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Management of COVID in care homes in Bath and North East Somerset and West of England: a quantitative and qualitative analysis

A report examining factors impacting on death rates in care homes in Bath and North East Somerset during the second wave of the COVID-19 pandemic 2020-2021 and the experiences of care home staff in the West of England

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Executive Summary

This work was undertaken to better understand the rate of deaths from COVID-19 in care homes in B&NES, during the second wave of the pandemic in 2020-2021. The rates had been higher than other local authorities with similar demographics.

The report is based on two studies undertaken by researchers from the National Institute for Health Research and Care: Applied Research Collaboration West. The first is a quantitative study which examines data collected by B&NES Council in relation to care home characteristics and activity during the pandemic. The focus was on identifying risk factors that were associated with higher rates of infection and death. The second study was qualitative and was based on interviews with care home staff in the West of England (B&NES and neighbouring areas) about their experiences during the pandemic and provided context, meaning and detail to complement the quantitative study. The qualitative data presented represent participants' experiences and perceptions and should not be read as an audit of practice across all care homes or policies from their local authorities or health bodies.

Both studies have limitations which are detailed in the report and are a result of the quantity and quality of data available to the research team. All the results should be viewed with this in mind.

The quantitative study found no evidence for an association between a number of suggested risk factors and higher COVID-19 cases or deaths in B&NES. The study showed that care home size was associated with higher numbers of infections but this was to be expected as there is there is a greater population pool available for the virus to spread among. There was an association between a care home manager being in post for less than a year and lower case and death rates. However, this finding was based on a small number of data and should be interpreted with caution.

The qualitative data show a more detailed picture of the care home experience during the pandemic. The situation for the care homes was completely unprecedented. Despite this, care homes coped well in the face of staff and equipment shortages, logistical challenges of implementing isolation practices in buildings with a variety of layouts, and the social challenges that arose for residents and staff. Staff shortages were an issue consistently identified by care homes staff, making them proactive and creative in identifying solutions to the problems. A key area was the widening of roles; staff took on a range of duties and activities that extended their roles to cover duties previously undertaken by visiting staff to ensure that provision of care was maintained.

The study did highlight feelings of isolation by care homes in terms of their relationship with the wider health and care services. To varying degrees, they felt abandoned by primary and secondary care providers. The relationship with local authorities was generally described as positive and supportive. However, there were communication issues that contributed to some misunderstandings between the care homes and local authorities. There was also confusion that stemmed from advice coming from government, local authority and public health sources which was felt, at times, to be contradictory.

The issues that were identified by the quantitative study were not supported by the qualitative data. In relation to care home size the participants pointed to the layout of their buildings rather than their size as being a more substantive challenge. Care home managers saw long service in the sector

and depth of experience as a positive factor in limiting the impact of the pandemic. Whilst this does not disprove the findings of the quantitative study it does highlight the limitations of the data and the need for further research.

The studies have provided some learning points in case of future pandemics,

- Staffing shortages was the biggest challenge identified by the care home staff. This is an ongoing issue with no clear answer. However, we would urge policy makers at government and local authority level to develop contingency plans that will enable care homes to be supported with emergency staff cover for pandemics and other unexpected events.
- Isolation and infection control: building layout and structure mitigated against some of the recommended policies for isolating infected residents. In partnership with local authorities care homes could develop and regularly update infection and prevention control plans that are particular to their setting.
- More consideration and autonomy could be given to care homes to enable them to find the right balance between infection control measures and the psychosocial wellbeing of their residents. There was a strong feeling that the measures imposed to support infection control went too far in removing the social aspects of residents lives, especially in homes with a significant proportion of people living with dementia.
- A key aspect to diminish the feelings of abandonment and isolation is to support and maintain lines of communication especially around policy and guidance where multiple sources of information led to confusion and uncertainty.

The overall conclusion from this report is that the evidence available did not suggest that behaviour and practices undertaken by care homes contributed to the death rates recorded in B&NES during the pandemic. For further contextual data, we recommend this report is considered alongside the B&NES briefing paper (Bath & North East Somerset, 2023) which uses national data to look at trends in where people die in the period leading up to and during the pandemic. The paper shows a historic trend within B&NES toward people dying in their usual place of residence rather than hospital and provides a different explanation for higher COVID death rates within care homes in the region.

1. Background

The COVID-19 pandemic reached the UK in late February 2020 (British Foreign Policy Group, 2022) with the first wave estimated to peak between late March and early April (Office for National Statistics, 2021a). From very early in the pandemic, it was known that older adults were particularly vulnerable to COVID-19 and at much greater risk of mortality, with the highest risk in older adults with comorbid health conditions (Chow, 2021; Shahid et al., 2020). The association between older age and greater risk of COVID-19 cases and deaths has been reported in previous research (Dutey-Magni et al., 2021).

Care homes are high risk places for transmission, as they house large numbers of older people and have high risk of infection transmission through numerous visits from professionals, the high number and mobility of staff, and regular contact (through patient admissions and discharges) with hospitals (Guthrie et al., 2022; Public Health England, 2021). However, early in the pandemic they were considered low risk and often used for the discharge of patients from hospital (Daly, 2020; Devi et al., 2020; McGilton et al., 2020). These challenges, in addition to difficulties faced by all care homes across the country prior to the pandemic, including workforce shortages and lack of sufficient funding (Dunn et al., 2021; Marshall et al., 2021), created a perfect storm nationally where care homes were vulnerable to the impact of COVID-19.

A range of measures were introduced in care homes to try and manage the introduction of infection and reduce the risk of outbreaks and deaths. Care homes were advised to not allow visitors after the start of the first lockdown (March 2020) until July 2020 (House of Lords, 2021), but initially with very little, and delayed, guidance from central government (Devi et al., 2020; Dunn et al., 2021). In some care homes, staff were provided with onsite accommodation, however this was often shared and with staff who worked in other care homes. Personal protective equipment (PPE) and COVID-19 testing equipment was eventually made available to care homes but considerably later than when it was first needed and compared with the NHS (Daly, 2020; Dunn et al., 2021).

Care homes were disproportionality affected by COVID-19; between March and June 2020, cases in care homes were estimated to be 13 times higher than in the community (Dutey-Magni et al., 2021). Whilst testing was scarce in care homes during the first wave (Daly, 2020), the high number of COVID-19 deaths indicate the impact the pandemic had in care homes. There were 19,236 COVID-19 deaths in care homes in England in the first wave of the pandemic (March to June 2020) and 16,355 in the second wave (September to March 2021) (Office for National Statistics, 2023a; Scobie, 2021). However, the two waves are not comparable in absolute figures, largely due to the lack of testing in the first wave (Daly, 2020). Excess deaths, compared with the years 2015-19, were higher in first wave but not in the second (Office for National Statistics, 2022b), reflecting the difference between the two waves.

It is important to understand the factors correlated with COVID-19 in care homes to understand the spread of infection and help equip care homes to minimise their risk of a future outbreak or epidemic. Various care home related factors have been investigated in relation to COVID-19 cases; previous research has reported associations between increased cases and nursing care, compared with residential (Dutey-Magni et al., 2021), larger number of beds in care homes (Burton et al., 2020; Dutey-Magni et al., 2021) and staffing ratio (high numbers of beds to staff) (Dutey-Magni et al.,

2021). Furthermore, studies did not observe an association between care home ownership (Burton et al., 2020) or Care Quality Commission ratings (Tulloch et al., 2021) and COVID-19 outbreaks.

Care homes received COVID-19-positive patients discharged from hospital, which led to outbreaks in care homes. In order to quickly free up hospital beds, patients were often discharged to care homes, without COVID-19 testing early in the pandemic (Daly, 2020; Dunn et al., 2021). Between 30th January and 12th October 2020, 1.6% of COVID-19 outbreaks in care homes (97 outbreaks involving 804 residents) were associated with hospital-seeded cases, resulting in 286 deaths (Public Health England, 2021). This had changed by the second wave, when all patients in hospital had to test negative for COVID-19 prior to transfer to care homes, although some patients may subsequently have become positive during the isolation period in the care home.

The experiences of care home staff, residents, and families during the COVID-19 pandemic (Giebel et al., 2022; Gray et al., 2022; Hanna et al., 2021) , the impact on their mental and physical wellbeing (Ho et al., 2022; Paananen et al., 2021) and the COVID-19 policies for care homes (Daly, 2020; Daly et al., 2022) have received attention by researchers. However, there has been limited research conducted to date, focusing on care home workers' experiences of overcoming everyday challenges of the pandemic (for exceptions see (Marshall et al., 2023).

Care home death rates in the Bath and North East Somerset (B&NES) area were comparatively higher compared with other local authorities in the country (in the period between the week ending 4th September 2020 to the week ending 19th February 2021 there were 523 deaths per 100,000 population mentioning COVID-19 where the place of death is a care home in adults aged 75+, ranking 30 out of 312 lower tier local authorities in England where 1 is the highest rate) (Office for National Statistics, 2022a). This was despite the South-West region generally having lower rates of COVID-19, and overall COVID death rates and hospital death rates in B&NES both being well below national average (Office for National Statistics, 2022a). In B&NES, 50% of COVID-19 deaths in were in care homes (Office for National Statistics, 2021b, 2021c), compared with the English national average of 40% in the first wave and 26% in the second (Curry, 2021).

