Witness name: Susan Hopkins
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UK COVID-19 INQUIRY

WITNESS STATEMENT OF PROFESSOR SUSAN HOPKINS

Section 1: Introduction

1.1. I, Professor Susan Hopkins, of the UK Health Security Agency, 10 South Colonnade, Canary Wharf, London E14 4PU, will say as follows:

1.2. I am employed by the Royal Free London NHS Foundation Trust and on long-term secondment to the UK Health Security Agency ("UKHSA").

1.3. UKHSA is an executive agency of the Department for Health and Social Care ("DHSC") and carries out certain statutory functions for the Secretary of State ("SoS") for DHSC. Fully operational from October 2021, UKHSA's role is to protect the public not only from infectious diseases but also from external hazards such as chemical, radiological, nuclear and environmental threats. It brings together expertise from predecessor organisations including Public Health England ("PHE"), NHS Test and Trace ("NHSTT"), the Joint Biosecurity Centre ("JBC") and the Vaccine Task Force ("VTF").

1.4. I have been the interim Chief Medical Advisor to UKHSA since October 2021 and was appointed formally to the post in June 2022. I am a member of UKHSA's Executive Committee. My current role as from June 2024 leads directorates that provide critical elements of professional health security, clinical and public health leadership for UKHSA through the provision of advice, guidance, evidence, epidemiological studies and evaluation of policy across infectious diseases and other health threats, the health protection in regions, emergency preparedness and response and national operations to scale delivery of health protection services in emergencies, and global health protection.

1.5. Prior to joining UKHSA I was Deputy Director of the National Infection Service (NIS) at PHE from 2018-2020, leading PHE's work on antimicrobial resistance and healthcare acquired infections. Before this, and from 2009, I worked part-time on specific projects and programmes in the Health Protection Agency (HPA) and PHE as a consultant epidemiologist.

1.6. I was PHE's National Incident Director (a role co-shared with Professor Nick Phin) from January to September 2020 and subsequently National Strategic Response Director for COVID-19 from September 2020 to September 2021. In addition to my PHE responsibilities, I acted as Chief Medical Advisor for NHS Test and Trace,

advising on testing, tracing and surveillance functions from September 2020 to September 2021.

1.7. I am also Professor of Infectious Diseases and Health Security at University College London ("UCL"), maintain an active research portfolio, and, as I did during the pandemic, continue to work clinically as a consultant in Infectious Diseases and Microbiology at the Royal Free London NHS Foundation Trust. I am a Fellow of the Academy of Medical Sciences, Fellow of the Royal College of Physicians Ireland, the Royal College of Physicians London, the Royal College of Pathologists, and the Faculty of Public Health.

1.8. This corporate statement is provided on behalf of UKHSA for Module 6 of the UK COVID-19 Inquiry ("the Inquiry") which is investigating the impact of the pandemic on the publicly and privately funded adult social care ("ASC") sector in England, Wales, Scotland and Northern Ireland over the period 1 March 2020 to 28 June 2022 ("the relevant period"). The statement responds to a request for evidence dated 22 October 2024.

1.9. The COVID-19 pandemic had a global impact, and its consequences continue to be felt to this day. For the ASC sector, there was a profound impact on residents, their families, friends and staff. It is important to recognise the contribution of the public health and healthcare professionals who worked with such dedication during the pandemic to try to minimise its impact on that sector. The loss experienced by those bereaved by the pandemic and the ill-health and hardship that it has caused to so many must drive the collective desire to continue to learn lessons for the future. This Inquiry offers an opportunity to learn such lessons and UKHSA will continue to assist the Inquiry with its work.

1.10. This is the fifteenth corporate witness statement which UKHSA has provided to the Inquiry. Professor Dame Jenny Harries, until recently the Chief Executive of UKHSA, has provided eight corporate statements for Modules 1 to 4 and Module 7. Professor Isabel Oliver, formerly UKHSA's Chief Scientific Officer, has made three corporate statements for Modules 1 and 5. Dr Mary Ramsay, UKHSA's Director of Public Health Programmes, provided a corporate statement for Module 4. Sarah Collins, UKHSA's commercial director, provided a corporate statement for Module 5. I made a corporate statement for Module 3: this is my second. Professor Harries has also made three personal statements in Modules 2 and 3 as well as in this module. I have

also made a personal statement for Module 7. Finally, UKHSA has supported several other witnesses in responding to Rule 9 requests throughout Modules 1 - 7 of this Inquiry.

1.11. I have been assisted in the preparation of this corporate statement by a team within UKHSA as well as UKHSA's legal team. The statement is necessarily lengthy because it responds to 99 questions many of which consist of multiple sub questions. UKHSA has endeavoured to address those questions where it is the right agency to do so. There are some requests where others are better placed to assist the Inquiry. Where this is the case, I have, if possible, indicated so.

1.12. Some requests concern matters which are outside my personal knowledge and that of colleagues currently working within UKHSA. Not all those who worked for UKHSA's predecessor organisations transferred to the Agency and subsequently others have left as we have adapted to the changing circumstances of the post-pandemic era. In such instances, we have relied on available documents.

1.13. As with requests in other modules, some questions, for understandable reasons, go to matters which fall outside the relevant period and so to assist the Inquiry with its work, I have referred to and exhibited documents which fall outside that time window. As requested by the Inquiry key documents are exhibited. In some instances, it has been necessary to repeat information to give full context. As the Inquiry appreciates, its modular nature means that some of the information sought is already to be found in previous corporate statements. Where appropriate therefore, I have repeated or adapted information contained in a previous corporate statement, albeit without exhibiting to this statement documents cited in any quoted extract.

1.14. Further to this introductory section, this statement consists of the following additional sections:

- **Section 2**: Organisational context
- **Section 3**: Understanding the virus
- **Section 4**: Advice and guidance provided by PHE/UKHSA in relation to the ASC sector
- **Section 5**: PHE/UKHSA's role in PPE guidance and policy
- **Section 6**: Testing
- **Section 7**: Hospital discharge

- **Section 8**: Visiting guidance
- **Section 9**: Vaccination as a Condition of Deployment
- **Section 10**: End of Life Care
- **Section 11**: Surveillance and data
- **Section 12**: Impact of COVID-19
- **Section 13**: Looking to the Future - UKHSA's work to support the ASC Sector

Section 2: Organisational context

PHE and UKHSA

2.1 The introductory section of this statement includes a paragraph which identifies those predecessor organisations whose functions were taken on by UKHSA when it became operational in October 2021. Of those predecessor organisations, the work of PHE is of particular relevance to this Module. The roles and functions of UKHSA and PHE are extensively documented in the corporate statements that UKHSA has already provided to the Inquiry, and which are now published on its website. Accordingly, in this section, I provide a high-level overview of the two organisations. I also set out those individuals and bodies with whom PHE/UKHSA engaged during the pandemic insofar as relevant to ASC.

