Prevalence and Risk Factors for Long COVID Healthcare Workers

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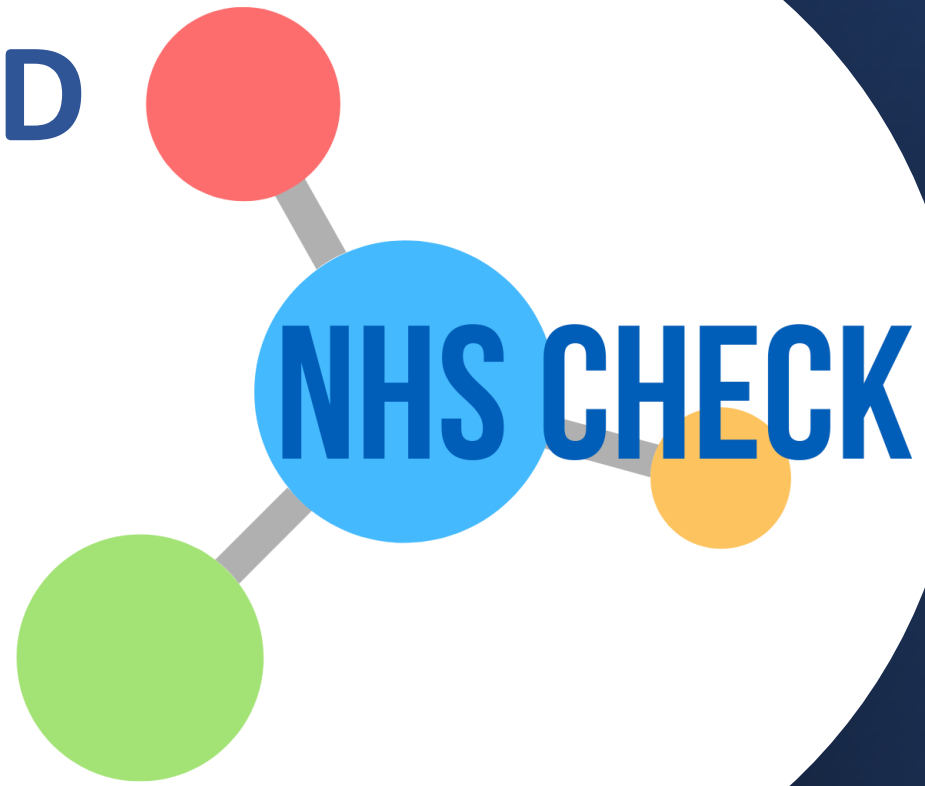
On behalf of the NHS CHECK Research Team



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What is Long Covid?

Long Covid has been used to describe the complex medical condition whereby symptoms of Covid-19 persist or develop after the acute phase of the infection

- The National Institute for Health and Care Excellence (NICE) define Post Covid-19 Syndrome (symptoms 12 weeks or more after the acute infection) [1]

- Figures from the ONS published in early 2023 suggest that over 2,000,000 people in the UK had the condition at the time.
  - This equates to ~3% of the population and ~9% of all PCR confirmed Covid-19 cases.

Risk factors for Long Covid?

A meta-analysis of 41 studies found significant risk factors for developing LC [2]

- Demographic factors such as being of female sex, older age, and higher BMI were associated with greater odds of developing Long Covid

- Health factors such as having a pre-existing medical condition, particularly a respiratory condition, and having fewer than two vaccinations against Covid-19 have also been associated with greater odds

Emerging research suggests that poorer mental health may be associated with developing Long Covid, though this is under-researched [3,4]

Long Covid among Healthcare Workers

Due to their proximity to the Covid-19 illness during the pandemic, healthcare workers are at increased risk of contracting Covid-19 and, in turn, Long Covid

ONS data has shown that HCWs were among the most at-risk occupational groups for contracting Covid-19 and experiencing prolonged symptoms during 2020 and 2021 [5,6]

Qualitative research has also highlighted challenges experienced by HCWs who develop LC [7-9]

Introduction to LC-CHECK

Using data from the NHS CHECK longitudinal cohort, we have four main research aims:

1. To examine the prevalence of Long Covid among NHS staff and the most common symptoms of the condition

2. To examine the characteristics of NHS staff with Long Covid

3. To explore baseline risk factors for developing Long Covid at follow-up among NHS staff

4. To examine sickness absence among NHS staff with Long Covid

Introduction to NHS CHECK

NHS CHECK – UK's largest study of the mental health and wellbeing of healthcare workers during the COVID-19 pandemic

- Includes ALL NHS staff (not just clinical)
- Longitudinal - online surveys completed at baseline (April 2020-January 2021), with follow-up surveys at 6 months, 12 months, and 32 months post-baseline
- Published analyses to date include mental ill-health prevalence over time, moral injury, suicidal ideation and behaviours, and free text survey data
- Also carried out qualitative interviews (experiences of support services, and moral injury experiences), diagnostic interviews, RCT of wellbeing app
- Protocol paper out in BMJ Open: https://bmjopen.bmj.com/content/11/6/e051687.abstract

