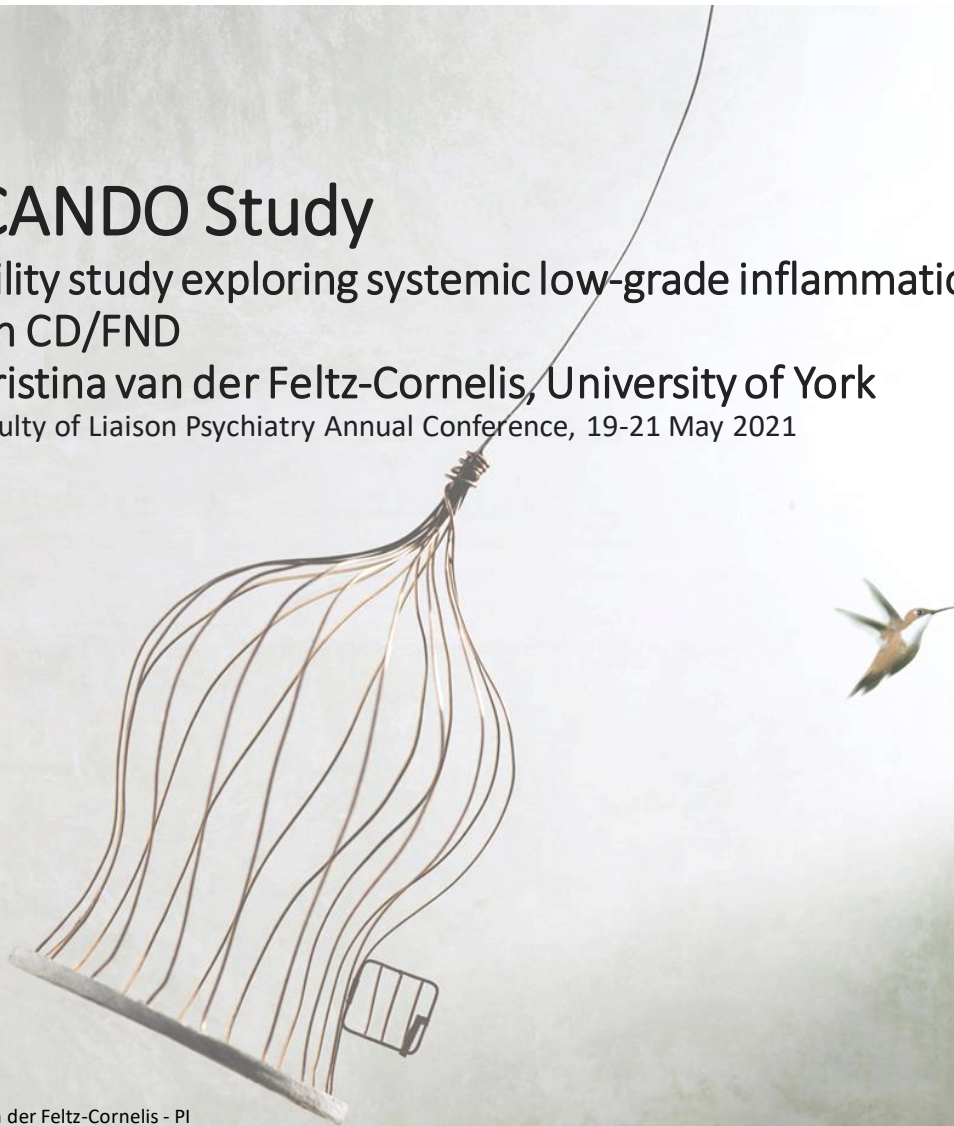


# The CANDO Study

A feasibility study exploring systemic low-grade inflammation and epigenetic factors in CD/FND

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RCPsych Faculty of Liaison Psychiatry Annual Conference, 19-21 May 2021



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- Victoria Allgar - HYMS
- Miles Whittington – HYMS
- Simon Gilbody - HYMS
- Natalie Smith – admin support
- Several teams supporting recruitment



# CANDO



UNIVERSITY  
*of York*



Tees, Esk and Wear Valleys  
NHS Foundation Trust



York **B**iomedical  
Research Institute

# Rationale

- Conversion disorder (CD) or functional neurological disorder (FND) affects at least 764,000 people in the UK per year.
- Its origin is unknown, the course is protracted and there is little evidence for effective treatment.
- We wanted to explore what role systemic low-grade inflammation plays in motor CD, and how the symptoms hang together with neurocognitive symptoms such as planning problems.