We conducted a mixed-methods study to understand Covid-19 infections and deaths in care homes in B&NES during the winter of 2020-2021. The quantitative investigation looks at the factors correlated with deaths in care homes, whilst the qualitative investigation focuses on the experiences of care home staff during the pandemic, giving a greater depth and understanding of the quantitative investigation. The qualitative study includes data from care homes outside B&NES, see section 3.4.2 which explains the rationale for this. The focus of the qualitative study was on the experiences and perceptions of staff during the pandemic rather than an audit of local policy and practice within the care homes and their local authorities. A parallel analysis by B&NES local authority used data collected nationally to look at place of death trends prior to and during the COVID pandemic to offer further understanding of the pattern of deaths in B&NES care homes (Bath and North East Somerset, 2023).

We have structured the report below in two sections to reflect the two methodological approaches. We will reflect on the outcomes from both analyses in the concluding discussion section at the end of the report.

2. Aims and objectives

The aims of this study were to determine factors correlated with COVID-19 infections and deaths in care homes in B&NES during the winter of 2020/21 and to explore the views and experiences of care staff.

- Identify risk factors correlated with infections and deaths during the COVID pandemic of 2020/21
- Identify the challenges experienced by care home staff during the COVID pandemic of 2020/21
- Identify the ways in which care home staff overcame challenges and developed solutions during the COVID pandemic of 2020/21
- Outline suggestions and strategies for care homes to employ in future pandemics.

3. Methods

3.1 Study Outline

To use quantitative data and qualitative interviews to understand the experience of care homes in B&NES and the West of England during the COVID pandemic 2020/21

3.2 Study Setting

- Quantitative - care homes (including nursing homes) in the B&NES footprint
- Qualitative – care homes (including nursing homes in the B&NES footprint and across the West of England

3.3 Quantitative evaluation

3.3.1 Data sources

Data for older adults' care homes were provided by B&NES Council for the second wave of the COVID-19 pandemic, defined here as the period between the week ending 4th September 2020 to the week ending 19th February 2021.

Data used for the study were collected from B&NES older adults care homes, the commissioner for care homes, the contract review officer and Infection Prevention and Control (IP&C) team and collated for research purposes by B&NES Council. Individual patient data were aggregated to the level of the care homes, anonymised and shared with the ARC West research team.

3.3.2 COVID-19 cases and deaths

The outcomes of interest in the older adults care homes in B&NES included in analysis were the weekly number of COVID-19 incident cases and deaths throughout the second wave of the pandemic for each of the older adults care homes in BANES. This was based on the case definition used by the UK Health Security Agency at the time the data was collated, which is when someone tested positive in a Covid-19 test, but does not include reinfections (UK Health Security Agency, 2022). Covid-19 deaths were defined as deaths where COVID-19 is mentioned anywhere on the death certificate (Office for National Statistics, 2023b). We were also provided with the mean age and standard deviation of the cases and deaths each week, as well as the weekly gender composition of cases and deaths, which are presented descriptively but not used in analysis.

3.3.3 Covariates

Care homes were categorised as complex dementia, dementia nursing, dementia residential, general nursing, general residential and general and dementia nursing. From this we derived two variables, care home speciality (general/dementia/mixed) and type of care home (residential/nursing). A measure of care home ownership combined chain and council owned homes, as those with owners that managed multiple care homes, and independent and voluntary homes, whose owners were more likely to manage only one care home. Care homes were labelled as small if they had less than 30 beds, medium if they had 30-59 beds and large if they had over 60. Care home size was closely related to, and used as a proxy for, occupancy. A COVID-19 outbreak (in the second wave) was defined as having two or more cases in a week. It was recorded whether, throughout the study period, care homes accepted admissions from acute or community hospitals in to intermediate care beds (eg, D2A, Chi or 3R beds) for short periods either before going home or into a long-term care home bed. Care home management was measured using four variables: high, medium or low

engagement with B&NES Council (indicating engagement with commissioners and the IP&C team through, for example, voluntary forums, requests for information and offers of proactive support); the number of days per week the care home completed the capacity tracker; the length of time the manager had been in post (dichotomised as less than one year and one year or more); and whether or not the care home had high staff turnover (which captured whether there were frequent periods of lower than normal staffing levels due to recruitment and retention problems). For care homes that were part of a chain, we also included support from the provider/area manager (this included, for example, support with COVID-19 guidance, risk assessments, policies and procedures etc, support if staffing levels fell), which was categorised as high, medium or low. GP involvement at the care home was summarised as high if regular face-to-face visits continued, medium if regular contact was through telephone or virtual calls and if visits took place when needed, or low if contact was only made when needed. Variables were also provided to indicate whether care homes received lateral flow tests on time or not and if their staff were in shared accommodation (either with staff from the same or another care home).

Variables considered to be on the causal pathway for either cases or deaths, such as a COVID-19 outbreak, Infection Prevention and Control (IP&C) involvement, IP&C training, IP&C visit, whether the route of infection was investigated or not (which would identify whether the outbreak was linked to an admission that tested positive in isolation, a staff member who was a household contact or a visitor into the home), and whether COVID-19 outbreak meetings were held were not included in the main analysis. Agency staff use and care home ownership could not be included in the model due to collinearity and non-convergence issues.

3.3.4 Statistical analysis

The number of COVID-19 cases and deaths for each week during the study period were summarised as the mean for the study period and presented with the standard deviation. Descriptive statistics were reported for the characteristics (age and gender) of the cases and deaths and the care home characteristics. Small cell counts (N<5) are supressed and not presented in tables in line with data protection guidelines.

The number of days the capacity tracker was completed, GP involvement, lateral flow tests (LTFs) received and used had missing data (N<5), which was assumed to be missing at random. Multiple imputation using chained equations was used to impute missing data with 100 imputations using Rubin's rule (Rubin & Schenker, 1991). An imputation model for the COVID-19 cases outcome included measures of days per week the capacity tracker was completed, GP involvement and receipt of lateral flow tests for imputation and the care home ID, number of cases, number of deaths, care home speciality, type of care home, care home ownership, care home size and week as independent variables. Following imputation, data were declared as time set panel data (care home ID was used as the panel variable).

Univariate and multivariable Poisson models using imputed data were performed with the weekly number of incident COVID-19 cases as the outcome, adjusted for risk factors (care home speciality, type of care home, care home ownership, care home size, hospital admissions to intermediate beds, time the manager had been in post, engagement with B&NES council, days capacity tracker completed, staff turnover, GP involvement, receipt and use of lateral flow tests, and staff in shared accommodation). The same steps were then taken for the COVID-19 deaths model. All Poisson

models used robust standard errors and were adjusted for care home size (which, in sensitivity analysis was found to be closely related to care home occupancy) and week.

Additional analyses were performed to consider the contribution of other variables that did not have complete enough data to include in the main analysis. The first included the measure of provider/area manager support. The second was for the deaths outcome only and included the COVID-19 outbreak variable. All analyses were done using Stata v17 (StataCorp, 2021).

3.4 Qualitative evaluation

3.4.1 Study design

Semi structured interview study with staff from care homes in B&NES and the West of England.

3.4.2 Recruitment and geographical scope

The qualitative researcher was recruited in September 2022. Ethics and governance permissions to undertake the research were secured prior to the researcher starting (see section 3.5) and recruitment efforts began almost immediately. Our initial aim was to recruit residents as well as staff from B&NES care homes. However, the length of time that had passed since the lockdown period meant that many residents recall would have been limited and a number had died before the research. This meant that recruiting residents to the study was not practical and a decision was made by the research team to focus on staff.

Recruitment initially focused on care home managers and a number of approaches were employed including: recruitment emails from B&NES staff with care home leadership roles to care home managers; and presentations by the qualitative research team to the B&NES care home forum for care home managers. This approach enabled us to recruit two care homes and whilst the managers and senior administrators were happy to talk to us there was limited engagement from care home staff. In conversations with care home managers who responded to emails but did not sign up to the research, our impression was that managers did not feel that they or their staff had the time for the study.

The data we collected from the interviews were very detailed and informative, but it was not enough to base our qualitative study on. In collaboration with the members of the study team from B&NES a decision was taken to recruit beyond B&NES – this would prevent us collecting B&NES specific data, which was the original aim, but it would enable us to give an insight into the experience of care home staff in the region and shed light on the issues experienced within B&NES. We acknowledge that this placed a significant limitation on our work, but we also recognised that the study still had the potential to contribute to the overall learning from the pandemic and shed some light on the experience in the B&NES area. The NIHR Comprehensive Research Network supported recruitment through the ENRICH network (NIHR, 2024): a database of care homes who have expressed an interest in research. ARC West provided the funding for the researcher to complete the data collection and analysis.

