

# Changing patterns of sickness absence among healthcare workers in England during the COVID-19 pandemic

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## ABSTRACT

**Background** Patterns of sickness absence shed useful light on disease occurrence and illness-related behaviours in working populations.

**Methods** We analysed prospectively collected, pseudonymized data on 959 356 employees who were continuously employed by National Health Service trusts in England from 1 January 2019 to 31 July 2020, comparing the frequency of new sickness absence in 2020 with that at corresponding times in 2019.

**Results** After exclusion of episodes directly related to COVID-19, the overall incidence of sickness absence during the initial 10 weeks of the pandemic (March–May 2020) was more than 20% lower than in corresponding weeks of 2019. Trends for specific categories of illness varied substantially, with a fall by 24% for cancer, but an increase for mental illness. A doubling of new absences for pregnancy-related disorders during May–July of 2020 was limited to women with earlier COVID-19 sickness absence.

**Conclusions** Various factors will have contributed to the large and divergent changes that were observed. The findings reinforce concerns regarding delays in diagnosis and treatment of cancers and support a need to plan for a large backlog of treatment for many other diseases. Further research should explore the rise in absence for pregnancy-related disorders among women with earlier COVID-19 sickness absence.

**Keywords** COVID-19, healthcare workers, sickness absence

## Introduction

In addition to its impacts on productivity, sickness absence is important as an indicator of patterns of disease and illness-related behaviours in working populations. During the COVID-19 pandemic, healthcare workers have faced a serious threat to their personal safety, in combination with new and heightened occupational demands from a rapidly evolving crisis. Rates of SARS-CoV-2 infection have been higher in healthcare workers than in most other occupations.<sup>1–3</sup> Workload has increased because of the exceptional number of patients requiring treatment for the disease, and a need to cover for colleagues who were themselves infected, isolating or shielding. In addition, the pandemic has had wider effects on people's activities and access to health services which could further alter patterns of sickness absence (e.g.

through postponement of less urgent clinical investigation and treatment).

Before the pandemic, staff employed by the National Health Service (NHS) in England had persistently high, but stable, overall rates of sickness absence.<sup>4,5</sup> Preliminary analyses have indicated a sudden rise during the early phase of the epidemic nationally (March–April 2020) with

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notable variability across geographical areas and between staff groups.<sup>6–8</sup> Much of this increase will have been driven by absence because of confirmed or suspected COVID-19, but there is a need to examine trends according to different medical reasons for absence.

We report an analysis of data on NHS employees in England, to explore the nature and extent of changes in non-COVID sickness absence during the first wave of the epidemic. We also examine whether absence for COVID-19 infection during the early weeks of the epidemic was associated with altered patterns of sickness absence in the longer term.

## Methods

We analysed pseudonymized data that had been abstracted on our behalf from the NHS Electronic Staff Record (ESR). All NHS trusts in England contribute monthly personnel records to the ESR central database, using a standardized coding system. We were given access to information on all staff who had been continuously employed between 1 January 2019 and 31 July 2020. It included demographic and occupational characteristics for each individual, together with data on all absences from work during that period (other than for annual leave), detailing the dates that each episode started and finished, and the reason for absence. An extensive description of the source material and its preliminary processing is presented in an earlier report.<sup>9</sup>

For the current analysis, we focused on incident episodes of sickness absence across the study sample, classified according to the week of the year in which they started, their duration ( $\leq 7$  days or  $> 7$  days) and the reason for absence. Reasons for sickness absence were classified to 22 diagnostic categories. In addition, from 17 March 2020, trusts had the option to record whether an absence was related to COVID-19.

Statistical analysis was carried out using R Statistical Software (version 4.0.4).<sup>10</sup> We calculated percentage changes (with 95% confidence intervals (CIs)) from 2019 to 2020 in the numbers of new episodes of sickness absence during corresponding weeks of the year.

The main periods that we examined were chosen to cover the time immediately before the first wave of the COVID-19 epidemic in England took off (weeks 2–10), the time when it was at its height (weeks 11–20) and then a time when it was subsiding (weeks 21–29). The periods of the year studied were specified *a priori*, and such that public holidays fell in the same period in each year. The data were complete up to 31 July 2020, and by setting the end of the last period a little earlier, we could reliably determine whether episodes had lasted for

longer than 7 days. Year-on-year changes were assessed for all sickness absence, and for sickness absence in which there was no record of COVID-19 as a related reason.