# Objectives

- Establish the feasibility of assessing a small clinical cohort of CD/FND patients with motor symptoms for high sensitivity C-reactive protein (hsCRP), cytokines and microRNA; trauma and stress; neurocognitive and psychological symptoms.
- Establish a Patient and Public Involvement (PPI) advisory group and to determine the acceptability of the study processes for patients and carers.
- Establish if hsCRP and cytokines compared to norm scores indicate SLI in CD/FND.
- Explore the role of microRNA

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Why are we doing this study?

How the study works

Get involved

Patient and public involvement

The Research Team

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## Conversion And Neuro-inflammation Disorder Observational (CANDO) study


Conversion disorder, also known as functional neurological disorder, is a condition that causes physical symptoms that seem neurological but doctors can't find an injury or physical condition to explain them. For example, it can present itself as unexplained paralysis, inability to talk or walk, or sudden unexplained blindness. It affects about 764,000 people in the UK annually and leads to long-term distress and disability. So far, its origin is unknown. Because the origin is unknown, and people with conversion disorder often suffer from concentration problems that hinder them in following treatment, treatment may have limited effects.

This study aims to understand more about the causes of conversion disorder so that new treatments can be developed in the future. This study is currently being undertaken by a research team at the University of York in collaboration with a number of sites across the Tees, Esk and Wear Valleys NHS Foundation Trust, York Teaching Hospital NHS Foundation Trust and Humberside NHS Foundation Trust. [See the Registration details.](#)

We are currently looking to recruit 20 patients with functional neurological disorders to take part in this study. We hope the findings of this study will help us design a larger study in which we can test new treatments for the condition.

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An Observational Study into Conversion And Neuro-inflammation Disorder


📍 University of York [york.ac.uk/healthsciences...](https://york.ac.uk/healthsciences...) 📅 Joined February 2020

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Congrats [@JonathanRatcl12](#) with your first publication on possible pathological mechanisms in CD/FND! [@HullYorkMed](#) INSPIRE program [@UniOfYork](#) [@CandoStudy](#) [@YBRI\\_UoY](#) [@MHARG\\_york](#) [@HealthSciYork](#)

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Today, Jonathan Ratcliffe, INSPIRE student [@HullYorkMed](#) and [@VanFeltz](#) published a review about current research on the pathological mechanism in CD/FND. You can read it here: [authors.elsevier.com/c/1bKi7maXiyuLF](https://authors.elsevier.com/c/1bKi7maXiyuLF)


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Browse the Registry - Research Registry

All research protocols in the database are freely accessible and searchable.

[www.researchregistry.com](https://www.researchregistry.com)

Christina van der Feltz-Cohen and CANDO project team

# Feasibility

Aim was to recruit at least 60% of eligible patients. 85% of people approached could be recruited. Because of COVID-19, recruitment had to be stopped in 7 patients (27%).

A variety of sites was interested in participation.

Study procedures were acceptable for patients in terms of

- a. tolerance for the duration of interviews,
- b. blood and hair sampling
- c. potentially distressing revisiting of past events,
- d. willingness to attend psychiatric assessment

Aim was attrition rates below 40%. Data were complete with an attrition rate of 13% before COVID-19 halted the study.

# Mechanism

- SLI with IL6, TNFa and IFNg significantly higher than normal, suggesting SLI
- VEGFa significantly lower, suggesting a possible lack of needed vascular and neuronal support
- Correlations between TNFa and microRNA associated with inflammation, such as 146a and 155
- And between VEGFa and microRNA associated with vascular inflammation, such as miR-21 and miR-132
- This suggests that there might be an epigenetic mechanism



# Conclusion

- This pilot feasibility study shows that there is scope for further exploration of an underlying pathogenic mechanism related to an inflammatory process and a vascular inflammatory process in CD/FND with motor problems, cytokines, and the role of miRNA.
- Sample size was limited due to the COVID outbreak.

# Publications CANDO study

- Study protocol:

<https://www.sciencedirect.com/science/article/abs/pii/S0213616320300392>

- Review:

<https://www.sciencedirect.com/science/article/abs/pii/S0213616320300367>

- Results feasibility study:

<https://www.sciencedirect.com/science/article/pii/S2666354621000314?via%3Dihub>

# Contact for future research

- This feasibility study was the first one in a planned program of research. We are preparing research to explore this further. If you are interested in collaboration, please contact
- [Christina.vanderfeltz-cornelis@york.ac.uk](mailto:Christina.vanderfeltz-cornelis@york.ac.uk)