3.4.3 Data collection

All care homes and care home workers were provided with full study information prior to participation. Care home workers were invited by care home managers and researchers clarified that participation was voluntary prior to consent. All interviews were audio-recorded and verbal consent was recorded prior to the commencement of the interview.

A semi-structured interview guide was developed and was informed by quantitative data from the wider research project which looked at risk factors for infection and death rates in care homes in the area. Our questions also drew on published research and reports. Interview questions sought to understand care home life during the pandemic, care home workers' everyday experiences and identify challenges and problems that care homes faced during the pandemic. Five care homes were recruited across the West of England. Fourteen semi-structured interviews were conducted with care home workers with a variety of roles and responsibilities. Four interviews were conducted with care home managers (three of which were joint interviews where managers were accompanied by a care home administrator/business manager/finance administrator).

3.4.3 Analysis

Interviews were transcribed verbatim, and transcripts were analysed with the support of NVivo 12 (QSR International Pty Ltd, 2018) software. Each transcript was analysed by two researchers (JB and SS) to ensure congruence in coding and interpretation. A thematic analysis (Braun & Clarke, 2019) using a combination of both inductive and deductive approaches was employed.

3.5 Research Ethics and Governance

The conduct of the study was approved by the University of Bristol Faculty of Health Science Research Ethics Committee (FREC; reference number 0135). Sharing of anonymised data was underpinned by a data sharing agreement between the University of Bristol and Bath and North East Somerset Council (Reference 2020-6000).

4. Results

4.1 Quantitative data

Thirty-three care homes were included in the analysis. There were 290 COVID-19 cases across all care homes during the study period (weekly mean = 0.35, SD = 1.47) and 101 deaths from COVID-19 (weekly mean = 0.12, SD = 0.57). The mean age of cases was 85.2 years (SD = 15.3) and for deaths was 88.7 years (SD = 5.5); 71.4% of cases and 64.4% of deaths were female. Descriptives for COVID-19 cases and deaths are presented in Table 1, summary statistics for cases and deaths are in Table 2) and Table 3 show care home descriptives.

Table 1: Characteristics of COVID-19 cases and deaths (1st September 2020 to 19th February 2021, 25 weeks)

Number of care homes included		33
Number of COVID cases in Wave 2		290
Mean age of COVID cases (SD)		85.22 (11.07)
Gender of COVID cases, N (%)[1]	Female	207 (71.38)
	Male	83 (28.62)
Number of COVID deaths in Wave 2		101
Mean age of COVID deaths (SD)		88.67 (5.47)
Gender of COVID deaths, N (%)	Female	65 (64.36)
	Male	36 (35.64)

[1] Older adults care home populations have a higher ratio of females to males (Office for National Statistics, 2020a)

Table 2: Weekly mean COVID cases and deaths for study period (1st September 2020 to 19th February 2021, 25 weeks)

	Mean (SD)
Mean COVID-19 infections per Care home per week	0.35 (1.47) [range 0 – 16]
Mean COVID-19 deaths per Care home per week	0.12 (0.57) [range 0 – 6]

Table 3: Care home characteristics

Care home characteristics (N=33)		N (%)
Care home specialty	General	19 (57.6)
	Dementia	6 (18.2)
	Mixed	8 (24.2)
Type of Care home	Residential	15 (45.5)
	Nursing	18 (54.6)
Care home Ownership	Chain / Council	20 (60.6)
	Independent / Voluntary	13 (39.4)
Care home size	Small (≤29 beds)	8 (24.2)
	Medium (30-59 beds)	19 (57.6)
	Large (≥60 beds)	6 (18.2)
Wave 2 outbreak? (N=31)	No	14 (45.2)
	Yes	17 (54.8)
Admissions from hospital into D2A, 3R or Chi beds?	No	9 (27.3)
	Yes	24 (72.7)
Manager in post	One year or more	24 (72.7)
	Less than a year	9 (27.3)
Engagement with B&NES Council	High	18 (54.6)
	Medium	8 (24.2)
	Low	7 (21.2)
Days per week capacity tracker completed (N=31)	5-6	7 (22.6)
	3-4	14 (45.2)
	1-2	10 (32.3)
Staff turnover	Stable staffing	15 (45.5)
	Staffing issues	18 (54.6)
Support from provider/area manager (N=30)	High	16 (53.3)
	Medium	6 (20.0)
	Low	8 (26.7)
GP involvement	High	7 (21.2)
	Medium	20 (60.6)
	Low	<5 (<10.0)
	Unknown	<5 (<10.0)
LFTs received and used	On time	10 (30.3)
	Late	13 (39.4)
	Unknown	10 (30.3)
Staff in shared accommodation	No	16 (48.5)
	Yes from same home	10 (30.3)
	Yes from another home	7 (21.2)

Associations between explanatory variables and COVID-19 cases and deaths in unadjusted and adjusted models are presented in Table 4.

The size of the care home was associated with the higher number of cases. Having a manager in post for less than one year is associated with fewer cases and deaths in care homes.

Weak and inconclusive associations were observed between lower engagement with B&NES council and completion of the capacity tracker with fewer cases and fewer deaths.

Type of care home, care home speciality, care home ownership, admissions from hospital, staff turnover, GP involvement, timing of LFT receipt and use and staff accommodation were not associated with either cases or deaths.

In the sensitivity analysis (Appendix 1), associations between less support from provider/area manager and fewer cases and deaths were observed in in unadjusted analysis only; associations were attenuated in the multivariable models. An additional sensitivity analysis, where a measure of a COVID-19 outbreak was included in the deaths model, confirmed that having an outbreak in the care home was strongly associated with more deaths. In the fully adjusted model, the inclusion of this variable attenuated associations between care home size and deaths, time manager was in post and deaths and remained the only significant correlate of deaths.

Table 4: Univariate and multivariable Poisson regression models for Covid cases and deaths (adjusted for week and care home size and with robust standard errors) (N=33 care homes)

		Cases		Deaths	
Exposure variables		Univariate Poisson regression model	Multivariable Poisson regression model	Univariate Poisson regression model	Multivariable Poisson regression model
		Incidence Ratio (95% CI)			
Type of care home	Residential	1.00	1.00	1.00	1.00
	Nursing	0.85 (0.34 to 2.12)	0.90 (0.34 to 2.36)	1.69 (0.69 to 4.12)	2.92 (0.53 to 16.16)
Care home specialty	General	1.00	1.00	1.00	1.00
	Dementia	1.05 (0.36 to 3.08)	0.82 (0.37 to 1.82)	1.42 (0.53 to 3.83)	1.06 (0.41 to 2.76)
	Mixed	1.33 (0.62 to 2.87)	1.34 (0.41 to 4.38)	2.11 (0.89 to 5.02)	1.68 (0.55 to 5.09)
Care home ownership	Chain/Council	1.00	1.00	1.00	1.00
	Independent/Voluntary	0.78 (0.31 to 1.92)	0.76 (0.32 to 1.84)	0.67 (0.29 to 1.52)	0.71 (0.14 to 3.56)
Care home size	Small	1.00	1.00	1.00	1.00
	Medium	*4.31 (1.62 to 11.49)*	*3.93 (1.08 to 14.28)*	*3.07 (1.03 to 9.13)*	1.12 (0.22 to 5.78)
	Large	*7.76 (2.86 to 21.11)*	*12.60 (2.54 to 62.51)*	*8.19 (2.73 to 24.62)*	16.48 (0.81 to 335.88)
Admission to D2A bed	No	1.00	1.00	1.00	1.00
	Yes	0.60 (0.32 to 1.12)	0.45 (0.11 to 1.83)	0.79 (0.43 to 1.44)	0.61 (0.11 to 3.22)
Manager in post	One year or more	1.00	1.00	1.00	1.00
	Less than a year	*0.44 (0.24 to 0.80)*	*0.19 (0.06 to 0.60)*	*0.49 (0.25 to 0.93)*	*0.08 (0.01 to 0.64)*
Engagement with B&NES Council	High	1.00	1.00	1.00	1.00
	Medium	1.05 (0.43 to 2.59)	0.91 (0.23 to 3.62)	1.71 (0.73 to 4.01)	3.22 (0.73 to 14.33)

	Low	*0.52 (0.29 to 0.94)*	0.43 (0.12 to 1.55)	*0.35 (0.15 to 0.80)*	0.22 (0.04 to 1.13)
Days per week capacity tracker completed	5-6	1.00	1.00	1.00	1.00
	3-4	1.32 (0.67 to 2.60)	1.45 (0.30 to 6.96)	1.02 (0.45 to 2.34)	4.07 (0.54 to 30.44)
	1-2	1.58 (0.80 to 3.13)	2.78 (0.91 to 8.54)	1.35 (0.59 to 3.06)	*10.57 (1.63 to 68.67)*
Staff turnover	Stable staffing	1.00	1.00	1.00	1.00
	Staffing issues	0.97 (0.54 to 1.73)	1.87 (0.80 to 4.33)	0.92 (0.48 to 1.74)	1.70 (0.57 to 4.91)
GP Involvement	High	1.00	1.00	1.00	1.00
	Medium	0.86 (0.43 to 1.72)	1.01 (0.27 to 3.75)	1.18 (0.49 to 2.81)	1.72 (0.27 to 11.02)
	Low	0.98 (0.36 to 2.66)	1.12 (0.37 to 3.35)	1.32 (0.51 to 3.43)	1.54 (0.45 to 5.35)
LFTs received and used	On time	1.00	1.00	1.00	1.00
	Late	0.68 (0.34 to 1.37)	0.64 (0.23 to 1.79)	0.78 (0.34 to 1.81)	1.08 (0.21 to 5.61)
Staff in shared accommodation	No	1.00	1.00	1.00	1.00
	Yes from same home	1.20 (0.61 to 2.35)	0.93 (0.26 to 3.34)	0.97 (0.46 to 2.06)	0.79 (0.16 to 3.93)
	Yes from another home	1.18 (0.58 to 2.41)	1.92 (0.59 to 6.21)	1.06 (0.50 to 2.24)	1.66 (0.26 to 10.77)

4.2 Qualitative data

4.2.1 Qualitative results overview

The data presented in this section represent participants' experiences and perceptions during the pandemic and should not be read as an audit of practice across all care homes or policies from their local authorities or health bodies.