PHE

2.2 The background to the establishment of PHE, its roles and responsibilities, governance structure and organisation is set out in great detail in section 2 of UKHSA's corporate witness statement for Module 1, dated 14 April 2023 [INQ000148429]. I do not exhibit that statement here but would refer the Inquiry to that statement for the necessary detail relating to PHE.

2.3 PHE was the only one of UKHSA's predecessor organisations that existed prior to COVID-19, and it had a broad public health remit, beyond health protection activity, which it continued to deliver alongside the COVID-19 specific response until 1 October 2021.

2.4 PHE was established as an Executive Agency of DHSC on 1 April 2013 to protect and improve the nation's health and wellbeing and reduce health inequalities. It primarily covered England, although had some UK-wide responsibilities, for example international health regulations and radiation protection.

2.5 PHE's role and responsibilities were set out in a framework agreement agreed between PHE and DHSC as well as annual remit letters from Ministers. The final Framework Agreement between DHSC and PHE was published in 2018.

2.6 At the beginning of the pandemic, PHE's role was primarily four-fold: to protect the

public from infectious diseases and other public health hazards, to provide expert advice to improve public health, to provide analytical expertise in support of sustainable health and care services, and to ensure the public health system had the capacity to tackle existing and emerging public health challenges. On becoming operational, UKHSA took on many of the functions previously carried out by PHE. However as with the other organisations taken into UKHSA, not every function of PHE was absorbed into the new Agency. For example, PHE's health improvement functions transferred to the Office for Health Improvement and Disparities and some expert public health activities related to healthcare and operational delivery of health services such as screening and immunisation were transferred to NHS England ("NHSE") regional and national teams.

UKHSA

2.7 Again, I would direct the reader to section 1 of UKHSA's corporate witness statement for Module 1 [INQ000148429], which also gives considerable detail about the creation of UKHSA and what follows is an overview. In August 2020, the then SoS for DHSC announced the creation of a new national body bringing together the health protection elements of PHE with NHSTT. This new body was to be called the National Institute for Health Protection ("NIHP"). On 24 March 2021, the SoS for DHSC announced that the new Agency would be known as UKHSA and that it would be formally established from 1 April 2021. By the time of this announcement, Professor Harries had been appointed as UKHSA's Chief Executive and Ian Peters as its non-executive Chair.

2.8 A Framework Agreement, published in January 2022, exists between DHSC and UKHSA and sets out how UKHSA is governed. The Framework Agreement lists the statutory duties that UKHSA carries out on behalf of the SoS for DHSC. Each year the relevant minister in DHSC writes an annual remit letter to UKHSA setting out the Government's expectations and priorities for UKHSA. The first remit letter set out four priorities for UKHSA: to continue the response to COVID-19, protect the public from new and existing threats to health, strengthen global health security, and establish UKHSA as a dynamic and innovative organisation. The most recent letter was published on 24 October 2024.

2.9 Until recently, UKHSA was organised into six groups, each led by a Director General reporting to the Chief Executive. Over the course of the last year, UKHSA has restructured its senior leadership team and governance structure. There are now four

groups each led by a Director General: the Chief Scientific Officer; the Chief Medical Advisor; the Chief Data Officer and the Chief Operating Officer, all of whom report to the Chief Executive. Alongside the internal UKHSA senior civil service restructure a new Commercial, Vaccines and Countermeasures Delivery Directorate has been formed which has incorporated parts of the VTF.

2.10 UKHSA's Executive Committee remains the Agency's key decision-making body. It sets the strategic direction of the organisation and supports the Chief Executive as accounting officer. The Chief Executive is a second Permanent Secretary in DHSC. The Executive Committee is made up of UKHSA's Directors General as well as the Chief Finance Officer.

2.11 The UKHSA Advisory Board, led by the Chair, is responsible for providing strategic advice, support and challenge on, and in relation to, the operation of UKHSA, so ensuring effective corporate and financial governance. It does this through board meetings, open to the public, and the work of its subcommittees: Audit and Risk Committee, People and Culture Committee, Science and Research Committee, and Equalities, Ethics, and Communities Committee. The members of the board are appointed by the SoS for DHSC and include those with experience of industry, the private sector, local government and healthcare.

PHE and UKHSA's role in the ASC sector

2.12 The ASC sector does not have a centralised structure, unlike the model in the NHS. Rather, care within the sector is commissioned by a range of organisations (including local authorities and the NHS) and individuals. It is provided by a mix of public and private bodies, including agencies operating at a local level. Individuals in need of social care can be resident in a care home or nursing home, be in supported living accommodation or in their own home. Those who provide care in the sector span a wide range of disciplines from social care staff employed to work in care homes to carers supporting someone in their own home. The ASC sector is supported in its remit, functions and its policy by several different organisations and across several different central government departments.

2.13 DHSC is the lead organisation for ASC, with responsibility for policy and funding in England. The Ministry for Housing, Communities and Local Government ("MHCLG") oversees the commissioners of state-funded ASC (i.e., local authorities). Much social

care is self-funded.

2.14 In England, the Care Quality Commission ("CQC") monitors, inspects, and regulates ASC providers. The services offered by these providers are classified as 'regulated care', which covers both settings where individuals live permanently or temporarily (e.g., a residential care home) and services that are provided across multiple locations (e.g., domiciliary care). It is important however when speaking of the ASC sector to remember that, beyond the regulated sector, a significant amount of care is provided on an informal basis, including through family and other unpaid carers, and through personal assistants directly employed by clients or their families.

2.15 PHE did not, and UKHSA does not, have direct responsibility for the delivery of ASC nor for its regulation. PHE had no powers of enforcement, and its role was an advisory one. PHE's role was to contribute expert public health advice to assist the work of colleagues within DHSC and elsewhere in central or local government who were developing policy or producing guidance to be published by that department or body. Separate from this, PHE also published its own guidance directed towards supporting those in different sectors with the operational delivery of the service they were providing. On occasion, as occurred during the COVID-19 pandemic, guidance published by PHE was the product of a working group which brought together expertise from different entities within the healthcare family. Of particular note to this module is that PHE's expertise in microbiology, epidemiology, behavioural science, modelling, research, and environmental decontamination contributed to the development of potential infection, prevention, and control ("IPC") measures.