To explore whether infection by COVID-19 was associated with altered patterns of sickness absence in the longer term, we also analysed year-on-year changes for specific categories of absence during weeks 21–29, according to whether individuals had taken COVID-19 sickness absence during weeks 11–18 of 2020. For this purpose, COVID-19 sickness absence was defined as in an earlier report<sup>9</sup>—i.e. sickness absence in any of five diagnostic categories (cough/flu, chest/respiratory, infectious diseases, other, unknown) with COVID-19 recorded as a related reason.

## Ethical approval statement

Ethical approval was provided by the NHS Health Research Authority (reference 20/SC/0282).

## Results

After exclusion of 21 775 individuals who were absent continuously throughout the study period, analysis was based on 959 356 employees. Most (89%) were aged between 25 and 60 years, and 77% were female.

Table 1 shows the numbers of new episodes of sickness absence within the study sample during corresponding 9- or 10-week periods in 2019 and 2020. Across the three periods in 2020, COVID-19 was recorded as a related reason for absence in a total of 101 585 new episodes, of which 100 833 (99%) met our specified criteria for COVID-19 sickness absence. Most (87%) began during weeks 11–20, and only 414 (0.4%) started earlier in the year.

For sickness absence that was not recorded as COVID-related, the overall number of new episodes during weeks 2–10 of 2020 was similar to that in the corresponding weeks of 2019 (274 720 versus 278 006), although within that, there were increases for mental illness (by 28.8%) and headache/migraine (by 12.8%), offset by a reduction for cough/flu (by 12.0%). In contrast, much larger year-on-year changes were observed during weeks 11–20. The total number of new non-COVID absences fell by 21.5%, including reductions for gastrointestinal problems (by 48.4%), genitourinary/gynaecological disorders (by 33.8%), eye problems (by 42.7%), injury and fracture (by 27.7%), back problems (by 19.6%), other musculoskeletal disorders (by 29.3%), disorders of ear, nose and throat (by 32.7%), cough/flu (by 24.5%) and cancer (by 24.1%). On the other hand, large increases were observed for infectious diseases (by 283%), asthma (by 122%), chest and respiratory disorders

**Table 1** Changes in numbers of new episodes of sickness absence from 2019 to 2020 by period of year and category of sickness absence