Data were collected between November 2022 and September 2023, recruitment took place between November 2022 and September 2023. Five care homes were recruited from 4 local authorities, and we conducted 14 interviews including 3 joint interviews; see Table 5 below for details on staff roles.

Table 5: care home details (qualitative study)

Size of Care Home	***Level of Clinical Support provided by care home***	***Interviewees and roles***	***ID***
30 beds	Nursing & residential home. Care for individuals with dementia including end of life	Care home manager	1
		Senior administrator	2
31 beds	Residential home for elderly needing personal or nursing care	Care home manager	3
		Business manager	4
		Assistant manager	5
		Activity co-ordinator	6
73 beds	Nurses are trainers in different areas in nursing. Home has dementia expertise.	Care home manager	7
		Deputy manager	8
		Unit manager	9
		Activity manager	10
65 beds	Nursing home specialising in dementia care	Care home manager	11
		Finance administrator	12
		Operations manager	13
34 beds	Family run group of residential care homes. Everyday personal and healthcare plus dementia care.	Quality Assurance Director	14

Our data focus on the challenges and successes that care homes experienced during the pandemic and their ability to implement and work with infection, prevention and control measures; policy and guidance issued by Government and local authorities; and lockdown measures which impacted on resident socialisation.

We start by looking at the overall experience of care homes during the pandemic. The quote below summarises a wide range of challenges including contact with medical professionals; accessing appropriate equipment; the psychological impact of social isolation; the reduction of resident activities; staff shortages; changing guidance; and staff exhaustion.

> *We tried to maintain as much of the standard as we possibly could, which is difficult when you're running short and when you don't always have the right equipment or access to the external support. We found a lot that we were having to, um, we were chasing medical professionals, paramedics. A lot of the routine appointments and tests and things fell by. Residents with dementia don't really understand why they were isolated to their rooms, why they couldn't cohort. Our staffing dependency increased because people became less able, they were less independent because they weren't doing things. Low mood took a big toll and people that are depressed generally don't do as much for themselves and then obviously with the staffing impact as well care wasn't at the same level that we would have hoped. (int 14)*

4.2.2 Infection prevention and control

Care homes undertook a range of practices for IP&C purposes. In this section we consider those practices and some of the challenges around implementing them. The care home manager below provides a good overview of the practices that were undertaken,

> *We had the uniforms even being washed here on the premises, or if somebody wanted to take them home, they needed to take them in a plastic bag. So, in the changing room they would change their clothes, not wearing the uniform outside in the community and then coming at work. We purchased a mobile sink at the staff entrance so everybody would wash their hands as soon as they entered the door, the sink was there, not making, you know, one step more into the home. So, we had long queues but needed to be done, hand washing as soon as you come into the building, disinfection, PPE. Then, oh God, we increased the yellow bins probably to five times than the normal usage because the amount of PPE used was high to the roof. The breaks we needed to look into the breaks as well to make sure that we don't exceed more than 14 members in the staff room at the same time than with the yellow tape, you know, the caution one. We separated on tables, you know, to make sure that everybody's at appropriate distance one another, windows open at all times. We put air filters for communal areas because caring for people with dementia was not easy to confine them, you know, in one space. (int 7)*

> *There's a massive list of changes that we've done, from the way that team members would log-in into the home to start work, they would have to first step into a disinfected erm, erm, we had a big - I don't know how to explain it, like a big barrel of disinfectant that they would step in to make sure that they were not carrying any viruses or bacteria from outside into the home. So, they would step into that, and then they would disinfect themselves, washing their hands. We increase the checkpoints, like cleaning checkpoints. (Int 8)*

The homes also undertook re-organisation of their buildings to isolate and control infections,

> *The home was not full at the beginning of the pandemic. This is what helped us so on the one floor the home is having three floors, ground, first and second, there's two units on each side. And one of the units on the ground floor are having a high number of rooms with a patio door to the garden. And at that time, I had the second floor empty, so we spoke with the families, there is an, and we need to change the rooms. So, we moved all the people on the ground floor, on the second floor to the same homes yes but on the second floor. And we've done the ground floor as a welcome unit. So, any discharge from hospital will come from the garden directly into the room, not in any other areas of the home for two weeks isolation. And then with tests and everything will be moved in any other areas of the home. (int 7)*

> *So, as I said again, we had to adapt, we had to move quite a lot of things here in [care home]. I remember we had one wing of the care home, so 13 beds, specifically adapted for only COVID positive residents. So, when they tested positive, we would move them in there, trying to maintain them there as much as possible, isolated to try and reduce the risk of infection. Yeah, there were lots of lots of changes done at that time (Int 8)*

In reflecting on the size of the care home and whether it affected their ability to control infections there were a range of views. Whilst some did perceive that smaller care homes gave a greater ability to limit the virus, there was also a belief that the approach of the care home team along with the structure and age of the building was more significant than the overall size.

> *I think with it being a small home as well and because we were on three floors and they're three completely separate floors they can be shut off, you can access each one from the outside, you don't have to go through the house, I think that made it easier as well. Of course, being an old building didn't help because trying to keep that sterile and everything it's not like a hospital, you've got nooks and crannies everywhere that you're trying to you know, make sure that they're sterile (Int 1)*

> *For us it was always the setup of the care home, because we had those six little communities. So, if there was an outbreak identified quickly, picked up on very quickly in one part, we were able to close that part off. (Int 7)*

> *I don't think size matters. It doesn't matter how many residents you have; you have to do all of it, no matter if you have five residents, 10, or 15. And I appreciate you have more responsibilities and more work to do if you have a bigger care home. However, size doesn't matter, you still have to do all those things. (int 6)*

There were a number of factors that made full engagement with infection control policies challenging and perhaps the most frequently and consistently reported was the pressures on staff. Whilst the care homes experienced staff shortages prior to and during the pandemic, the nature of the work within care homes changed; the staff available were stretched thinly,

> *Because when you're a small care home and you may have five on shift and you have to have one or two people looking after particular COVID residents to try and prevent the infection spreading, that was challenging because we were having to maybe try and get more staff on duty. So that these – we could make sure that our residents were protected and that the staff stayed with those residents (int 5)*

> *The residents were having episodes of vomiting, they were having diarrhoea. We had to triple the collection of waste in a very short period of time. Everyone was working really hard, enter into rooms with PPE on, washing hands, everything. Yeah, the work increased so much, and it was difficult. I remember we had some team members that resigned at the time, because they were worried about having COVID, and they were worried that they would take it home. Yeah, very difficult. (int 8)*

> *We had to wear masks which was a huge thing, because all of a sudden on the same aspect that I was talking about before, having that familiarity having that continuity of recognising faces, all of a sudden there were just eyes. We had people who we recruited during COVID, and for ages we didn't know how they looked! We saw them somewhere else outside of the home, and we didn't know who they were because we could only see their eyes. (int 10)*

The pressures of wearing full PPE and engaging fully with the infection control measures took their toll on staff,

> *We couldn't have a drink around the care home so we found that in the summer in the office particular, or care staff, if we were having a really busy shift, they couldn't carry their bottle of water round with them because they couldn't take their mask off when they were near a resident … So a lot of staff complained of headaches and migraines, we had the same if we were busy in the office because we couldn't have our water on our desk, we had to go to this room to take off your mask, use your hand gel, have a drink, put it all back on, go back out where residents are. (Int 5)*

Care homes were generally positive about the commitment of staff, but the standards established were not always adhered to by visitors,