2.16 In outline, PHE's role in the ASC sector during the pandemic was therefore:

2.16.1 To conduct scientific and clinical research into SARS-CoV-2.

2.16.2 To collate data on notified infection outbreaks in care homes.

2.16.3 To produce guidance on IPC measures to prevent and manage outbreaks of COVID-19 in care homes.

2.16.4 To support the production of guidance owned by other departments by contributing public health advice.

2.16.5 To provide support for care settings and care sector stakeholders via PHE Health Protection Teams ("HPTs").

2.17 UKHSA took over these functions upon becoming operational.

Key advisory bodies

2.18 The table below lists the cells whose work was relevant to the ASC sector's response to the COVID-19 pandemic, and which were either established within PHE or of which PHE was a member. Cells established within PHE were led by a senior responsible officer or a deputy. Similarly, for those cells on which PHE was represented, the organisation was represented by either a senior responsible officer or a deputy. It is important to keep in mind that the role of these cells was to produce guidance which then would be approved, whether by a minister, an expert clinical group or through other formal organisational governance systems.

Cell	**Time period**	**Function**
Four Nations IPC Cell	23 January 2020	The Four Nations IPC Cell was established to provide infection prevention and control advice and review and/or develop guidance for the NHS and NHS commissioned services. NHSE was the lead organisation and acted as the secretariat. PHE published the guidance produced on behalf of the Four Nations IPC Cell.
Clinical Guidance Cell External Guidance Cell	January – September 2020 February – November 2020	The COVID-19 guidance was drafted and published by the Clinical and External Guidance Cells, which were established in January and February 2020, respectively. In November 2020, these merged to become the Advice and Guidance Team.
PHE Integrated Social Care Cell	25 March - June 2020	The Cell was established by PHE's COVID-19 Incident Management

		Team ("IMT") to support the IMT in co-ordinating adult and children's social care. Its membership included the Regional Directors of Public Health, PHE Chief Nurse, and consultant epidemiologists.
PHE ASC Cell	June 2020	In recognising the needs of the ASC sector, PHE's COVID-19 IMT established a dedicated 'enabling cell' for ASC which would coordinate expertise across the cells and become a multi-disciplinary cell. This was effectively a successor of the above-mentioned PHE Integrated Social Care Cell. It aimed to provide public health leadership and advice within PHE's overall response to the co-ordination of ASC service; provide strategic and operational advice to central and local government and partners to prevent and control the spread of transmission in ASC settings; and drafting tailored IPC guidance for the ASC sector.
COVID-19 Children and Young People and Schools Cell	June 2020	The Cell's remit included, *inter alia*: co-ordinating the PHE approach to impacts of COVID-19 on children, young people and families (CYPF); hosting functions relating to this coordination including for relationship management with the Department for Education; management of a dedicated inbox for advice on COVID—19 in children and action

		accordingly; where appropriate, contributing advice and public health nursing and clinical expertise; and contributing to and producing guidance. (Standalone COVID-19 guidance development was out of scope).
Advice & Guidance Team	November 2020	Created by the merger of the Clinical and External Guidance Cells.
Public Health Advice, Guidance and Expertise ("PHAGE")	19 October 2020	PHAGE was an overarching function for PHE's Advice and Guidance team, Behavioural Science, Modelling, Rapid Evidence Service and Senior Medical Advisors and Senior Public Health Advisors. It aimed to maximise the expertise of the different specialist teams, ensuring evidence-based, aligned, and consistent public health outputs. PHAGE published guidance documents on GOV.UK for the public, for clinical audiences, and for specific settings.

Transition from PHE to UKHSA

2.19 The Inquiry has asked if the transition of roles and responsibilities from PHE to UKHSA, including the timing of the transition, impacted on the response of the ASC sector to the COVID-19 pandemic. The decision to establish a new public health agency during the pandemic was a ministerial one. The transition was an operational matter which was co-ordinated by a team. Work included designing a new organisational structure, matching senior staff to new roles; merging corporate services such as strategy, finance, and HR; and bringing together existing IT and

other systems. For the vast majority of staff, the transition to UKHSA resulted in no change to their role, location or immediate line management, including for expert PHE staff working in laboratories, in front-line PHE HPTs, for NHSTT staff delivering operational test and trace services, and for PHE's national incident response cells including PHE's ASC Cell.

2.20 Whilst of course moving from one agency to another brought challenges, the immediate continued national necessity to maintain a focus on COVID-19 response meant that UKHSA, once operational, was able to continue to provide expert clinical, public health and science advice, and data analysis, and to support those delivering a wide range of operational services, including any to ASC. In the post pandemic era, efforts were then made to minimise, as far as practically possible, any negative impact on delivery of those activities which now fell within the remit of UKHSA, including in relation to ASC, whilst increasing the efficiency of the organisation overall, removing duplication and developing work against its new remit.

Engagement with Government and ASC stakeholders

DHSC

2.21 Prior to and during the pandemic, the DHSC was, and remains, the lead organisation for the ASC sector for national decision making and policy setting. As discussed in more detail later in this section, PHE and UKHSA engaged centrally with the ASC sector predominantly via the DHSC, including through fortnightly meetings with the COVID-19 ASC Working Group of Stakeholders ("CAWGS").

2.22 Officials from PHE, and subsequently UKHSA, attended regular meetings with the SoS for DHSC. The regularity of these meetings varied throughout the pandemic depending on requirements. At official level, there was frequent contact between PHE and DHSC to ensure urgent priorities were addressed and to ensure a co-ordinated health and social care system response.

2.23 As part of PHE/UKHSA's engagement with DHSC, regular meetings took place to discuss the ASC sector's response to the COVID-19 pandemic. This included monthly meetings with the SoS, and frequent meetings with the Minister for Social Care ("MSC"). Internally, the main operational meeting attended by DHSC, NHS, and others was PHE's Management of Care Home Outbreaks meeting ("MOCHO"). There

were numerous taskforces set up throughout the pandemic (including the Social Care Sector COVID-19 Support Taskforce, chaired by Sir David Pearson, which was the main stakeholder high-level meeting report directly to minsters). Several of the meetings attended by PHE were inter-departmental to ensure that the pandemic response was joined-up – for instance, the COVID-19 Testing Task and Finish Group which included representatives from PHE, DHSC, NHSE/I, CQC, Cabinet Office, Care England, local government, and the National Care Association. At the operational level, there were various meetings focused on particular aspects of the response (e.g., visiting) or with particular stakeholders – for instance, via CAWGS as the single touchpoint for ASC stakeholders on a range of aspects covering PPE, vaccines, IPC, admissions, visiting etc. or with the Adult Social Care National Steering Group (which was replaced by the National Adult Social Care COVID-19 Group) via weekly meetings hosted by DHSC and attended by national partners and representatives from the sector. The SAGE Social Care Working Group ("SCWG") was the forum through which the evidence base was analysed, and expert consensus positions were agreed. Exceptionally consensus statements were issued on significant evidence areas.