Category of sickness absence	Weeks 2–10			Weeks 11–20			Weeks 21–29		
	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)
	All categories	278 006	275 134	-1.0 (-1.6 to -0.5)	250 011	284 935	14.0 (13.4 to 14.6)	218 190	170 005
COVID-19 <sup>b</sup>	414			88 695			12 476		
All categories except COVID-19	278 006	274 720	-1.2 (-1.7 to -0.7)	250 011	196 240	-21.5 (-22.0 to -21.0)	218 190	157 529	-27.8(-28.3 to -27.3)
Asthma	1057	1113	5.3 (-3.2 to 14.5)	959	2130	122 (106 to 140)	885	781	-11.8(-19.8 to -2.8)
Back problems	9409	10 130	7.7 (4.7 to 10.7)	10 459	8410	-19.6 (-21.9 to -17.2)	9859	9622	-2.4 (-5.1 to 0.4)
Blood disorder	526	577	9.7 (-2.5 to 23.5)	646	476	-26.3 (-34.5 to -17.1)	640	427	-33.3(-41 to -24.6)
Cancer	981	958	-2.3 (-10.7 to 6.7)	1041	790	-24.1 (-30.8 to -16.8)	1053	678	-35.6(-41.5 to -29.1)
Cardiac and circulatory	2315	2528	9.2 (3.2 to 15.5)	2673	2525	-5.5 (-10.5 to -0.3)	2566	2403	-6.4 (-11.4 to -1.0)
Chest and respiratory	12 787	11 725	-8.3 (-10.6 to -6.0)	9143	12 083	32.2 (28.6 to 35.8)	6863	3298	-51.9(-53.9 to -49.9)
Cough, flu	82 504	72 641	-12.0 (-12.8 to -11.1)	45 138	34 070	-24.5 (-25.6 to -23.5)	28 110	6403	-77.3(-77.8 to -76.6)
Dental and oral problems	3133	3371	7.6 (2.5 to 13.0)	3633	2391	-34.2 (-37.5 to -30.7)	3418	2929	-14.3(-18.4 to -10.0)
Ear, nose, throat	9773	10 831	10.8 (7.8 to 13.9)	10 181	6854	-32.7 (-34.7 to -30.6)	9074	5377	-40.7(-42.7 to -38.7)
Endocrine, glandular problems	791	851	7.6 (-2.3 to 18.5)	943	662	-29.8 (-36.4 to -22.5)	887	654	-26.3(-33.4 to -18.4)
Eye problems	2644	2895	9.5 (3.9 to 15.4)	3108	1782	-42.7 (-45.9 to -39.2)	2878	2001	-30.5(-34.3 to -26.4)
Gastrointestinal problems	50 359	49 775	-1.2 (-2.4 to 0.1)	54 410	28 098	-48.4 (-49.1 to -47.6)	49 317	32 687	-33.7(-34.6 to -32.8)
Genitourinary, gynaecological	7405	8072	9.0 (5.6 to 12.5)	8188	5417	-33.8 (-36.1 to -31.5)	7964	6327	-20.6(-23.1 to -17.9)
Headache, migraine	15 255	17 210	12.8 (10.4 to 15.3)	17 239	16 358	-5.1 (-7.1 to -3.1)	17 362	19 053	9.7 (7.5 to 12.0)
Infectious diseases	1644	1699	3.3 (-3.4 to 10.6)	1670	6401	283 (263 to 305)	1690	1454	-14.0(-19.8 to -7.7)
Injury, fracture	5797	6214	7.2 (3.4 to 11.1)	6681	4832	-27.7 (-30.3 to -24.9)	6634	5809	-12.4(-15.5 to -9.3)
Mental health	15 888	20 470	28.8 (26.2 to 31.5)	17 749	25 259	42.3 (39.6 to 45.1)	17 974	20 792	15.7 (13.4 to 18.0)
Nervous system disorders	971	1089	12.2 (2.9 to 22.3)	1095	891	-18.6 (-25.5 to -11.1)	1082	950	-12.3(-19.5 to -4.2)
Other musculoskeletal disorders	12 630	13 478	6.7 (4.2 to 9.3)	14 137	9997	-29.3 (-31.1 to -27.5)	14 282	11 748	-17.7(-19.7 to -15.7)
Pregnancy-related disorders	7151	7082	-1.0 (-4.2 to 2.3)	6211	5179	-16.6 (-19.6 to -13.5)	3699	4079	10.3 (5.5 to 15.3)
Skin disorders	1702	1854	8.9 (2.0 to 16.3)	2007	1892	-5.7 (-11.5 to 0.4)	2248	2066	-8.1 (-13.4 to -2.4)
Other and unknown	33 284	30 130	-9.5 (-10.9 to -8.1)	32 700	19 743	-39.6 (-40.7 to -38.5)	29 705	17 991	-39.4(-40.5 to -38.3)