> *It was more time consuming to obviously make sure whoever was coming into the building had full PPE, so they had gloves, they had masks, they had aprons, and they obviously wash their hands before they came, they use the steriliser obviously, and they had to put on full PPE. So, then we would take that person wherever they were going, and then when they left the room, they had to take all the PPE off, and then walk out of the building. So, it took much more time with things like that to make sure people were following the rules, because not everyone did. And to my surprise district nurses and health professionals that should be on the same page as us, weren't. They weren't happy to wear full PPE, and if we didn't follow them, they would go from one room to another in the same PPE. So, for me the difficulty was to get everyone on the same page, and to not cheat if we weren't looking, if you know what I mean. (Int 6)*

Care homes used innovative strategies to support infection control and prevention, in the example below, residents were introduced to monitoring carers' hand washing practices as a way of developing peer compliance but at the same time stimulating resident activity and involvement,

> *We had loads of peers' compliance as well … We used our residents to do observations on the carer, so it was our activity. We have a special sheet, so the residents were watching carers washing their hands for 20 seconds and making sure that everything happened. (int 10)*

Although the use of PPE and other infection control measures became normalised, as time went on, the commitment to their use started to wane,

> *But I think as we went along, people were picking what suited them in terms of infection control, and it's not always the matter of everyone doing exactly the same thing, going from one extreme to another. (Int 10)*

For some care homes the standards of infection control and prevention were perceived as impossible to implement and where some homes were able to organise their buildings to accommodate strict separation of COVID cases this was not deemed fully possible for others,

> *So, this idea that you could try cohorts and keep COVID positive residents separate was a complete farce, it just didn't work, and it was impossible. And almost cruel because you know, they don't understand why they have to stay in their room, you know? It's sort of like they're a prisoner. So that was really hard, you know, that we just couldn't do it and we had to try and keep parts of the home that maybe were COVID positive so that we would try and*

keep them in that space but then it's very difficult because you've got to move them around the building back to their rooms, so you're going through corridors and you know, it was just really impossible. The residents who had capacity, you know, on the whole they were happy to stay in their rooms and keep away from, you know, anyone who might be positive. But it was the residents with dementia, it was just, it was impossible. (Int 3)

We tried to make it that the same staff worked upstairs and then the same staff worked downstairs. It was very hard to do it actually so in the end we didn't worry we just got on with it. (Int 13)

The resident population also played a role shaping the care homes' ability to isolate residents when infections had occurred as people with dementia did not necessarily comprehend the situation or the limitations that were necessary,

You've also got a lot of residents that you can't isolate. Because short of sedating them and pinning them into bed, there's no way, you know, our residents here if they want to walk, they will walk, you can't keep them in their bedrooms. (Int 13)

But (laughs) try to isolate someone that lives with dementia and can get upset and get anxious if he's alone in the room, and things like that, those were difficult times. (Int 8)

4.2.3 Care home managers and experience

The quantitative analysis identified an unexpected and unexplained link between risk of infection, death and the length of time a care home manager had been in post. We explored this issue in the qualitative interviews and how length of service impacted on IP&C. Managers tended to equate more experience with a greater level of confidence and a stronger skillset to deal with the pandemic associated challenges that care homes faced,

I think having the experience and looking back at the way that we worked, it definitely helped me … working in different sectors, working in different homes in the past, dealing with infections, dealing with chest infections, flu, all of those things that we've had in the past, it definitely, definitely helped me to cope a bit better with COVID. Again, having such a good team definitely, definitely helped me to cope with COVID. (Int 8)

Managers felt that experience in clinical settings equipped to navigate the IP&C measures effectively and years in service gave them skills in communicating with staff, residents and families in circumstances previously not encountered.

Of course experience counts because it's the way that you deliver the message to the team members, to the relatives who are absolutely horrified because they don't know what's happening behind closed doors. They've seen so many things on Panorama or tv with abuse and things like that so they don't know what's happening. They don't know how many staff they've got on duty. So all experience helped me in delivering the information in a safe way to make sure that everybody are safe and settled and reassured. But I think I had more help from my experience as a nurse … and I think that because I'm clinically trained and I practised for a high number of years as a nurse, that helped me keep a very close grip on the infection control and not let that slip down and let the standards down. (Int 7)

Experience was also described as having limitations as the manager below describes, nothing that they had encountered in previous years provided a framework or the level of contingency to deal with the COVID pandemic in a way they may have liked,

> *I've worked through the SARS virus, I've worked through the Foot and Mouth outbreak, I've worked through the Swine Flu outbreak, and it was absolutely nothing like it. You know, every tiny little measure that we had in place against those kind of viruses, our contingency, this was nothing like it at all. It was (-) I don't think anything could have prepared us for it! I don't think any of us really saw how quickly it could get through. (Int 13)*

4.2.4 The psycho-social aspects of lockdown

There was another side to infection control: the social and psychological challenges experienced by residents and staff during the lockdown period. These increased the pressure on staff because of the increased levels of support and care that were needed. In the quote below the participant described the experience in terms of a psychological trauma that touched all those at the care home along with the families of residents,

> *It was quite traumatic for the home and for the residents and their families, you know, they really struggled with not being able to come in, not being able to see their loved ones and there was a lot more sort of stress, more, we had more issues with relatives you know, questioning why they couldn't come in and all that sort of thing, so it was the extra pressure … when we had our outbreak so it was extremely stressful and extremely hard for staff, residents, I would say it was quite a traumatic time and I think a lot of the staff talk about, you know, post-traumatic stress. (Int 3)*

The focus of the pandemic was, understandably, infection control and prevention. However, for the care homes the social and psychological impact on residents presented an equal challenge,

> *The COVID pandemic had a big impact on my customers, because they were unable to see their families, some of them having really advanced dementia, they didn't know what it was all about. They couldn't understand why their family was not coming to see them, and yes, some of them stopped eating and drinking. They were reluctant to get out of their rooms, they isolated themselves. (Int 9)*

> *It was difficult because obviously we had to separate the residents, they had to stay in their rooms. They were isolated in a way because obviously we didn't have the staff who could sit with them for most of the day. We had to check on all the residents. It was tricky, it was difficult for the residents definitely, because they felt like their freedom was taken away, and we were trying to do it. It was really tricky to try to explain to them what was happening, because of the way our residents are. (Int 4)*

For some there was a tension between infection control, isolation and socialisation, which may have erred too far in preventing the spread of the virus at the expense of mental and social wellbeing,

> *I learnt that isolating people in their rooms doesn't work. It does not work because the virus goes round anyway. So, I thought that was unusual because there were residents who could*

actually meet together, and they could enjoy it a bit more. So I think that should be avoided for the residents mental health and wellbeing. (Int 6)

What we took from it was we want to be face-to-face, we want to connect … to not be able to touch someone felt strange and alien and especially with our residents that, like a cuddle or need a bit of touch support for reassurance and comfort, especially for those that can't see very well and those that can't hear and having your face covered it reflected very much how important that face-to-face communication is, and a lot of the residents were saying they didn't care if the virus made them poorly because they had no quality of life. (Int 14)

Reflecting how to manage in a future pandemic the following participant expressed the view that infection control measures overrode the needs of residents and families and there should be a greater balance in similar situations in the future,

I think that we can maybe not – in care homes the lockdown was very – too strict too soon. I know you had to lockdown to keep residents safe but I think stopping them seeing their families so quickly was too much for some residents, it was a shock. And I think next time if it's a pandemic yes, but if we've got PPE and we know about infection control, we need to keep that going and bring that in quickly but allow residents to still see at least one family member. (Int 5)

4.2.5 Relationship with health services

The pandemic impacted on the relationship between clinical services and care homes. Hospitals began to be viewed as high-risk places and care home staff reported a reluctance among residents to go to hospital; a change which continues to affect behaviour post-pandemic.

A lot more are declining to go to hospital now. They're afraid to go to hospital now and they want their care in the home. … we have a lot less emergency admissions now and care is more in the home. I think the pandemic when they couldn't even have a loved one with them in hospital, it frightened a lot of people and they wanted to be somewhere where they feel safe. I think a lot of people have maybe lost confidence as well in being cared for outside because everything was in the home … they want to be in the home and cared for in the home. (Int 5)

The relationship with hospitals was, to a certain extent, defined or shaped by the pressure that they felt to take COVID positive patients from hospital into the care home,

The local authorities very often were trying to make us admit infected positive patients from the hospital, so that was difficult. We didn't have many beds available, so we managed to slightly avoid it. (Int 10)

There was a meeting and the hospital consultant said they were running out of capacity and would be seeking to discharge COVID positive patients to the care homes for them to have palliative care in the care homes. But our decision was that we weren't going to take any COVID positive people. We would only accept if they had had a COVID negative result. That was our reaction. (Int 4)

The actions or the perceived actions taken by hospitals and by primary care are outside the remit of our research but it is evident that some care homes felt isolated and unsupported and that residents were almost cut off from health services support,

> *There was an incident where we did ring for an ambulance and we were told no, they're not coming out … because they said oh no, your resident's safe because they're in a care home. (Int 3)*

4.2.6 Guidance and legislation

Care homes had to interact with and attempt to implement a range of measures during the pandemic. The guidelines came from a number of sources including: central government; local authority; and care home owners. Many of the IP&C measures which we have discussed above were clearly and consistently interpreted; the issuing of policy from different sources did create confusion,

