1)

The pandemic disrupted society and health services through lockdowns and resource reallocation to care for COVID-19 patients. Reductions in numbers of cancer patients having surgery, being diagnosed pathologically or via 2-week wait, and screening programs pauses have been described. The effect on emergency presentation, which represents an acute episode with poor outcomes, has not been investigated. This study explored the pandemic's impact on emergency hospital admissions for cancer patients in a UK region.

2)

Reductions in emergency admissions, and pathologically diagnosed cancers, as reported by the Northern Ireland Cancer Registry (NICR), indicate undiagnosed patients in the community which has implications for future workloads and survival. Data suggest undiagnosed cases may be higher for haematological, brain and CNS, and lung cancers and among females. Efforts should be made to encourage people with symptoms to present for diagnosis or reassurance.

3)

On 23rd March 2020, in response to a novel coronavirus (SARS-CoV-2), causing a disease known as COVID-19, national lockdowns were implemented in many countries including the United Kingdom (UK), where the overarching message was "Stay Home, Protect the NHS, Save Lives" [1]. Many health care providers diverted resources towards the treatment and care of COVID-19 patients.

4)

Reductions in the numbers of cancer patients having surgery, being diagnosed pathologically or via 2-week wait, have been described . It would be expected that these changes would lead to increased presentation via Accident and Emergency. Before the pandemic, emergency presentation was the route to cancer diagnosis for about 1 in 5 cancer cases in Northern Ireland (NI) (more so for older persons, patients in socially deprived areas, colon, and lung cancer patients) and poorer net survival rates for patients diagnosed via emergency routes were highlighted.

5)
Previous evidence indicated that the first wave of the pandemic had a profound impact on the cancer services, with UK data reporting an 82% reduction in screening services, a 70% reduction on two-week wait system, and a 40% reduction in numbers of cancer patients receiving surgery. This first study on the impact of COVID-19 on emergency cancer admissions indicates that in addition to fall off in cases presenting via screening there was also a reduction in presentations via emergency departments.

6)
These figures indicate a further deficit of cancer patients presenting for diagnosis and care. Additional resource will be required to investigate treat and provide holistic personalised support to the backlog of patients. A sustained campaign to increase symptom awareness and presentation to primary care is required. Data were obtained for cancer related emergency admissions between March to December 2017–2019 (‘Pre-COVID’ era) and March to December 2020 (‘During COVID’ era) from the Patient Administration System (PAS).

7)
These anonymised PAS data provided details of patients’ International Classification of Diseases (ICD) code, their demographics including age group: (‘0 to 49’, ‘50 to 64′, 65 to 74′, and ‘75+’) and sex, with deprivation quintile (1 = least deprived - 5 = most deprived) and rurality based on postcode of residence [9] before anonymisation. As these were raw data that had not been through the normal routine checks that cancer registrations require, we have a mix of incident and prevalent cases.

8)
Data analysis was completed using the Stata Software (Stata Corp LLC. TX. Software Release: 17). Binomial probability tests (with 95% confidence intervals) were used to analyse month of admission and tumour site. This allowed us to investigate if the ‘During COVID’ patient cohort admissions represented the expected 25% of admissions over the four-year period studied.

9)

If there was no change in emergency admissions during the first year of the pandemic, we would expect each of the 4 years under analysis to represent around 25% of the total number of emergency admissions for the whole period. Other categorical variables were analysed using Pearson’s chi-squared test and if significant, adjusted residuals were used to understand from where the associations originated, and Cramer’s V was used to show the strength of association

10)
Compared to the average preceding 3 years, in 2020 the number of cancer related hospital admissions from any route fell by 14.5%. There were on average 3456 emergency cancer admissions per year across the ‘Pre-COVID’ cohort, and 3031 admissions ‘During COVID’: a decrease of 12·3%, representing a fall from 183·4 to 159·4 admissions per 100,000 people

11)
Monthly emergency cancer admissions were significantly reduced when COVID-19 levels were highest; at the start of the pandemic (i.e., − 15·6% in March 2020) and in December 2020 when admissions dropped to the nadir (− 33·9%) - see Table 1), when the number of daily confirmed cases surged to over 2000 per day, and a third lockdown was initiated.