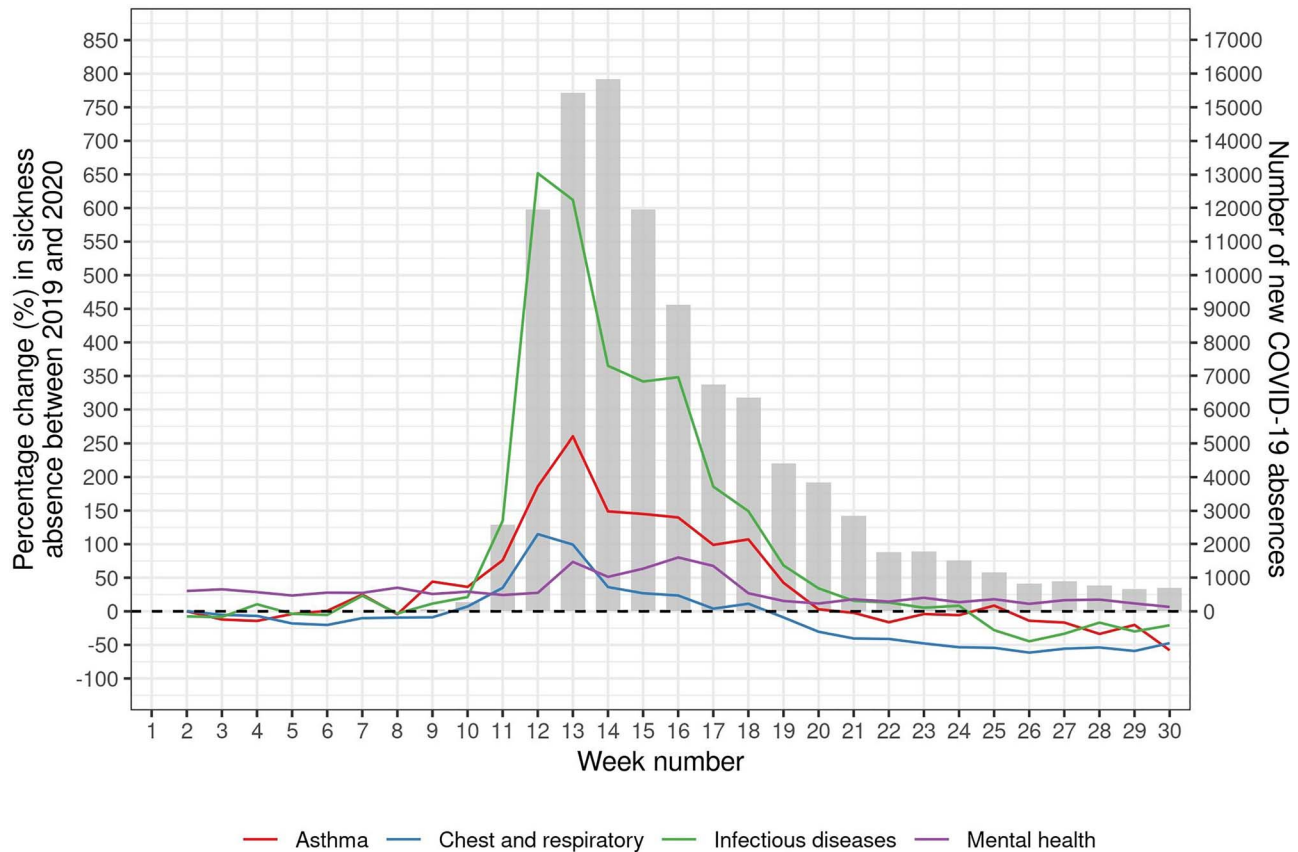
Weeks 2–10 correspond to the equivalent periods: 7 January 2019 to 10 March 2019, and 6 January 2020 to 8 March 2020.

Weeks 11–20 correspond to the equivalent periods: 11 March 2019 to 19 May 2019, and 9 March 2020 to 17 May 2020.

Weeks 21–29 correspond to the equivalent periods: 20 May 2019 to 21 July 2019, and 18 May 2020 to 19 July 2020.

<sup>a</sup>Calculated as 100\*(Number in 2020 - Number in 2019)/Number in 2019.

<sup>b</sup>Any sickness absence in which COVID-19 was recorded as a related reason for absence.



**Fig. 1** Percentage change from 2019 to 2020 in new episodes of sickness absence for selected causes and number of new absences for COVID-19 by week of year.

(by 32.2%) and mental illness (by 42.3%). In the third period (weeks 21–29), the overall year-on-year reduction in non-COVID absences was maintained (down by 27.8%), with changes for most specific diagnostic categories in the same direction as for weeks 11–20. Exceptions, however, were asthma, chest and respiratory disorders and infectious diseases, for all of which numbers were lower in 2020 than in 2019, and pregnancy-related disorders, for which there was a 10% increase.

Figure 1 shows the percentage change from 2019 to 2020 in new episodes of sickness absence by individual week of the year for selected diagnostic categories, and weekly numbers of new episodes of COVID-19 sickness absence during 2020. The surges in absence for infectious diseases, asthma and chest and respiratory disorders all coincided with the emergence of absences for COVID-19, peaking 1–2 weeks earlier, while the increase in new absences for mental illness was less steep and peaked several weeks later.

Table 2 breaks down the year-on-year changes in numbers of new absence episodes during weeks 11–29 according to whether they were of short ( $\leq 7$  days) or longer duration. The

increases for asthma, chest and respiratory disorders, infectious diseases and mental illness were all larger for longer term than for short-duration episodes. There were also increases in long-duration absences for cough/flu and cardiac and circulatory disease, whereas short-duration absences for these diagnostic categories were less frequent in 2020 than in 2019. The reduction in absences for cancer was greater for short-duration episodes (48.1%) but was apparent also for episodes of longer duration (18.0%).