> *We used to receive emails from different people, local authority was sending a link and then you'll have in the infection control sending you another link. And then you have the head office sending you another link and you had three links saying three different things. That was very challenging and stressful. (Int 7)*

> *So, all those three different sources had to be put into one. For me it was super challenging, because I was the person responsible for contact with the families, I was always the first one getting the biggest blow. If there was anything changing with the visiting, it was my fault. So very often it felt completely personal that they thought that overnight I was talking to the Prime Minister trying to come up with the most tortures for the families, that I was doing this out of menace, out of mischief, and not because I was following the procedures. (Int 10)*

> *have one side saying 'No, no, no, they're supposed to do this' and [colleague] will say 'No, I didn't read it that way'. Then I would say 'Well which one are you looking at?' 'I'm looking at yesterdays' and I'll say 'Well this one has come in today'. 'Really?' It wasn't like it was weeks; sometimes it could be two or three in one week. (Int 11)*

> *I don't think there should be local policy because that's where the confusion arises. I think we should go with the national guidance so if the national guidance says this then that's what we do and not the national guidance says this but us as a local authority are saying we can do this because that muddies the water. (Int 11)*

4.2.7 Relationship with local authorities

Care homes worked closely with their local authority during the pandemic who provided information on guidelines, support around infection control training, support efforts to source PPE and facilitate the grants that central government had made available to support care homes. From our interviews the relationship with local authorities was defined, largely, in positive and supportive terms,

> *[local authority] were very good, if we did hit a hurdle with trying to get [PPE]. So, for example, I think we had trouble one time getting orange bags and we had an outbreak, I spoke to [local authority] and literally within hours, we had a delivery of orange bags, they were on it. (Int 2)*

We had regular meetings with [local authority] and other care homes and so they would be, you know, a way to you know introduce us to any new changes that the Government had put in place or Public Health England had put in place, and they would you know, help us to work out ways we can implement those policies and those changes. And also, obviously they started to supply the PPE for us so there was the NHS portal that we could get supplies and equipment. (Int 3)

[Local authority] had the infection control nurse on each call. She was keeping us up to date with the number of cases in UK and locally and the pressure on hospital and all those things. … Also when I had the outbreak as I said over a year in the pandemic. She did come and she done an infection control audit in the home as well, you know, just to make sure that we do follow the good practice which did find it worth following good practice. So yes, that was the support that we had. (Int 7)

Through the local authority meetings that we had there were lots of homes that would attend, and at the time we really had to step-up and find ideas of what we could do better than what we were already doing. So we had interaction with them from different homes in as much as possible, mainly through the local authority webinars and meetings that we had. … they were sharing ideas, discussing what things they are doing right, what we could do better, all of those things were discussed. Any concerns that were raised by anyone we would take note of, we would learn from them. So definitely, I am 100 percent up for communicating and learning ideas from others. I think this is how we all should do it, and how we could grow. (Int 8)

The area where care homes would have appreciated more support from local authorities was in relation to staffing, an issue we highlight in the report as their biggest challenge during the pandemic. There was a perception that the furlough policy employed in local authorities was a wasted resource that could have been directed to support them,

The council said they were gonna help us and they, you know, there was a certain amount of help but you know, there was all these people who were furloughed who, in my mind, had a background in care maybe day centres and that sort of thing, why couldn't they have been recruited to help out with these care homes. (Int 3)

They were all furloughed, weren't they? I don't think there was a local authority. I think they all disbursed and worked from home. Yeah, it was just a struggle. You couldn't get anyone to do anything. You couldn't get hold of anyone. There was no named social workers, there were no reviews... Nobody could move in, nobody could move out. There was just nothing (Int 14)

Yes, we had to use agency staff which we couldn't always get so I used to be a carer so management were actually having to take on care roles to fill the gaps. So we were having to use our staff and sharing roles which was the only way we could manage because we couldn't get any agency staff because of COVID. But also we would get these things from the local authority where we were told about all the measures and the testing but then when we were short staffed and we asked for help, all we were given was some advice on infection

control. We were hoping they could help us with staffing levels and maybe supply staff, (Int 5)

When staff went off sick it wasn't for three days, it was for two weeks, three weeks, a month, six months, as some people had to shield, the staffing was crumbling, crumbling, crumbling, and we didn't have any help in this respect from [local authority], or from the government when we needed it the most, to have bodies in work. (Int 6)

4.2.7.1 The capacity tracker

During the pandemic, care homes completed a capacity tracker which gave up-to-date information to their local authority about their capacity and ability to take patients from hospital along with information about COVID infections and deaths. The views on the tracker were divergent with a number of staff viewing the tool as a bureaucratic exercise which did not benefit them,

We had to use it because they made us use it! And they withheld funding and fees and support and help if we didn't use it. We all hate it. We still all hate it. We still think for us it's a whole lot of work and data that they don't need to hold. (Int 14)

I think it's useful for them because they are collecting the information but it didn't help us I don't think in any way, I mean it was just an extra bit of work that we had to do that we did think, you know, why are we having to do this every day, putting this bit of information on and actually what help is it to anyone. (Int 3)

However, this was view was not universal and some care homes found completing the tracker gave them a perspective and overview of their own situation,

Yeah, I'm still using it to this day. I think it was really, really helpful, putting all that information in there. It was really, really helpful for the local authority, for us as well, we can keep a good track of what's going on and we can see the information in there. So, yeah we are still using it now. (Int 8)

4.2.8 Reorientation of practice

Care homes did not experience the pandemic as a wholly negative experience. For some, in overcoming challenges, they were able to implement practices and policies that had a positive impact and carried on into the post pandemic period.

What we did was we realised that we spend a lot of time dealing with professionals and families and all that time then got re-digested and put back into the residents. … it was a great opportunity to change our model and that now what we do in comparison is we have a very big wellbeing team now so we have 12 people who deliver wellbeing throughout the week in this home. And it means that every day we don't just get people up and washed and, you know, give them meals and put them back to bed again, part of the day now which is given by the care staff is a social element … So I could go into the day room probably now and they'll be care staff sitting with residents, they may be playing a game, they may be doing a jigsaw puzzle, the may be out walking with them. And that has all formed part of our day because we had to fill that gap. … so the outcomes for the residents are they're far more settled, they're relaxed, we've reduced psychotropic medications. (int 13)

> *The one good thing that COVID did for particularly our nursing teams was that it empowered them to make serious decisions … We have nurses here that were making critical decisions because they had to because for ten months we didn't have a GP set foot in the building. They drove the GP if that makes sense … So it empowered them to realise just how good they are. …. They really upped their skill levels because of that. …. So from something negative came a very very positive outcome and as a result of that those outcomes are then passed onto the residents that we look after so they're now receiving really positive outcomes as a result of our nursing team empowering themselves to higher levels. (Int 11)*

> *So we're now looking at what people can do outside of their role. So for example, we have carers that we now know that can cook in the kitchen so they do shifts in the kitchen in part of X's team. There's a gentleman that's on reception but he also runs the kitchen if he wants to or when he's required to because he's trained to do that. So definitely since the pandemic we've become more diverse in the way we do things so we don't just have carers performing care and activity assistants doing activities; everybody literally does everything or anything and that's what's changed, not the delivery of care. The standard of care is still the same but who delivers certain parts of care has changed a little bit. (Int 11)*

Some care homes implemented strategies to update residents' families and friends when visiting was limited. A common communication strategy involved creating a closed Facebook group to share updates regarding the residents' situation. The Facebook group functions as a digital information-sharing service that serves as a source of updates for residents' families and friends:

> *Yes, so what we did with that group as well, so it was an information giving service but also, we put pictures of all the residents on there every day. So, we were showing them what the residents were doing, showing all the activities, trying to sort of put happy pictures on there, you know. But now unfortunately like I say I can't get rid of it because the families love it. So, every time we try and cut it down or say we're thinking about ending it, they all say oh no, no please don't do that. And we also find that having that cuts down the amount of visiting that we have now because families can see their loved one on there and, you know, they don't feel, oh are they alright, aren't they alright, they can see them happy and joining in with things. So that's worked really well. (Int 13)*

Care home managers described the positive effects of working with other care homes to share knowledge and working practices during the pandemic. The collaborative effort served as a platform for sharing information, navigating uncertainty, and providing mutual support that highlight the value of collective efforts in addressing complex issues in the context of care homes.

> *We cohorted with our local care homes. We had [the area] Care Home Collaborative that was set up just to kind of make sure that we were all especially managers as well because we were sort of sat at the top and we were responsible for protecting everybody and still kind of getting all the pressure and not really knowing what was going on and not really knowing what we should be doing and that was difficult. So, as managers, we kind of created our own little safety network of sharing information and support. (int 14)*

5. Discussion

5.1 Summary and comparison with existing literature

Using data from care homes in B&NES we were able to assess the number of cases and deaths in each home for each week of the second wave of the pandemic and identify any correlates of high cases and deaths across a region reported to have higher COVID-19 death rates in care homes than the national average (although the region had lower than national death rates).