The Office of the Chief Medical Officer ("OCMO")

2.24 PHE worked closely with OCMO. It's two primary roles were to provide scientific advice and guidance to the CMO which was focused on the practical application of scientific evidence and research, and to undertake a range of specific operational and scientific delivery tasks (for instance, testing and contact tracing).

2.25 PHE would commission and produce critical appraisals and primary research for groups, such as SAGE, for those groups to use as a means of providing scientific and medical advice to various arms of the Government. PHE also worked alongside OCMO in the Senior Clinicians Group ("SCG"). The SCG was not a decision-making body but brought together senior clinical staff from across the health systems of the UK to support the response to the pandemic.

Government Chief Scientific Advisor ("GCSA")

2.26 PHE/UKHSA engaged with the GCSA primarily through SAGE, subgroups of SAGE, and other advisory groups such as the New and Emerging Respiratory Virus Threats Advisory Group ("NERVTAG"). An important role for PHE, and subsequently UKHSA,

was to commission and produce critical appraisals and primary research for these groups. A consensus view of these groups would be directly provided to Government by the GCSA and the CMO.

Chief Nursing Officers ("CNOs")

2.27 PHE engaged with the CNOs via the Four Nations IPC Cell.

Chief Social Worker

2.28 PHE did not engage directly with the Chief Social Worker in regard to the ASC sector's response to the COVID-19 pandemic although s/he will have been present at many meetings attended by PHE.

Local and regional government

2.29 PHE HPTs were a central part of PHE's engagement at local level. Representatives from PHE HPTs would regularly engage with local care providers and attend regular meetings alongside key local leaders. Within PHE, the Centre and Regions Operating Centre (later renamed the Regions Operations Centre) co-ordinated the national functions of PHE and the local response provided by the PHE HPTs.

2.30 PHE HPTs supported local management of outbreaks [SH/M6/002 – INQ000421847]. PHE HPTs operated across a region and had a role in preparedness by supporting the local ASC sector to prepare for seasonal infections (such as influenza) and to contribute to emergency planning activities. The system of HPTs facilitated PHE's monitoring and surveillance capabilities to understand COVID-19 infection and transmission within care settings. Wider policy and strategy considerations were for DHSC. PHE HPTs now sit within UKHSA where that connection with local authorities continues.

2.31 PHE HPTs were multidisciplinary teams. The workforce consisted of a range of professionals and specialist support staff led by professionally qualified health protection consultants (the consultant title is as used within the NHS) with professional registration with the General Medical Council or the UK Public Health Register (UKPHR).

2.32 In each HPT, one of the registered consultants[1] would be the designated lead consultant for working with one or more upper tier and/or unitary authorities within the Centre footprint. These leads were the first point of contact for important health protection issues from or to the Director of Public Health including local outbreaks and incidents.

2.33 Generally, the role of PHE's HPTs was as follows:

2.33.1 HPTs ran acute response desks where enquiries and concerns about health protection issues were received, assessed, and answered/escalated as appropriate.

2.33.2 HPTs also provided a 24/7 out-of-hours on-call service, which operated year-round.

2.33.3 The management of local infection outbreaks was usual business for such HPTs in every region.

2.33.4 Although arrangements would vary in each region, PHE HPTs would typically provide advice and guidance on outbreak management; single cases of infection of a significant healthcare associated infection or a notifiable disease or pathogen; and preparedness.

2.34 Specifically in relation to the ASC sector, PHE HPTs had the following role:

2.34.1 In some areas, local arrangements in place varied to suit the ASC infrastructure. PHE's HPTs would provide and support the local ASC sector directly, or indirectly through local government health protection teams or local community infection prevention and control teams.

2.34.2 HPTs also supported the local ASC sector to prepare for seasonal infections such as influenza and norovirus. This would typically include providing training and resource packs although local arrangements would

[1] Staff in HPTs are of varying grades, the most senior of which Consultants in Public Health who are accredited and professionally registered. In each HPT, one of the consultants would be the designated lead consultant for working with one or more upper tier and/or unitary authorities within the Centre footprint. These leads were the first point of contact for important health protection issues from or to the Director of Public Health including local outbreaks and incidents.

vary. HPTs, through local resilience forums, would also contribute to emergency planning activities across local health and social care systems.

2.35 PHE HPTs worked alongside both regional and local partners, including NHS bodies and the Local Government Association, to ensure the delivery of an integrated response in England. In the summer of 2020, in response to the increased engagement required with the wider system, NHS Test and Trace in collaboration with PHE developed nine Regional Partnership Teams ("RPTs") across nine recognised government regions to provide a robust local, regional, and national response to COVID-19 in England; the team leads and staff often had previously worked with local government or central government regional offices. PHE worked collaboratively with the RPTs who in turn worked closely with local authorities and wider local systems. The RPTs provided further data and intelligence at a local level, which was utilised by PHE.

2.36 PHE HPTs (now UKHSA HPTs) continue to work collaboratively with local and regional government on ASC matters. Such engagement is essential for a co-ordinated and integrated response to challenges faced by the ASC sector.

NHSE

2.37 Throughout the pandemic PHE, and subsequently UKHSA, and NHSE worked closely together, with counterparts from each organisation invited to each other's organisational meetings:

2.37.1 PHE IMT meetings: NHSE representatives were invited to PHE IMT and relevant IMT subgroups held by PHE and then UKHSA.

2.37.2 Bronze, Silver and Gold meetings: NHSE representatives also attended Bronze/Silver/Gold meetings. These meetings provided the national governance framework for the consideration of data and local insight to inform Ministerial decisions about the potential application of localised restrictions such as non-pharmaceutical interventions. Bronze meetings looked to identify areas and key issues of concern. Silver meetings focused on the local and national epidemiology, analysis and issues raised at Bronze meetings. Gold meetings reviewed recommendations

from Bronze and Silver and information from these meetings provided critical insight for further consideration and decision making, at Ministerial level, on potential necessary public health interventions, including for local and regional control of COVID-19.

2.37.3 NHS emergency response structure meetings: PHE and subsequently UKHSA attended the NHS emergency response structure meetings. The COVID-19 National Incident Response Board was the key operational arm of this with the PHE Incident Director regularly attending to provide situational and organisational updates as well as other clinical or operational leaders from PHE/NHSTT/UKHSA as required.