NHS CHECK Demographics

- 18 NHS Trusts in England
- Total baseline sample size: 23,462 (N=152,113)
- 15% overall response rate
- As far as we know, we have the largest data set and the highest response rate of any similar study
- Using NHS Trust specific data, we have also weighted the data in the study

	NHS workforce	NHS CHECK sample	NHS CHECK weighted sample
Mean age	43	43	42
Sex	77% female	81% female	75% female
Ethnicity	78% white	86% white	77% white
Doctors	10%	7%	10%
Nurses	26%	26%	30%
Other clinical	46%	31%	32%
Non-clinical	18%	36%	28%

Methodology for Long Covid Study

For research aims 1, 2 and 3, our outcome was whether NHS staff experienced Long Covid

- Staff were asked if and for how long they experienced each of the following symptoms:
  - Fatigue; fever, chills or shivering; muscle or body aches; joint pain; headache; loss or change in sense of smell or taste; cough; shortness of breath; chest pain or tightness; runny nose or nasal congestion; sore throat; sneezing; nausea or vomiting; diarrhoea; abdominal pain; skin rash; tinnitus (ringing or noises in the ears); dizziness; palpitations; pins and needles or numbness; feeling anxious or depressed; difficulty sleeping; difficulty concentrating; memory loss or confusion.

- We used the NICE definition of Post Covid-19 Syndrome (any symptom for 12+ weeks after the onset of Covid-19 infection)

- We also asked staff if they had ever been diagnosed with Long Covid by a healthcare professional

For research aim 4, our outcome was the number of days off work due to Covid-19

Aim 1 – Prevalence of Long Covid

- 33.6% of the staff who reported a previous Covid-19 infection (1,752 of 5,328) said that they experienced symptoms that lasted for 12 or more weeks.
    - Interestingly, only 7.4% of staff reported a formal diagnosis of Long Covid received from a medical professional
- Among staff with PCS, the most common symptoms were:
    - Fatigue (51.4%)
    - Insomnia (35.2%)
    - Shortness of breath (28.6%)
    - Loss/Change of taste/smell (23.4%)
    - Difficulty concentrating (36.7%)
    - Anxiety or depression (33.0%)
    - Memory loss or confusion (27.0%)
    - Joint pain (23.0%)

Aim 2 – Characteristics of Staff with Long Covid

- Using weighted data, we can compare the demographic and occupational breakdown of NHS staff who met the criteria for Long Covid

	NHS CHECK weighted sample (n = 23,462)	Reported a Previous Covid-19 Infection (n = 5,428)	Covid symptoms for more that 12 weeks (n = 1,752)
Mean age	42	44	43
Sex	75% female	75% female	79% female
Ethnicity	77% white	81% white	83% white
Doctors	10%	9%	6%
Nurses	30%	31%	35%
Other clinical	32%	32%	32%
Non-clinical	28%	28%	27%

Aim 2 – Characteristics of Staff with Long Covid

- We also looked at information relating to physical and mental health

	NHS CHECK weighted sample (n = 23,462)	Reported a Previous Covid-19 Infection (n = 5,428)	Covid symptoms for more that 12 weeks (n = 1,752)
Respiratory Illness	5%	5%	7%
Probable CMDs	46%	46%	55%
Probable Depression	14%	18%	24%
Probable GAD	12%	13%	18%
Probable Burnout	8%	10%	13%
Probable PTSD	13%	15%	20%

Aim 3 – Risk Factors for Long Covid

- The following baseline variables were used to explore risk factors for reporting Long Covid at follow-up:

Demographic Factors

- Age
- Sex
- Ethnicity
- Relationship status

Occupational Factors

- Job role
- Income
- Contact with Covid-19 Patients
- Access to PPE
- Confidence in infection control policies
- Burden on the NHS
- Trust (Level 2)

Physical & Mental Health

- Pre-existing respiratory illness (asthma/COPD)
- Alcohol intake
- Mental health indicators
  - Probable CMDs as primary indicator
  - Probable depression, GAD, burnout, PTSD as secondary indicators