Table 3 shows percentage changes from 2019 to 2020 in numbers of new absences during weeks 21–29, according to whether individuals had COVID-19 sickness absence during weeks 11–18 of 2020. There were few clear indications (from 95% confidence intervals) of a differential change in subsequent patterns of new sickness absence following previous absence for COVID-19. However, the year-on-year increase in new absences for pregnancy-related disorders during weeks 21–29 was much greater among women with earlier COVID-19 sickness absence (215%, 95%CI 159–284%) than in those without COVID-19 (2.8%, 95%CI –1.8 to 7.6%).

**Table 2** Changes in numbers of new episodes of sickness absence during weeks 11–29 from 2019 to 2020 by category and duration of sickness absence

Category of sickness absence	Duration of absence ≤ 7 days			Duration of absence > 7 days		
	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)
All categories	379 770	300 545	−20.9 (−21.2 to −20.5)	88 431	154 395	74.6 (73.2 to 76.0)
All categories except COVID-19	379 770	250 449	−34.1 (−34.4 to −33.7)	88 431	103 320	16.8 (15.8 to 17.9)
Asthma	1471	1647	12.0 (4.4 to 20.1)	373	1264	239 (202 to 280)
Back problems	14 642	12 080	−17.5 (−19.5 to −15.5)	5676	5952	4.9 (1.1 to 8.7)
Blood disorder	823	504	−38.8 (−45.2 to −31.6)	463	399	−13.8 (−24.6 to −1.5)
Cancer	825	428	−48.1 (−53.8 to −41.7)	1269	1040	−18.0 (−24.5 to −11.0)
Cardiac and circulatory	3315	2811	−15.2 (−19.4 to −10.8)	1924	2117	10.0 (3.4 to 17.0)
Chest and respiratory	12 175	8034	−34.0 (−35.8 to −32.1)	3831	7347	91.8 (84.4 to 99.4)
Cough, flu	69 177	30 507	−55.9 (−56.5 to −55.3)	4071	9966	145 (136 to 154)
Dental and oral problems	6489	4862	−25.1 (−27.8 to −22.2)	562	458	−18.5 (−28.0 to −7.8)
Ear, nose, throat	16 346	9840	−39.8 (−41.3 to −38.3)	2909	2391	−17.8 (−22.1 to −13.2)
Endocrine, glandular problems	1212	814	−32.8 (−38.5 to −26.6)	618	502	−18.8 (−27.8 to −8.6)
Eye problems	4673	2998	−35.8 (−38.7 to −32.8)	1313	785	−40.2 (−45.3 to −34.7)
Gastrointestinal problems	98 113	56 124	−42.8 (−43.4 to −42.2)	5614	4661	−17.0 (−20.1 to −13.7)
Genitourinary, gynaecological	11 977	9199	−23.2 (−25.3 to −21.1)	4175	2545	−39.0 (−42.0 to −36.0)
Headache, migraine	33 292	33 648	1.1 (−0.5 to 2.6)	1309	1763	34.7 (25.4 to 44.7)
Infectious diseases	2463	4174	69.5 (61.2 to 78.1)	897	3681	310 (281 to 341)
Injury, fracture	7160	5643	−21.2 (−23.9 to −18.4)	6155	4998	−18.8 (−21.8 to −15.7)
Mental health	14 973	15 768	5.3 (3.0 to 7.7)	20 750	30 283	45.9 (43.4 to 48.5)
Nervous system disorders	1424	1092	−23.3 (−29.1 to −17)	753	749	−0.5 (−10.1 to 10.1)
Other musculoskeletal disorders	18 215	13 741	−24.6 (−26.2 to −22.9)	10 204	8004	−21.6 (−23.8 to −19.2)
Pregnancy-related disorders	7110	5618	−21.0 (−23.7 to −18.2)	2800	3640	30.0 (23.8 to 36.6)
Skin disorders	3201	2762	−13.7 (−18.0 to −9.2)	1054	1196	13.5 (4.5 to 23.3)
Other and unknown	50 694	28 155	−44.5 (−45.3 to −43.6)	11 711	9579	−18.2 (−20.4 to −16)

<sup>a</sup>Calculated as 100\*(Number in 2020 – Number in 2019)/Number in 2019.

