy donor stool transplant showed a significant improvement in their motor score, the most important measure for Parkinson's symptoms."

The improvement in [motor symptoms](#) became even more pronounced between the sixth and twelfth month after the transplant, suggesting a potential long-lasting effect. Additionally, participants had less from constipation, a frequent and bothersome symptom for many people with Parkinson's disease. More research is needed to determine whether this treatment also slows the progression of the disease.

Way forward

This study is a significant step forward in the search for new treatment options for Parkinson's disease.

"Because there were major questions about the feasibility at the start of the study, financing this research was no easy task," says Prof. Santens.

"This research was only possible thanks to the support of patient organizations, donations to the UGent Parkinson Research Fund, and the willingness of participants to undergo the rather invasive procedures."

"Our study provides promising hints that FMT can be a valuable new treatment for Parkinson's disease," says Prof. Vandenbroucke. "More research is needed, but it offers a potentially safe, effective, and cost-effective way to improve symptoms and quality of life for millions of people with Parkinson's disease worldwide."

"Our next step is to obtain funding to determine which bacteria have a positive influence. This could lead to the development of a 'bacterial pill' or other targeted therapy that could replace FMT in the future," says Prof Laukens.

More information: Arnout Bruggeman et al, Safety and efficacy of faecal microbiota transplantation in patients with mild to moderate Parkinson's disease (GUT-PARFECT): a double-blind, placebo-controlled, randomised, phase 2 trial, *eClinicalMedicine* (2024). DOI: [10.1016/j.eclinm.2024.102563](https://doi.org/10.1016/j.eclinm.2024.102563)

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