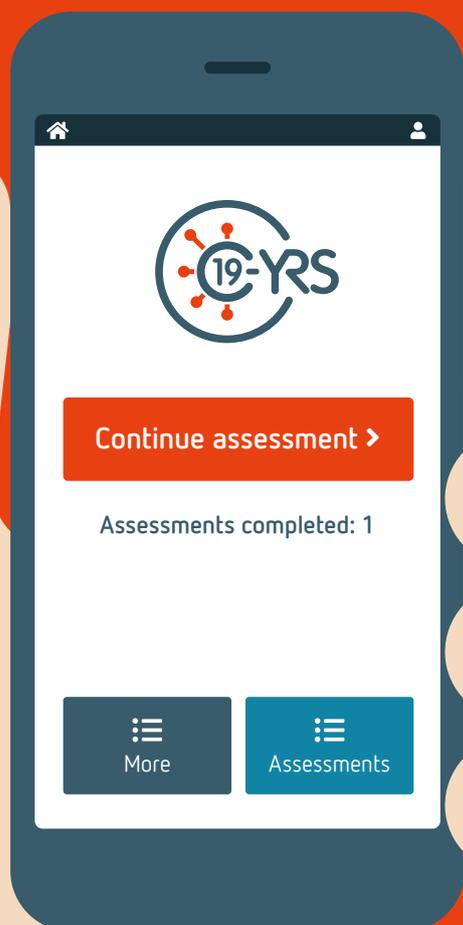


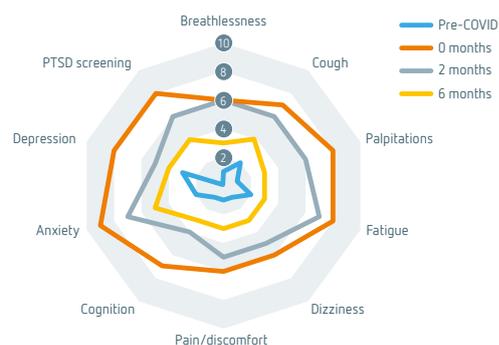
C19-YRS

COVID-19 Yorkshire Rehabilitation Scale

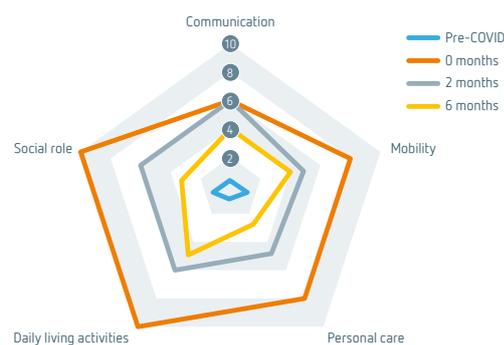
A digital assessment and monitoring tool to help manage individuals with Long COVID



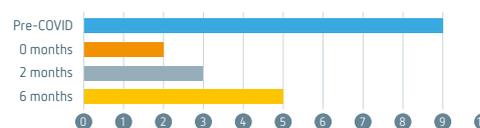
Symptoms severity score



Functional disability score



Overall health score



The C19-YRS tool provides a comprehensive assessment of symptoms in Long COVID

- ✓ C19-YRS screens for the most common symptoms in Long-COVID.
- ✓ Grades the severity of symptoms to provide a score of burden.
- ✓ Grades the functional impact of the condition in daily activities.
- ✓ Allows patients to track the condition with time and provides them with a quantitative assessment of improvement or deterioration which is important in the long-term management.
- ✓ Allows healthcare professionals to evaluate the treatment programmes of patients.
- ✓ Allows national comparison of data and the influence of region, gender, race, ethnicity, severity of acute illness and other variables on the condition.
- ✓ Allows international standard definition of the condition and the development of clinical diagnostic criteria.

C19-YRS

Significant benefits for both clinicians and patients

FEATURES OF THE CLINICAL WEB PORTAL

- › Report of symptoms severity score and functionality disability score generated for clinical decision making
- › Covers all components of the WHO International Classification of Functioning, Disability and Health (ICF) framework
- › Online web portal to oversee patients for continuous monitoring and rehabilitation
- › Easy to use, secure and scalable platform
- › Extensive reporting tools to support health organisations better deploy, evidence and account for the complex mix of resources used for Long COVID patients

FEATURES OF THE PATIENT APP

- › Clinically relevant C19-YRS recommended by NHS England and NICE
- › Dedicated profile for patients
- › Discrete entries with encrypted data
- › Easy to use and convenient for patients
- › 15-item questionnaire to assess problems relating to illness with COVID-19
- › Multiple diary entries for continuous monitoring
- › Accessible on any smartphone or web-link
- › 20 minutes to complete
- › Translatable to 5 different languages

BENEFITS FOR CLINICIANS

- › Multiple patients managed in one place
- › Helps clinicians capture symptoms and guide rehabilitation interventions for patients
- › Digitally enhanced integrated care
- › Provides clear clinical audit trail
- › Powerful reporting and research tools
- › Long term capture and analysis

BENEFITS FOR PATIENTS

- › More reliable than a paper diary
- › Automated data capture and assessment
- › Can be completed anywhere, any time.
- › Appropriate rehabilitation interventions, leading to better patient outcomes
- › Can be completed with help from family members or carers
- › Digitally enhanced personalised care
- › Sustainable remote patient monitoring



UNIVERSITY OF LEEDS

CREATED BY CLINICAL ACADEMICS

C19-YRS is a clinically relevant outcome tool developed at the University of Leeds to assess persistent COVID-19 symptoms. The tool has been adopted by NHS Trusts across the UK.