2.37.4 JBC engagement with NHSE: JBC produced analysis on NHS healthcare pressures at regional and trust level, including forecasts for expected admissions and bed occupancy based on syndromic surveillance data. This helped inform discussions regarding where parts of the healthcare system were, or would likely be, under increasing pressure and helped inform local Non-Pharmaceutical Interventions (Tiering and Local COVID-19 Alert Levels). However, the NHS held the final assessment of, and operational responsibility for, NHS capacity and their ability to scale up or down to respond to the pandemic.

Other organisations

2.38 PHE was involved in the Four Nations IPC Cell. From 10 January 2020, when the first UK IPC guidance was published by PHE, an initial information-exchange IPC working group was set up between PHE and NHSE with daily calls. The IPC Cell was more formally established on 23 January 2020 after the Wuhan Novel Coronavirus IMT meetings convened by PHE. The IPC Cell Terms of Reference can be seen at [SH/M6/003 – INQ000348135]. PHE's role, alongside the other Public Health Agencies, was to provide scientific evidence and act as advisers to the IPC cell. IPC cell membership included representatives from NHSE, four nations public health agencies (including PHE), and DHSC, with representatives from equivalent bodies in Wales and Scotland joining the calls in early February 2020.

2.39 PHE worked with the CQC, alongside academic partners, to model the possible evolution of the pandemic in care homes. In order to collate data on COVID-19

infection rates in care homes by region, PHE developed a system that matched CQC information systems.

2.40 PHE contributed to the SAGE SCWG. Shortly after the move of the DCMO Professor Dame Jenny Harries, and previous co-chair of the SCWG, to become CEO of UKHSA, Dr Eamonn O'Moore, who had previously contributed directly to the group, took over as co-chair from 14 April 2021, working alongside Ian Hall who remained co-chair throughout. The role of the SCWG was to provide expert modelling and evidence review functions to support science-based policy decisions intended to continuously improve the management of COVID-19 in social care service provision, with particular consideration of the context of the individuals involved and the settings in which many of those affected were living or working. An individual from PHE, subsequently UKHSA, provided secretariat functions to the SCWG in addition to those giving technical professional advice There were representatives from all devolved administrations in the SCWG.

2.41 PHE provided clinical advice to the National Institute for Health and Care Excellence ("NICE") in the early phase of the pandemic.

2.42 PHE, and subsequently UKSHA, worked with the UK Statistics Authority to share data and statistics.

Stakeholder engagement

2.43 Undertaking and communicating scientific analysis of how a pathogen is behaving is distinct from the need for public health agencies to be aware of the operational challenges faced by the sector. Having this latter information allows a public health agency to better provide technical advice and to share expertise with others providing such advice (for instance, the Health and Safety Executive ("HSE"), CQC, and the NHS).

2.44 As the lead organisation responsible for the ASC sector, DHSC also led on engagement with ASC stakeholders, such as bodies representing the interests of ASC workers, providers and those receiving ASC. At DHSC's request, PHE/UKHSA engaged with the ASC sector through established DHSC stakeholder channels, to ensure consistency in messaging to and from the sector.

2.45 PHE's direct engagement with stakeholders took place primarily through regional PHE HPTs and their engagement with local authority Directors of Public Health and IPC teams, communications received in the ASC Cell/team inbox, MOCHO, the NHSTT led Testing Stakeholder group, DHSC Regional Assurance Teams and the DHSC led CAWGs (see for instance [SH/M6/004 – INQ000591437] and [SH/M6/005 – INQ000591464]).

2.46 As set out above, there were regular operational meetings between PHE and DHSC officials, and stakeholder feedback would be shared and discussed during these meetings. DHSC facilitated stakeholder engagement on behalf of PHE generally, but PHE also liaised with specific groups if they were required for consultation, for instance the Social Care Sector COVID-19 Support Taskforce. PHE and UKHSA also gained regular feedback from the ASC sector through the following channels:

2.46.1 HPTs regularly received feedback from the sector via Directors of Social Care, care home managers, local authorities and DPHs.

2.46.2 Testing Operations, which led on testing policy, had a high degree of direct stakeholder engagement.

2.46.3 DHSC Regional Assurance teams.

2.47 PHE and UKHSA also engaged with stakeholders through DHSC's group of "trusted stakeholders". This stakeholder group was selected by DHSC, but PHE/UKHSA could make specific requests to include stakeholders. For example, PHE/UKHSA requested the inclusion of unpaid carers, small care home providers, and young disabled people representatives. PHE/UKHSA could engage with this stakeholder group where rapid stakeholder input into clinical advice was needed, but, generally, DHSC would test most guidance with this group.

2.48 Through these groups, PHE/UKHSA would receive information about:

2.48.1 the size of outbreaks;
2.48.2 hospitalisations / severity of cases in outbreaks;
2.48.3 changing trends in outbreak data e.g., staff only outbreaks; issues with testing operations e.g., shortage of PCR tests;
2.48.4 operational pressures on PHE HPTs;

2.48.5 variation in issues across regions;

2.48.6 operational pressures for ASC providers;

2.48.7 data on vaccination uptake;

2.48.8 barriers to implementing guidance such as insurance cover; and

2.48.9 feedback and suggestions on guidance content.

2.49 PHE and UKHSA also received daily correspondence from stakeholders (including individuals, representative bodies, Members of Parliament) via the ASC Vulnerable People and Inclusion Health ("VPIH") inbox which was operated by the PHE ASC Cell. The PHE ASC Cell sat within the VIPH division, later superseded by UKHSA's Health Equity and Inclusion Health ("HEIH") division, which UKHSA's national ASC Team continues to operate within. These inboxes provided a point of contact, internally and externally for enquiries.

Section 3: Understanding the virus

Pre-pandemic understanding of respiratory viruses including coronaviruses

3.1 The Inquiry has asked for an explanation of what was known before the pandemic about the transmissibility, transmission routes, symptoms, severity of disease and mortality risks to adults in receipt of ASC from respiratory viruses including coronaviruses. That is a very expansive question given the wide range of pathogens that fall within the category of a respiratory virus. In order to effectively assist the Inquiry, I focus here on key points which are important to keep in mind when considering what was known of SARS-CoV-2 when it emerged in late 2019.

3.2 First, the term "respiratory virus" refers to any virus which targets the respiratory system including the nose, throat, airways, and lungs. Associated viral transmission therefore is focused on how the virus reaches these sites, whether directly or indirectly through airborne (droplet or aerosol) or fomite transmission, or via respiratory secretions as occurs with, for example, the Respiratory Syncytial Virus ("RSV"), the common cold virus, or the influenza virus, the symptoms of which can also be severe.