## Discussion

### Main findings of this study

Our analysis confirms that during the first wave of COVID-19 in England there were major changes in the incidence of sickness absence among NHS staff as compared with the corresponding period a year earlier. For some diagnostic categories (e.g. asthma, chest and respiratory disease, infectious diseases and mental illness), rates of absence increased (at least initially), whereas for others (e.g. musculoskeletal disorders, injury and fracture, gastrointestinal disease, genitourinary and gynaecological disease and, most notably,

cancer), there were substantial reductions. COVID-19 sickness absence during weeks 11–18 of 2020 was not clearly associated with a higher year-on-year rise in new sickness absence during weeks 21–29, other than for pregnancy-related disorders.

The diverging trends that we report may have been driven by various mechanisms including direct effects of COVID-19; a lower threshold for absence because of symptoms that might be caused by coronavirus infection; fears about vulnerability to COVID-19 in the presence of some comorbidities; pressures either at work or domestically as a consequence of the epidemic; a higher threshold for taking sickness absence



in general because of the need to respond to the emergency posed by COVID-19; changes in activities outside work as a consequence of the epidemic; reluctance to present to medical services; health system reprioritization and longer term trends unrelated to COVID-19.

### What is already known on this topic

Patterns of orthopaedic injury observed during the COVID-19 epidemic (low-energy/fragility trauma persisted, while injuries associated with younger people reduced) indicate that social distancing measures contributed to the reduction.<sup>11</sup> Referrals for suspected cancer in the UK during April–August 2020 were down by approximately 350 000 compared with the same period in 2019,<sup>12</sup> as a consequence, 40 000 fewer patients started cancer treatment in 2020.<sup>13</sup> Evidence is emerging that COVID-19 poses an increased risk in pregnancy, with higher odds of premature birth than in women who do not have the disease,<sup>14</sup> and a greater risk of severe illness (particularly in the context of high body mass index and pre-existing comorbidities) as compared with that in infected women of the same age who are not pregnant.<sup>15</sup>

### What this study adds

This is the first large study of the effects of the COVID-19 pandemic on sickness absence in healthcare workers for illness not directly attributable to coronavirus infection. The large sample size (almost a million individuals) gave the investigation high statistical power, and because we limited it to staff who were employed continuously throughout the study period, changes in numbers of new absences directly reflected changes in incidence rates. Moreover, they could not be confounded by differences between individuals in propensity to take sickness absence when ill, although they could reflect changes over time in thresholds for taking absence.

Absences for infectious disease and chest and respiratory disorders increased sharply in March 2020 compared with 2019 and closely paralleled the trajectory of COVID-19 sickness absence. This may have reflected failure to correctly identify and label some illness as COVID-related, especially early in the epidemic when testing was less widely available. In addition, individuals may have had a lower threshold for taking absence for illnesses with COVID-like symptoms because of the possibility that it might be caused by coronavirus. Year-on-year increases were predominantly for longer duration absences (Table 2), which suggests that the former was the main driver of the increase.

The pattern of sickness absence attributed to cough/flu was different, with year-on-year reductions in sickness absence

episodes throughout the first wave of the epidemic. However, those reductions related only to short-duration episodes, and following the onset of the epidemic, new long-term episodes more than doubled (Table 2). Again, this is likely to reflect failure to identify and label COVID-related illness. The fall in short-term absence may be attributable to reductions in the incidence of common respiratory infections as a consequence of measures taken to reduce transmission of coronavirus.<sup>16,17</sup>

The surge in new absences for asthma closely paralleled the rise in COVID-19 sickness absence (Fig. 1) and was driven by episodes of longer duration (Table 2). It is possible that during the early phase of the epidemic, some workers with asthma took precautionary sickness absence due to concerns about vulnerability to COVID-19 (on which the evidence at that stage was uncertain).<sup>18</sup>

The year-on-year fall in new episodes of absence for injury and fracture, which applied to both short and longer duration absence (Table 2), was more marked in the early phase of the epidemic (Table 1) when restrictions on activities outside work were greatest. It may have resulted, at least in part, from lower rates of injuries because of reductions in activities such as sports and driving.

A year-on-year increase in sickness absence for mental health was apparent prior to the COVID-19 epidemic, but it was most marked in weeks 11–20, suggesting that stresses relating to the epidemic (either at or outside work) may have led to an increase in mental illness. This will be explored in more detail in a separate paper.