DEVELOPED WITH NHS TRUSTS

C19-YRS was developed with support from Leeds Teaching Hospitals and Leeds Community Healthcare NHS Trusts.



NICE



RECOMMENDED BY NHS ENGLAND AND NICE

NHS England has suggested routine use of C19-YRS at first assessment, 6 weeks and 6 months to monitor Long COVID.

ENHANCED BY INDUSTRY EXPERTS

Digitally enhanced by ELAROS 24/7 Ltd, building on their established CE-marked medical device, the Digital Bladder Diary platform.

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C19-YRS

Background and supporting literature

Long COVID is a clinical syndrome of symptoms that persist 4 weeks after contracting COVID-19 illness. Symptoms can include breathlessness, fatigue, pain, palpitations, dizziness, cognitive problems (brain fog), sleep problems, autonomic dysfunction, functional disability in daily activities and reduced quality of life. There are currently more than 100,000 individuals in the UK (and more than 5 million worldwide) struggling with Long COVID.

C-19 YRS is currently the only scale reported in the literature that can capture these symptoms and grade the severity of symptoms and functional disability (*Sivan ACNR 2020*). The use of the scale has been recommended in the 2020 NHS England Clinical Guidance for Long COVID assessment and management and 2020 NICE rapid guidelines for management of Long COVID. The scale also allows a guide for directing patients to appropriate treatments based on severity of symptoms scored on the scale (*Sivan JRM 2020*).

TIMELINE

- 1. March 2020: Meta-analysis of long-term outcomes in previous coronavirus outbreaks.** *Hassaan et al JRM 2020*.
The research team performed a systematic review and meta-analysis of long-term clinical outcomes in those affected by SARS (2002) and MERS (2012) and found more than one-third of survivors suffered persistent symptoms of psychological problems, exercise intolerance, fatigue, compromised lung function and reduced quality of life even at 12 months after discharge. This prompted to us to capture longer-term problems in COVID-19.
- 2. April 2020: Development of telephone version of C19-YRS.** *Sivan et al ACNR 2020*.
A multidisciplinary team of rehabilitation professionals came together to tackle this important issue of following up COVID-19 patients after hospital discharge. As face-face appointments were deemed risky, there was a need for virtual assessment of these patients. A telephone screening scale was developed based on staff experience of managing these patients and knowledge from our systematic review of previous outbreaks. A consensus method was used to decide on the final questions of C19-YRS. The scale was kept balanced in terms of questions spanning all aspects of the 2001 WHO International Classification of Functioning, Disability and Health (ICF) framework.
- 3. May-June 2020: Leeds COVID-19 follow-up study.** *Halpin et al 2020*.
The research team conducted the UK's first COVID-19 follow-up study studying 100 patients discharged from hospital and used a version of the C19-YRS scale to capture symptoms and rehabilitation needs. This study proved the content validity of the scale that it captured and measured persistent symptoms reported in other studies. Fatigue, breathlessness, psychological symptoms, pain and cognitive problems were the most common problems at 7 weeks after hospital discharge. This syndrome has since been named as Long COVID or post-COVID syndrome.
- 4. July-Aug 2020: Leeds Integrated rehabilitation pathway.** *Sivan et al 2020*.
The findings of the above study helped inform Leeds commissioners to invest in setting up a dedicated COVID follow-up service. This was the UK's first dedicated specialist multidisciplinary rehabilitation service and is currently the benchmark service for other UK centres setting up their services. C19-YRS is the core measure used in the service for triage, deciding interventions and monitoring of patients with Long COVID.
- 5. Oct-Nov 2020: NHS England Clinical Guidance and NICE guidelines.**
NHS England invests £20m in setting up 40 Long COVID centres (clinics) to assess and manage these individuals. The Clinical Guidance recommends the use of C19-YRS as an outcome measure to be used at first assessment, 6 weeks and 6 months to monitor progress. NICE guidelines suggest using C19-YRS as part of the comprehensive assessment of the individuals with Long COVID. NICE has suggested further validation and development of the scale.
- 6. Dec 2020: Digital self-report version of C19-YRS.**
Based on the feedback received from all centres in the country currently using the scale, a self-report version has been developed with some modifications made to yield a symptoms severity score and functional disability score. Additional symptoms have also been added based on the emerging evidence on symptoms of Long COVID. ELAROS teamed up with the research team to develop a digital version of the scale that provides a smartphone application for end-users and a clinical web portal for healthcare professionals to manage patients. These tools can be used in routine care provided to these individuals in Long COVID centres. Data collected by the digital version will also be used for further validation and psychometric evaluation of the scale.