3.3 Second, the range of pathogens which can cause acute respiratory illness is wide. It includes influenza viruses (of which there are four types, which divide into many

different subtypes) and non-influenza viruses such as RSV, parainfluenza, rhinovirus, and human metapneumovirus (hMPV). Acute respiratory illness may also have a bacterial cause, for example pneumococcus, legionella, mycoplasma or tuberculosis.

3.4 Third, the transmissibility of a particular virus, the symptoms it causes, and its severity will depend on the characteristics of the particular virus including its incubation period, the period of time in which it might persist on a dry inanimate surface, whether it affects the upper or lower respiratory tract and the immunological response to infection. For example, influenza A viruses are known to have caused pandemics and many emerging zoonotic influenza A viruses are considered to have pandemic potential. Wider factors will also affect the outcome from respiratory viral infection including the underlying health status and age of the infected patient, any coinfections or secondary infections and the appropriate use of and access to relevant health services. Section 4 of this statement sets out relevant pre-pandemic guidance issued in relation to dealing with outbreaks of acute respiratory illnesses in care homes. That guidance illustrates the point that influenza and other respiratory illnesses have long been recognised as a major cause of hospitalisation, morbidity, and death among the elderly. An underlying chronic health condition will make a patient more susceptible and vulnerable to severe disease. Respiratory infections can also spread rapidly in a care home resulting in high attack rates because of prolonged close contact between residents and between patients and their carers, which in itself is a critical and necessary part of the resident's daily care.

3.5 Fourth, coronaviruses, like influenza, are RNA viruses (a reference to the genome or genetic makeup of the virus). Prior to the pandemic, four of the then six human coronaviruses identified generally caused mild to moderate upper respiratory tract illnesses, similar in severity to the common cold. The remaining two were highly transmissible and pathogenic viruses that emerged in the 20 years prior to the COVID-19 pandemic. Severe acute respiratory syndrome coronavirus (SARS-CoV-1) was first detected in 2002 in China and spread to some 28 other countries causing 774 deaths. No new cases of SARS-CoV-1 have been identified since 2004. Middle East respiratory syndrome coronavirus (MERS-CoV) was identified in Saudi Arabia in 2012 with a similar strain being identified by PHE in the UK. The European Centre for Disease Prevention and Control ("ECDC") has recently reported that, as of 5 March 2025, the number of reported cases of MERS-CoV globally stands at 2,626 with 953 deaths. There remains no effective vaccine for either SARS-CoV-1 or MERS-CoV.

3.6 Finally, in circumstances where an outbreak has been caused by a novel pathogen and there is a lack of data, it is reasonable to extrapolate from available data on other viruses that show similar features, such as the route of transmission. Knowing that a virus can be transmitted by the respiratory route does not however, without more evidence, tell you how transmissible the virus is or the extent to which there is asymptomatic transmission. This is why early on in the pandemic, to inform the public health response to SARS-CoV-2 (the virus responsible for COVID-19), PHE provided reports setting out available data on for example viral shedding and asymptomatic transmission in SARS-CoV-1 (report dated 28 January 2020 [SH/M6/006 - INQ000074909]) and the environmental stability of MERS-CoV (report dated 3 February 2020 [SH/M6/007 - INQ000348261]).

PHE's evolving understanding of the nature and spread of SARS-CoV-2

3.7 The narrative that follows is taken from that previously set out in the UKHSA corporate statements provided by Professor Harries in Modules 1 [INQ000148429_0131ff[2]] and 2 [INQ000251906_0072ff] and the corporate statement I provided in Module 3 [INQ000410867_0034ff]. I have not repeated every detail in those statements here nor duplicated every exhibit cited in the relevant sections of those statements. I begin with an outline of PHE's initial understanding of the virus.

3.8 On 31 December 2019, the on-duty epidemiologist in PHE's Epidemic Intelligence team identified reports from the Wuhan Municipal Health Commission of a cluster of viral pneumonia of unknown aetiology (i.e., cause) in Wuhan City, Hubei Province, China. This information was shared on the same day with key stakeholders including relevant colleagues in PHE, the Devolved Administrations ("DAs"), Cabinet Office ("CO") and other government departments, OCMO, as well as colleagues within NHSE emergency response and the High Consequence Disease Network.

3.9 On 2 January 2020 PHE provided the CMO with an update on what was known of the outbreak of viral pneumonia in China. It noted that there had not been any reports of human-to-human transmission and that *"Inferences about Severe Acute Respiratory Syndrome (SARS) is [sic] speculative in the absence of any confirmation of coronaviruses being identified among these cases."* [SH/M6/008 - INQ000223306].

[2] INQ number_page number.

3.10 On 5 January 2020, the CMO set out three triggers that, if met, would require consideration of whether the outbreak presented a risk to the UK [SH/M6/009 – INQ000223307]:

1. *Healthcare workers dying. This is often the early warning that a new infection is both severe and transmissible (eg SARS, MERS, Ebola). This would be the most concerning.*
2. *Evidence of person-to-person spread eg in families.*
3. *Geographical spread implying a zoonosis is spreading (in this case we would also want to liaise with DEFRA).*

3.11 On the same day, WHO reported that: 44 patients with pneumonia of unknown cause were detected in Wuhan City, of whom 11 were severely ill; there was no evidence of significant human-to-human transmission; and no healthcare worker infections had been reported [SH/M6/010 - INQ000223308].

3.12 On 12 January 2020, WHO confirmed that the virus was a novel coronavirus and noted the clinical signs and symptoms reported were mainly fever and, in some instances, difficulty breathing [SH/M6/011 - INQ000183385].

3.13 On 21 January 2020, PHE updated a NERVTAG meeting that evidence of human-to-human transmission had been reported overnight, including in healthcare workers. NERVTAG concluded that there was evidence of human-to-human transmission but that the extent of transmissibility between people was not clear [SH/M6/012 - INQ000023119]. WHO confirmed the following day that human-to-human transmission had been identified. Initial symptoms were now being described as mostly fever, cough or chest tightness and dyspnoea. By the time of the NERVTAG meeting on 28 January 2020, there was evidence of a human-to-human transmission event in Vietnam within a family cluster, and 16 reported cases in healthcare workers [SH/M6/013 - INQ000223327; [SH/M6/014 - INQ000047820].

3.14 On 30 January 2020, WHO declared a public health emergency of international concern with human-to-human transmission events further reported in Germany, Japan, and the USA.