New episodes of sickness absence for cardiovascular disease and cancer declined in the 20 weeks following the onset of the COVID-19 epidemic, but the reduction was much greater for cancer (30%) than for cardiac and circulatory disorders (6%). There is no reason to suspect that the incidence of such diseases changed as a consequence of the pandemic, and the trends are more likely to have been driven by changes in health-seeking behaviour, and the postponement of less urgent investigations (e.g. in follow-up of patients) due to reprioritization of health systems.<sup>19</sup> There may have been some reluctance to seek medical advice about new symptoms when healthcare services were under pressure, especially where symptoms were not seriously incapacitating. In addition, individuals may have postponed medical consultation because they were preoccupied in adjusting to personal/professional demands posed by the pandemic. The reduction in sickness absence for cancer was greatest for short-duration episodes, indicative of a change in health-seeking behaviour. Whatever the reason, the finding adds to concerns about an impending problem from late diagnosis and treatment of cancers as a consequence of the pandemic. In the case of

**Table 3** Changes from 2019 to 2020 in numbers of new episodes of sickness absence during weeks 21–29 by category of sickness absence, according to whether individuals had new COVID-19 sickness absence during weeks 11–18 of 2020

Category of sickness absence	No new COVID-19 sickness absence during weeks 11–18 of 2020			New COVID-19 sickness absence during weeks 11–18 of 2020		
	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)	Number in 2019	Number in 2020	Percentage change <sup>a</sup> (95%CI)
All categories	195 563	151 106	−22.7 (−23.2 to −22.2)	22 627	18 899	−16.5 (−18.1 to −14.8)
All categories except COVID-19	195 563	140 839	−28.0 (−28.5 to −27.5)	22 627	16 690	−26.2 (−27.7 to −24.7)
Asthma	791	685	−13.4 (−21.8 to −4.1)	94	96	2.1 (−23.2 to 35.7)
Back problems	8798	8605	−2.2 (−5.1 to 0.8)	1061	1017	−4.1 (−12.0 to 4.5)
Blood disorder	574	378	−34.1 (−42.2 to −25)	66	49	−25.8 (−48.7 to 7.4)
Cancer	990	620	−37.4 (−43.4 to −30.8)	63	58	−7.9 (−35.6 to 31.5)
Cardiac and circulatory	2279	2114	−7.2 (−12.6 to −1.6)	287	289	0.7 (−14.5 to 18.6)
Chest and respiratory	6183	2836	−54.1 (−56.1 to −52.0)	680	462	−32.1 (−39.6 to −23.5)
Cough, flu	25 165	5766	−77.1 (−77.7 to −76.4)	2945	637	−78.4 (−80.1 to −76.4)
Dental and oral problems	3059	2600	−15.0 (−19.3 to −10.4)	359	329	−8.4 (−21.1 to 6.4)
Ear, nose, throat	8111	4858	−40.1 (−42.2 to −37.9)	963	519	−46.1 (−51.6 to −40.0)
Endocrine, glandular problems	799	564	−29.4 (−36.6 to −21.4)	88	90	2.3 (−23.8 to 37.2)
Eye problems	2578	1814	−29.6 (−33.7 to −25.3)	300	187	−37.7 (−48.1 to −25.2)
Gastrointestinal problems	44 211	29 352	−33.6 (−34.6 to −32.6)	5106	3335	−34.7 (−37.5 to −31.8)
Genitourinary, gynaecological	7103	5656	−20.4 (−23.1 to −17.5)	861	671	−22.1 (−29.5 to −13.8)
Headache, migraine	15 617	17 038	9.1 (6.8 to 11.5)	1745	2015	15.5 (8.3 to 23.1)
Infectious diseases	1505	1313	−12.8 (−19.0 to −6.1)	185	141	−23.8 (−38.8 to −5.1)
Injury, fracture	5922	5212	−12.0 (−15.2 to −8.7)	712	597	−16.2 (−24.8 to −6.5)
Mental health	16 126	18 673	15.8 (13.4 to 18.3)	1848	2119	14.7 (7.7 to 22.0)
Nervous system disorders	974	843	−13.4 (−21.1 to −5.1)	108	107	−0.9 (−24.2 to 29.4)
Other musculoskeletal disorders	12 639	10 492	−17.0 (−19.1 to −14.8)	1643	1256	−23.6 (−29.0 to −17.7)
Pregnancy-related disorders	3569	3669	2.8 (−1.8 to 7.6)	130	410	215 (159 to 28)
Skin disorders	2051	1845	−10.0 (−15.5 to −4.2)	197	221	12.2 (−7.4 to 35.9)
Other and unknown	26 519	15 906	−40.0 (−41.2 to −38.8)	3186	2085	−34.6 (−38.1 to −30.8)

<sup>a</sup>Calculated as 100\*(Number in 2020 – Number in 2019)/Number in 2019.

cardiovascular disease, the impact of delayed diagnosis and treatment may be more immediate than for cancer, and that could explain why the incidence of longer duration absence for cardiac and circulatory disorders rose despite a fall in short-duration absences (Table 3).