Care home size was a strong correlate of more cases and deaths, in line with previous research (Burton et al., 2020; Guthrie et al., 2022). In the quantitative analysis, care home size was directly correlated with weekly occupancy (i.e., the number of beds occupied by residents), thus larger care homes had more residents which resulted in more cases and deaths. Further, larger care homes have more staff, which is a main route for introducing infection into a care home (Office for National Statistics, 2020b). In additional sensitivity analysis, as shown in previous research (Dutey-Magni et al., 2021), COVID-19 outbreaks in care homes were associated with more deaths.

The qualitative data indicate that care home managers placed more emphasis on organisation and team culture over the care home size. Whilst there was a perception that the situation may have been more manageable in smaller homes this was overridden by other factors including: care home capacity, spare beds that gave the home more control over isolation practices; and the nature of the building, where some felt that their older buildings presented more challenges in terms of sterilisation and in creating segregated areas for those infected.

Length of time the manager had been in post, the number of days per week the capacity tracker was completed, staff turnover, care home engagement with B&NES council and support received from the provider/area manager were all indicators of the commissioner's confidence in the home. The observed association between the length of time the care home manager had been in post and number of cases and deaths must be viewed with caution due to the limitations of the sample size and the data. Just nine care homes had a manager in post for less than a year and the confidence intervals were extremely wide. There was evidence from the univariate models for an association between lower engagement with the B&NES council and fewer cases and deaths, though these associations were attenuated in the adjusted models. In sensitivity analysis, we observed an association between less support from the provider/area manager and fewer cases and deaths, again the confidence intervals were wide and the sample size was smaller (30 care homes).

Manager experience was discussed with participants in the qualitative study and the limited data we had did not support the link between shorter length of service and lower death and infection rates. Managers placed high value on their length of service as an enabling quality in terms of infection control and communication. Engagement with the capacity tracker was discussed but whilst not universal, there was a tendency for the tool to be seen as a bureaucratic exercise that took up staff time in the care home but with no or little benefit for the user. Managers saw it as something that had to be done and that certain grants and payments that they relied on were dependent on its completion which may have reinforced its negative perception. As reported in the data, this was not a universal view and that some care homes engaged positively with the tool and used it to reflect and keep track of their situation at the same time as providing data to the local authority.

Care home staff, particularly managers, were faced with taking on responsibilities previously belonging to other clinical service providers, such as GP services, that changed or reduced their care provision during the pandemic (Devi et al., 2020; Marshall et al., 2021), so not only did care home managers have to adapt to new means of delivering their regular care, they also had to upskill and expand their remits. This was often without adequate support; consequently burnout among care home staff was high (White et al., 2021) and care home managers reported feeling isolated early in the pandemic (Marshall et al., 2021).

Previous research has suggested that staff and professional visitors were often the source of infections. Of the 22 care homes for which we had data, 68% used agency staff. Although this variable was not included in our analysis due to collinearity with other variables, it is possible that there was a link between the use of a wide workforce and COVID-19 outbreaks. There was a suggestion that this was a factor in the qualitative data, where some homes identified visitors, including health care professionals, as reluctant to fully engage with the measures implemented at their care home. Care homes may have been working to a higher standard of infection control which visiting health care professionals were not prepared for and this did appear to cause some level of disquiet between visitors and care homes.

It was notable, in the qualitative data, that staff were taking on more duties, including managers, that may have previously been done by visiting clinicians. This had the effect of intensifying the demands on care home staff which in some cases led to resignations and sick leave. The nature of work for the care home staff also changed because of the need to manage the psycho-social aspects of residents' lives as they were deeply affected by the social isolation measures. Care homes had to become more resourceful in creating activities that would stimulate their resident group and this involved more one-to-one work with staff. It is this side of the pandemic, the effect on mental health, which many in the qualitative study felt had been overlooked when the infection control measures had been deployed.

We did not find an association between discharges to care homes from hospital and number of cases or deaths. Although this has been a point of contention, mostly following the first wave, the research investigating the impact of discharges has been mixed and it was concluded that discharge to hospital was not the dominant route of infection to care homes (Guthrie et al., 2022). However, the reliance on care homes to receive patients discharged from hospital was thought to reflect a negligent attitude towards care homes. Care home specific guidance was limited and often confusing and contradictory (when coming from multiple agencies) (Devi et al., 2020; Marshall et al., 2021; White et al., 2021) and concern for care homes, particularly in the early phase of the pandemic, was secondary to that for hospitals (McGilton et al., 2020), despite lessons learned from previous epidemics (Lum et al., 2020). This perceived inferiority to hospitals and hospital staff was felt by care home staff, who felt undervalued and underappreciated compared with hospital staff (Devi et al., 2020; McGilton et al., 2020; White et al., 2021). This was confirmed by the qualitative data which showed that care home staff felt alone and isolated as a provider of social and clinical care. The issue of admitting COVID positive patients was not identified as a factor in spreading infection and it is notable that at least one care home felt empowered to resist taking COVID patients from hospital while they were infected. However, there was some thought that the experience strained and ultimately changed the relationship between care homes and secondary care. Staff described

residents as feeling safer in care homes and reluctant to go to hospital and this has continued into the post-pandemic period.

It is worth noting the findings from the B&NES local authority briefing document (Bath & North East Somerset, 2023) on trends in place of death in the area drawn from national statistics. They note that whilst care home deaths were higher than the national average during COVID the rate in hospitals was lower. Also, prior to COVID it was shown that B&NES had one of the highest percentages of people dying in their usual place of residence, which for some would have been the care home. This trend points to a change in behaviour among the elderly population which is likely to have become magnified further during the pandemic.

The care home sector was facing challenges (particularly in funding and recruitment) prior to the pandemic (Daly, 2020; McGilton et al., 2020). Staffing problems were exacerbated throughout the pandemic with staff sickness and isolation (Marshall et al., 2021). Compared with NHS services, care homes were late to get PPE (Daly, 2020; Marshall et al., 2021) and testing was late to be rolled-out (Devi et al., 2020). Dealing with a novel virus, from which care home residents were the most vulnerable, when already over-stretched, under-staffed and under-funded will undoubtedly have presented further strain and challenges for care homes. Globally, care homes have not been given the support and resources they needed (McGilton et al., 2020).

The biggest challenge experienced by care homes in the qualitative study was insufficient staffing levels. The reasons for this are multifaceted and complex and beyond the scope of this report. However, it was apparent that there were, what were probably, misconceptions about the potential of furloughed council staff to act as an alternative staffing resource. This viewpoint became part of a wider sense of isolation and abandonment and highlights the importance of communication with care homes and their staff in such a situation so that misunderstandings can be resolved. This issue of communication is also illustrated around the use of the capacity tracker. There were varying views about the tool with those who valued it recognising how its use could help them as much as the local authority and the wider area as opposed to a bureaucratic burden.

It is important to note that the qualitative data showed how care homes experience of the pandemic was multi-faceted with positive as well as negative or more challenging elements. The flip side of isolation, for some, meant a closer working relationship within their teams and the lack of social engagement for residents led them to develop innovative activities for residents and channels of communication for families. Some of these developments have impacted beyond the pandemic and into everyday practices within the care homes such as the issue of weekly newsletter or active use of closed Facebook groups to update residents' families and friends.

We conclude by reflecting on the tension between IP&C measures and the general wellbeing of residents. For some the measures went too far in terms of closing down the social aspects of residents' lives. There may be a case for care homes to be given greater levels of autonomy in managing these aspects in the future.

5.2 Strengths and limitations

5.2.1 Limitations – quantitative

As often with retrospective observational studies using administrative data not collected for research purposes, we were limited by the data available. We were only able to use anonymised aggregated data for our analysis. It is likely there are many unmeasured confounders (e.g. use of agency staff, vaccination status of residents, visitors or staff, staff infection rates, staff working across different sites) that we were not able to make adjustments for. We acknowledge that more robust analysis could have been done had we used patient-level data or if we were able to enhance the dataset through linkage. The relatively small number of care homes also meant that our analysis was underpowered.

5.2.2 Limitations – qualitative

The limitations associated with the qualitative research are linked to the recruitment challenges we experienced: we were unable to recruit sufficient care homes in the B&NES area to address the original research question directly and the lack of the resident voice in the work means we are missing a crucial perspective. The care homes where we did recruit were sampled by convenience rather than purposefully, i.e. we included all those who were willing to participate rather than selecting to ensure that we covered a range of care home characteristics. We were able to interview managers and senior members of staff from the care homes but were unable to recruit from the full range of care home staff. In spite of these limitations, our findings provided important insights on experiences of care homes during the Covid pandemic.