3.15 On 31 January 2020, the first two cases were confirmed in the UK.

Sources of information and data

3.16 From the beginning of January 2020 and as the virus spread, PHE's work included providing advice, providing epidemiological updates to, for example, SAGE and NERVTAG, introducing enhanced surveillance monitoring, and undertaking diagnostic work. PHE worked with international collaborators to develop a specific PCR test to detect this novel coronavirus. The sources from which PHE obtained information to develop understanding are discussed in my Module 3 corporate witness statement [INQ000410867_0036] and can be summarised as follows.

3.17 WHO and international intelligence: Particularly in the early stages of the pandemic, information on the virus was gathered from open sources such as WHO, ECDC, the US Center for Disease Control and Prevention ("CDC"), Ministries of Health, and other official government sources from other countries as well as the media. WHO also shared restricted information.

3.18 Prior knowledge of related viruses: As I have already indicated above, before robust evidence on SARS-CoV-2 was available, experts within PHE, SAGE, NERTVAG and internationally had to necessarily rely on the available data on the characteristics of viruses such as SARS-CoV-1, MERS and influenza when making assessments of, for example, the likely incubation period or the potential for reinfection.

3.19 Genomic sequencing: Chinese scientists shared the genome of SARS-CoV-2 with GISAID for SARS-CoV-2 on 10 January 2020 and it was published on January 11, 2020 on virological.org. Comparison with other known human pathogens demonstrated that SARS-CoV-1 was the closest related human pathogen, with around 80% genomic similarity to SARS-CoV-2. Following the first UK case being confirmed, PHE had cultured and sequenced the SARS-CoV-2 genome and shared this globally with academic partners via GISAID (a global science initiative to share particularly influenza genomes which expanded to other pathogens). That allowed for early virological work and wider research into the pathogen. As further data became available over the next few months, it was possible to identify the features of SARS-CoV-2 which differed from SARS-CoV-1.

3.20 A high proportion of early cases underwent genomic analysis, which contributed to understanding viral diversity and virus evolution at this very early stage of the pandemic. This early work demonstrated the close relatedness of circulating viral

strains. With little evidence of significant biological variation, sequences were used to investigate chains of transmission to monitor any signals of significant virus adaptation to humans.

3.21 In March 2020, PHE created the COVID-19 Genomics UK Consortium ("COG-UK") led by Professor Sharon Peacock, the then Director of National Infection Services at PHE. It brought together the UK public health agencies and the NHS with academic partners to develop a network of laboratories to rapidly collect, sequence, and analyse genomes of SARS-CoV-2 to improve our understanding of the virus and determine the utility of sequencing. In January 2021, the ongoing mass sequencing service for the pandemic to inform policy was commissioned by NHSTT with ongoing work from the COG-UK and a range of additional providers.

3.22 Surveillance: Before the pandemic, PHE had the responsibility to provide the infrastructure for a national surveillance system for infectious diseases to detect, understand, and monitor infectious disease threats to health. These systems were used throughout the pandemic, together with COVID-19 specific surveillance systems. As explained later in the statement, the ASC sector is complex and thus there is not a unified system for monitoring or surveillance of specific infections for the sector.

3.23 Evidence reviews: PHE, and subsequently UKHSA, undertook 37 evidence reviews on a range of issues throughout the pandemic. The evidence reviews sought to provide the best available evidence in a timely and accessible way, drew on published peer-reviewed scientific papers, unpublished reports, and pre-prints of research papers. Such reviews were completed at pace, were subject to internal, but not external, review and were only valid as of the date stated on the review. The review outputs informed advice and guidance.

3.24 Surveillance and evidence reviews are addressed later in the statement where appropriate. These were two equally important sources in developing understanding of the virus.

Modes of Transmission

Droplet, aerosol, contact

3.25 It was recognised early on that, as a respiratory virus, SARS-CoV-2 carried the potential for transmission via respiratory routes such as droplets and aerosols, direct physical contact, and indirect contact. However, there was a high degree of uncertainty about the exact mode of transmission. Annexed to this statement (Annex A) is a table taken from my Module 3 corporate witness statement (see INQ000410867_0041) which sets out the evolution of PHE and then UKHSA's understanding of this characteristic of SARS-CoV-2 from early 2020 to June 2022[3].

3.26 At the outset of the pandemic, knowledge of other genetically similar respiratory viruses pointed to droplet transmission as the dominant route[4]. The relative importance of respiratory versus touch modes of transmission, and asymptomatic as opposed to symptomatic transmission, could not be assessed with precision[5]. A report published by the WHO-China Joint Mission on 28 February 2020 concluded that SARS-CoV-2 was likely to be primarily transmitted through respiratory droplets during close unprotected contact, and by fomites (objects/materials); there was insufficient evidence of aerosol transmission [SH/M6/015 – INQ000218368][6].

3.27 In April 2020, the Environmental Modelling Group ("EMG"), which brought together a range of scientific experts to best monitor available evidence on transmission routes, provided a paper to SAGE on the growing evidence base for the role of aerosol transmission, whilst noting the evidence was not yet clear[7]. In June 2020, an EMG paper to SAGE noted that the highest risk of transmission was in crowded spaces over extended periods, suggesting that droplet and indirect contact were still the most important routes of transmission. The EMG noted, however, that the "*selection of prevention and mitigation measures should consider all the potential transmission routes and need to be bespoke to a setting and the activities carried out*"[8]. In July 2020, the WHO reaffirmed the most likely principal route of transmission was via droplets. The WHO acknowledged aerosol transmission but concluded the scale

[3] In the interests of proportionality, the exhibits cited in this table are not exhibited to this statement.
[4] Table entry 'early 2020'
[5] Entry '3 February 2020'
[6] Entry '28 February 2020'
[7] Entry '14 April 2020'
[8] Entry '4 June 2020'

remained unknown[9]. It was in August 2020 that it was considered to pose an "*important risk*"[10].

3.28 Stepping back from the detail of the annexed table, it is important to note that there was never a specific point in time when the evidence indicated that SARS-CoV-2 was transmitted via aerosol in addition to droplet. Rather, the emerging evidence indicated that it was a possible route of transmission, although it was not likely to be the dominant mode of transmission. Indeed, it remains uncertain whether aerosol is the dominant route of transmission of SARS-CoV-2. Whilst over the course of the pandemic, the national and international understanding of the contribution of airborne transmission evolved, the extent to which the evidence supported a dominant transmission route through different stages of the pandemic remains unclear.

Asymptomatic transmission

3.29 Asymptomatic infection was documented by the end of February/March 2020, however, the available data remained inadequate to provide evidence of significant pre-symptomatic/asymptomatic transmission[11]. Whilst there was no specific point in time when it became obvious that asymptomatic transmission was occurring in a certain percentage of cases, better evidence of the potential significance of asymptomatic transmission began to emerge in late March and April 2020. Studies undertaken by PHE as well as data from other countries allowed PHE to begin to understand the risk of asymptomatic transmission.