A combination of factors could have contributed to declines following the onset of the epidemic in absence for categories of illness such as dental and oral problems; disorders of ear, nose and throat; endocrine and glandular disease; eye problems; genitourinary and gynaecological disorders; diseases of the nervous system and skin problems.

They include altered thresholds for taking absence for minor symptoms because of a wish to support patients and colleagues when services are stretched; diversion of resources from other services (e.g. less urgent surgery) to the management of COVID-19; and avoidance of healthcare settings because of a perceived risk of exposure to infection.<sup>20</sup> The last two could again be expected to forebode long-term challenges from a backlog of untreated morbidity.

Pregnancy-related disorders were the only category of sickness absence for which the year-on-year increase was

greatest in weeks 21–29, and remarkably, that increase was limited to women who had an earlier episode of COVID-19 sickness absence during weeks 11–18 (Table 3). This cannot be explained by women opting for earlier maternity leave, which was coded separately from sickness absence, nor is it likely to reflect generic fears about risks from COVID-19 during pregnancy—the rise occurred after the initial peak of the epidemic and did not follow the pattern observed for asthma. Moreover, it was limited to women with earlier COVID-19 sickness absence. While that is an imperfect measure of COVID-19 infection, we have shown previously that it correlated with a positive antibody test for SARS-CoV-2.<sup>9</sup>

### Limitations of this study

Information in the central ESR database had been collected prospectively through monthly updates, which were provided by NHS trusts in a standardized format. Dates of absence should have been highly reliable, but reasons for absence, which will have been determined originally from a combination of self-report and (for longer episodes) medical certification, may have been more prone to error, and also to inconsistencies in coding. In general, however, we would not expect there to have been systematic changes in the misclassification of reasons for sickness absence over the study period.

The broad categories that were used when coding reasons for absence should have reduced the scope for misclassification, but they prevented us from exploring patterns of absence in finer detail. Nor was it possible to investigate longer-term trends, although the year-on-year comparison for the weeks 2–10 provided some insight into levels of change that might have been expected in the absence of COVID-19.

### Conclusions

The COVID-19 pandemic has had a profound effect on patterns of sickness absence among NHS staff. Of particular concern is the marked reduction in sickness absence for cancer, which suggests an added burden of future morbidity, and perhaps mortality, as a consequence of delays in diagnosis and treatment—such effects would be expected to extend to the wider population. In addition, plans are needed to manage a backlog of treatment for many other categories of disease that has been postponed because of the COVID-19 pandemic. Further research should be undertaken to understand the rise in absence for pregnancy-related disorders, which was limited to women with earlier COVID-19 sickness absence.

### Data availability

With permission, source data are available upon request from the NHS Electronic Staff Record (ESR) Warehouse (NHS England).

### Contributorship statement

All authors contributed to the planning, conduct, analyses and reporting of this manuscript as outlined below.

Rhiannon Edge (Lecturer in Population Health) was responsible for advising on study design, analysis and interpretation of results.

Diana van der Plaats (Statistician) was responsible for the statistical aspects of analysis and interpretation of the quantitative aspects of the study.

Vaughan Parsons (Research manager) was responsible for overseeing the set-up and delivery of the study and facilitated data collection.

David Coggon (Emeritus Professor of Occupational and Environmental Medicine) was responsible for advising on methodological design, analysis and interpretation of results.

Martie van Tongeren (Professor of Occupational and Environmental Medicine) was responsible for advising on study design, analysis and interpretation of results.

Rupert Muiry (Research assistant) was responsible for scoping out and reviewing the emerging literature.

Ira Madan (Consultant Occupational Physician and Reader) was co-chief investigator with responsibility for advising on study design, analysis and interpretation of results.

Paul Cullinan (Professor in Occupational and Environmental Respiratory Disease) was chief investigator with responsibility for advising on study design, analysis and interpretation of results. He had overall responsibility for the management and delivery of the study.

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## Conflict of interest

All authors have completed the ICMJE uniform disclosure form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) and declare: no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous 3 years; no other relationships or activities that could appear to have influenced the submitted work.

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