5.3 Conclusion Implications for future practice

In the case of any future epidemics, whether coronavirus or seasonal flu, better understanding of how to protect care homes is needed. Learning from previous epidemics and the examples set by other countries could aid preparation for future events (Lum et al., 2020), in addition to learning from both the successes and failures witnessed throughout the COVID-19 pandemic. One way to achieve this is to prioritise further research of the risk factors for the spread of infection and associated mortality. This would require the availability of research ready routine data in social care, which is currently lacking in comparison with the NHS (Devi et al., 2020; Guthrie et al., 2022). This does restrict the ability for local authorities, trusts and Integrated Care Boards (ICBs) to undertake comparative analyses with neighbouring or similar areas. However, there is potential for improvement under the research and innovation role of the new ICBs.

The lower national excess deaths in the second wave in care homes (Curry, 2021; Scobie, 2021) show that lessons can be learnt and positive action taken to improve care homes' chances in resisting the impact of an infection. There is clearly no blueprint for this that will fit all homes and there may be a case for developing, in partnership with local authorities, care home specific plans which recognise the scope and limitations of what can be achieved within particular buildings and which could be updated regularly.

Overall, we conclude that we have no substantive evidence to suggest that care homes practices and their wider interactions with councils and health bodies contributed to the death rates recorded in B&NES during the pandemic. Our data highlight a range of complex challenges that went beyond infection prevention including the psycho social aspects of residents lives but they also show

innovation and autonomy in overcoming these challenges and how these could be harnessed in collaborations with other care homes. A key aspect to diminish the feelings of abandonment and isolation is to support and maintain lines of communication especially around policy and guidance where multiple sources of information led to confusion and uncertainty.

We recognise that many of the points here do not address the death rates in B&NES specifically but we were unable to collect sufficient data for this purpose. However, the data we have provided enable insight into the situation for care homes during the pandemic and offer pointers to the future management during outbreaks of severe infectious diseases.

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Appendices

Appendix 1: Sensitivity analysis I including support from area manager variable (adjusted for week and care home size and with robust standard errors) (N=30)

		Cases		Deaths	
Exposure variables		Univariate Poisson regression model (N=33)	Multivariable Poisson regression model (N=30)	Univariate Poisson regression model (N=33)	Multivariable Poisson regression model (N=30)
		IR (95% CI)			
Type of care home	Residential	1.00	1.00	1.00	1.00
	Nursing	0.85 (0.34 to 2.12)	0.50 (0.13 to 1.99)	1.69 (0.69 to 4.12)	3.50 (0.33 to 36.85)
Care home specialty	General	1.00	1.00	1.00	1.00
	Dementia	1.05 (0.36 to 3.08)	0.31 (0.09 to 1.04)	1.42 (0.53 to 3.83)	0.27 (0.03 to 2.35)
	Mixed	1.33 (0.62 to 2.87)	1.05 (0.28 to 3.98)	2.11 (0.89 to 5.02)	1.42 (0.33 to 6.07)
Care home ownership	Chain/Council	1.00	1.00	1.00	1.00
	Independent/Voluntary	0.78 (0.31 to 1.92)	3.66 (0.91 to 14.83)	0.67 (0.29 to 1.52)	4.36 (0.42 to 45.63)
Care home size	Small	1.00	1.00	1.00	1.00
	Medium	*4.31 (1.62 to 11.49)*	*29.75 (2.60 to 339.77)*	*3.07 (1.03 to 9.13)*	5.79 (0.18 to 184.02)
	Large	*7.76 (2.86 to 21.11)*	*30.99 (3.36 to 285.99)*	*8.19 (2.73 to 24.62)*	19.20 (0.84 to 439.06)
Admission to D2A bed	No	1.00	1.00	1.00	1.00
	Yes	0.60 (0.32 to 1.12)	0.38 (0.10 to 1.50)	0.79 (0.43 to 1.44)	0.16 (0.01 to 2.11)
Manager in post	One year or more	1.00	1.00	1.00	1.00
	Less than a year	*0.44 (0.24 to 0.80)*	*0.26 (0.08 to 0.84)*	*0.49 (0.25 to 0.93)*	*0.07 (0.02 to 0.30)*
Engagement with B&NES Council	High	1.00	1.00	1.00	1.00
	Medium	1.05 (0.43 to 2.59)	0.43 (0.08 to 2.29)	1.71 (0.73 to 4.01)	0.80 (0.02 to 28.81)
	Low	*0.52 (0.29 to 0.94)*	0.64 (0.17 to 2.49)	*0.35 (0.15 to 0.80)*	0.54 (0.11 to 2.77)
Days per week capacity tracker completed	5-6	1.00	1.00	1.00	1.00
	3-4	1.32 (0.67 to 2.60)	1.38 (0.11 to 16.61)	1.02 (0.45 to 2.34)	19.71 (0.70 to 558.14)
	1-2	1.58 (0.80 to 3.13)	4.99 (0.38 to 64.88)	1.35 (0.59 to 3.06)	*150.85 (1.16 to 19541.06)*
Staff turnover	Stable staffing	1.00	1.00	1.00	1.00
	Staffing issues	0.97 (0.54 to 1.73)	1.23 (0.33 to 4.50)	0.92 (0.48 to 1.74)	0.39 (0.07 to 2.21)
Support from provider/area	High	1.00	1.00	1.00	1.00
	Medium	0.44 (0.10 to 1.98)	*0.04 (<0.01 to 0.37)*	*0.14 (0.04 to 0.48)*	*0.02 (<0.01 to 0.48)*

manager (N=30)	Low	0.87 (0.41 to 1.86)	0.12 (0.01 to 1.11)	0.42 (0.17 to 1.02)	0.02 (<0.01 to 1.54)
GP Involvement	High	1.00	1.00	1.00	1.00
	Medium	0.86 (0.43 to 1.72)	1.76 (0.29 to 10.65)	1.18 (0.49 to 2.81)	6.03 (0.15 to 235.41)
	Low	0.98 (0.36 to 2.66)	1.50 (0.42 to 5.38)	1.32 (0.51 to 3.43)	1.66 (0.36 to 7.60)
LFTs received and used	On time	1.00	1.00	1.00	1.00
	Late	0.68 (0.34 to 1.37)	0.65 (0.22 to 1.94)	0.78 (0.34 to 1.81)	0.88 (0.17 to 4.49)
Staff in shared accommodation	No	1.00	1.00	1.00	1.00
	Yes from same home	1.20 (0.61 to 2.35)	1.44 (0.37 to 5.63)	0.97 (0.46 to 2.06)	0.84 (0.12 to 5.90)
	Yes from another home	1.18 (0.58 to 2.41)	0.86 (0.15 to 4.86)	1.06 (0.50 to 2.24)	0.28 (0.01 to 7.45)

Appendix 2: Sensitivity analysis II including Outbreak in Covid Deaths models

		Deaths	
Exposure variables		Univariate Poisson regression model	Multivariable Poisson regression model
Type of care home	Residential	1.00	1.00
	Nursing	1.69 (0.69 to 4.12)	2.78 (0.44 to 17.52)
Care home specialty	General	1.00	1.00
	Dementia	1.42 (0.53 to 3.83)	0.92 (0.29 to 2.92)
	Mixed	2.11 (0.89 to 5.02)	1.29 (0.37 to 4.44)
Care home ownership	Chain/Council	1.00	1.00
	Independent/Voluntary	0.67 (0.29 to 1.52)	0.78 (0.12 to 4.97)
Care home size	Small	1.00	1.00
	Medium	*3.07 (1.03 to 9.13)*	0.76 (0.16 to 3.66)
	Large	*8.19 (2.73 to 24.62)*	3.52 (0.16 to 76.63)
Outbreak in care home	No	1.00	1.00
	Yes	*12.76 (4.96 to 32.85)*	*10.67 (4.25 to 26.81)*
Admission to D2A bed	No	1.00	1.00
	Yes	0.79 (0.43 to 1.44)	0.73 (0.17 to 3.14)
Manager in post	One year or more	1.00	1.00

	Less than a year	*0.49 (0.25 to 0.93)*	0.34 (0.03 to 3.48)
Engagement with B&NES Council	High	1.00	1.00
	Medium	1.71 (0.73 to 4.01)	3.69 (0.79 to 17.33)
	Low	*0.35 (0.15 to 0.80)*	0.43 (0.07 to 2.79)
Days per week capacity tracker completed	5-6	1.00	1.00
	3-4	1.02 (0.45 to 2.34)	2.99 (0.36 to 24.96)
	1-2	1.35 (0.59 to 3.06)	3.99 (0.79 to 20.05)
Staff turnover	Stable staffing	1.00	1.00
	Staffing issues	0.92 (0.48 to 1.74)	0.79 (0.18 to 3.40)
GP Involvement	High	1.00	1.00
	Medium	1.18 (0.49 to 2.81)	1.14 (0.20 to 6.46)
	Low	1.32 (0.51 to 3.43)	0.87 (0.21 to 3.57)
LFTs received and used	On time	1.00	1.00
	Late	0.78 (0.34 to 1.81)	1.34 (0.27 to 6.56)
Staff in shared accommodation	No	1.00	1.00
	Yes from same home	0.97 (0.46 to 2.06)	0.88 (0.12 to 6.47)
	Yes from another home	1.06 (0.50 to 2.24)	1.80 (0.28 to 11.62)