Aim 3 – Risk Factors for Long Covid

Variables	Categories	Odds of PCS aOR	95% CI
Sex	**Female (Ref)**	**1**	**–**
	Male	**0.80**	**[0.67, 0.94]**
Age in years	**30 and younger (Ref)**	**1**	**–**
	31–40	1.50	[0.82, 2.75]
	41–50	1.71	[0.94, 3.14]
	51–60	**1.81**	**[1.32, 2.47]**
	61 and older	1.46	[0.92, 2.31]
Ethnicity	White (Ref)	1	–
	Black	0.73	[0.30, 1.75]
	Asian	0.75	[0.39, 1.43]
	Mixed/Multiple ethnic group	0.88	[0.40, 1.91]
	Other ethnic group	1.17	[0.49, 2.82]
Work role	**Nurse (Ref)**	**1**	**–**
	Doctor	**0.64**	**[0.42, 0.97]**
	Other clinical	0.75	[0.57, 1.01]
	Non-clinical	0.78	[0.60, 1.01]
Relationship status	Single/Divorced (Ref)	1	–
	Married/Cohabitating	1.04	[0.83, 1.30]
Probable Common Mental Disorders (GHQ-12)	**GHQ-12 score <4 (Ref)**	**1**	**–**
	GHQ-12 score ≥4	**1.91**	**[1.65, 2.23]**
Probable Alcohol use disorder (AUDIT-C)	AUDIT-C score <8 (Ref)	1	–
	AUDIT-C score ≥8	0.94	[0.68, 1.30]
Pre-existing respiratory illness	**No (Ref)**	**1**	**–**
	Reported Asthma/COPD	**1.54**	**[1.13, 2.11]**
Income	AfC Band 5 or below (Ref)	1	–
	AfC Band 6 or higher	0.82	[0.61, 1.11]
Contact with Covid-19 patients	**No contact (Ref)**	**1**	**–**
	Contact	**1.70**	**[1.31, 2.21]**
Access to personal protective equipment	Inadequate access (Ref)	1	–
	Adequate access	0.59	[0.32, 1.09]
	Non-applicable	0.71	[0.35, 1.42]
Confidence in workplace infection control policies	Inadequate confidence (Ref)	1	–
	Adequate confidence	0.98	[0.83, 1.17]

PCS = Post Covid-19 Syndrome (symptoms lasting for 12 or more weeks after the onset of the acute Covid-19 infection), aOR = Adjusted Odds Ratio, 95% CI = 95% Confidence Intervals for the effect of each variable on the outcome. COPD = Chronic Obstructive Pulmonary Disease; NHS Band 5 or below = Annual income of £34,581 or lower; NHS Band 6 or above = Annual income of £35,392 or higher (As of January 2024).

Aim 4 – Sickness Absence

- 1,628 (92.7%) of staff with Long Covid symptoms reported sickness absence due to their condition

- The number of days off significantly reduced between our 2021 (12 month) and 2023 (32 month) data collection points
  - In 2021, the median number of days off was 14 (IQR 10 – 30)
  - In 2023, the median number of days off was 7 (IQR 4 – 14)

- We define long-term sickness absence as requiring 4 or more consecutive weeks off work
  - In 2021, 20.8% of staff with PCS required long-term sickness absence
  - In 2023, this figure fell to 4%

Conclusions

- We found that 33.6% of people who contracted Covid-19 experienced symptoms for 12+ weeks, which is consistent with other similar studies [10]
  - Despite this, only 7.4% of the current sample had received a diagnosis of LC
  - Indicates a disparity between number of people who experience prolonged Covid-19 symptoms and people who may be impacted by the condition
  - Further work is needed to understand how we classify Long Covid in research

- The observed risk factors were comparable to the international literature [2]
  - Good evidence that being female sex, middle age and having a chronic respiratory illness is related with greater odds of developing LC
  - We also found that poorer mental health is associated with greater odds of reporting prolonged symptoms, something that is generally under-reported in the literature [3,4]

Conclusions

- There was a significant reduction in sickness absence between 2021 and 2023
  - This may be related to the withdrawal of special sick pay provisions for NHS staff with Covid-19 infection in 2022
  - The next stage of our analysis will be to look for risk factors for requiring long-term sickness absence

- We are currently working on publishing:
  - A paper on Long Covid prevalence and risk factors is currently under review
  - A paper on sickness absence is currently being prepared
  - A commentary article written by our PPIE group (16 HCWs with lived experience of Long Covid) to be published alongside our results papers

Overview

[1] NICE (2020) COVID-19 rapid guideline: managing the long-term effects of COVID-19

[2] Tsampasian et al. (2023) 'Risk Factors Associated With Post–COVID-19 Condition: A Systematic Review and Meta-analysis. JAMA

[3] Lemogne et al. (2023) Why the hypothesis of psychological mechanisms in long COVID is worth considering. Journal of Psychosomatic Research

[4] Burton et al. (2023) Within and between-day variation and associations of symptoms in Long Covid: Intensive longitudinal study. PLoS ONE

[5] Rhodes et al. (2022) Occupational differences in SARS-CoV-2 infection: analysis of the UK ONS COVID-19 infection survey. J Epidemiol Community Health

[6] Kromydas et al. (2023) Occupational differences in the prevalence and severity of long-COVID: analysis of the Coronavirus (COVID-19) Infection Survey. Occup Environ Med

[7] Ladds et al. (2021) Developing services for long COVID: lessons from a study of wounded healers. Clinical medicine

[8] Taylor et al. (2021) 'Reluctant pioneer': A qualitative study of doctors' experiences as patients with long COVID. Health expectations

[9] Torrance et al. (2024) Lived experience of work and long COVID in healthcare staff. Occupational Medicine

[10] Whitaker et al. (2022) Persistent COVID-19 symptoms in a community study of 606,434 people in England. Nat Commun

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