3.30 On 27 March 2020, the US CDC published an early release of a significant study on outbreaks in a long-term skilled nursing facility in Washington[12]. The study was formally published on 3 April 2020 [SH/M6/016 - INQ000348269]. To summarise, on 1 March 2020, a healthcare provider tested positive for SARS-CoV-2, after working whilst symptomatic on 26 and 28 February. By 6 March, 7 residents of this facility were symptomatic and had tested positive for SARS-CoV-2. On March 13, CDC performed symptom assessments and SARS-CoV-2 testing for 76 of the 82 (92.7%) residents to evaluate the utility of symptom screening for identification of COVID-19 for residents in these settings. Residents were categorised as asymptomatic or

[9] Entry '9 July 2020'
[10] Entry '13 August 2020'
[11] Entry '24 February 2020'
[12] Entry '27 March 2020'

symptomatic at the time of testing, based on the absence or presence of a fever, cough, shortness of breath, or other symptoms on the day of testing or during the preceding 14 days. Among the 23 (30.3%) residents with positive test results, 10 (43.5%) had symptoms on the date of testing, and 13 (56.5%) were asymptomatic. 10 of the 13 asymptomatic residents went on to develop symptoms in the next seven-day period and were recategorised as presymptomatic, but the remaining 3 residents remained asymptomatic. This study was considered a milestone in the understanding of COVID-19 as it was the first reference to evidence of pre-symptomatic and asymptomatic transmission of the virus, though the relative contribution remained uncertain.

3.31 Care homes around that time, particularly in London, were experiencing large outbreaks of COVID-19 associated with high case-fatality rates. In England and Wales, there were 45,899 deaths among care home residents between 2 March and 2 May 2020 of which 12,526 (27.3%) involved COVID-19 [SH/M6/017 – INQ000591532]. Building on the US CDC study, in April 2020 PHE proactively undertook a seminal study – the Easter 6 Study (also known as the London Care Homes Study) – to better understand the transmission of SARS-CoV-2 in care homes in the UK, and occupational risk factors, to inform public health interventions that could reduce transmission. This work went further than the CDC study and utilised whole genome sequencing ("WGS"). The purpose was to understand better the transmission of the virus in care homes. In April 2020, PHE's aim was to understand COVID-19 transmission and occupational risk factors, with a view to identifying interventions.

3.32 In Phase 1, six care homes for older adults reporting suspected outbreaks between 10 – 13 April 2020 were investigated. The investigation sought to test all residents and staff for COVID-19 (518 individuals in total), irrespective of whether they had symptoms. PHE assessed SARS-CoV-2 positivity in residents and staff at the care homes (518 individuals in total), recorded any symptoms in the two weeks prior to sampling, and for two weeks after monitored them daily through phone-calls and datasheet completion to record new symptoms and any outcomes. Staff working at the care homes during the days of testing took nasal swabs from the residents and submitted their own samples by way of self-swabbing. The investigation found that across the six care homes, 105 of 264 (39.8%) residents were SARS CoV-2 positive, and only 28 of the 105 (26.7%) were symptomatic at the time of testing. Additional follow-up identified 10 of the 105 (9.5%) as post-symptomatic, 21 (20%) as pre-

symptomatic, but 46 residents (43.8%) remained asymptomatic throughout the studied period. Case-fatality was highest among symptomatic SARS-CoV-2 positive residents (10 of 28 or 35.7%), compared to asymptomatic residents (2 of 46 or 4.4%). Of the staff who were SARS CoV-2 positive (53 out of 254 (20.9%), 26 (56.9%) remained asymptomatic throughout the follow up period [SH/M6/018 - INQ000089681].

3.33 PHE went on to utilise WGS analysis on positive samples to further inform understanding of likely infection transmission routes, and explore whether cases were linked (i.e., 'clusters'). WGS found multiple 'lineages' in each of the six care homes studied, suggesting that in each outbreak there had been multiple introductions of the virus. Each cluster included a member of staff, indicating a strong likelihood that staff played a critical role as a vector of transmission of the virus.

3.34 Phase 2 of the study, initiated one week later, involved additional sampling in four care homes reporting a single suspected (based on symptoms) or confirmed (based on PCR positive with symptoms) case of COVID-19 [SH/M6/019 - INQ000223932]. In two of these care homes the virus had already spread extensively, affecting 32% and 61% of residents and staff respectively. In the other two care homes, much lower proportions tested positive (3% of residents and 11% of staff) for SARS-CoV-2 infection. In these care homes (and any other care homes where cases were detected) infected residents were isolated in the care home unless hospital care was required, and infected staff were requested to not work and to isolate at home. Stringent infection prevention and control practices were reinforced in all four homes. Repeat swabbing a week later confirmed no further spread of the virus, demonstrating that these measures could support the termination of transmission within care homes.

3.35 Phase 3 of the study aimed to assess the presence of silent infection and transmission in five additional London care homes with no suspected or confirmed cases of COVID-19 in April 2020. In addition to the swabbing of all residents and staff, blood samples for SARS-CoV-2 antibodies were obtained. The high SARS-CoV-2 seropositivity rates among staff and residents in care homes with no recognised COVID-19 outbreaks demonstrated a significant role for asymptomatic infection leading to widespread silent transmission within care homes: SARS CoV-2 seropositivity ranged between 10.7% to 56.5% [SH/M6/020 – INQ000591503].

3.36 The Easter 6 study was significant in improving understanding of the extent of asymptomatic infection and potential transmission, and the consequent research publications have been provided to the Inquiry. At the time, it provided the strongest evidence yet to show that it was likely the virus was being transmitted asymptomatically: asymptomatic residents and staff who tested positive for SARS-CoV-2 were potential reservoirs for infection and ongoing transmission within care homes. The study highlighted that symptom-based screening alone was not going to be sufficient for outbreak control. This underpinned the need for reprioritisation of testing to enable testing of both symptomatic and asymptomatic residents and staff where COVID-19 outbreaks were suspected, and the introduction of asymptomatic testing for ASC staff and visitors.

3.37 As with all studies, Easter 6 had its limitations and needed to be interpreted in the context of other available evidence at that time. The limitations were set out in the following research paper [SH/M6/021 – INQ000591450]:

> *"…we only tested the care homes once [i.e., a single point in time for testing (often called point prevalence)][13]. Additional testing would have allowed more objective tracking of transmission and diagnosis in pre-symptomatic residents and staff, while testing for other viruses may have explained the development of new symptoms in SARS/CoV-2 positive and negative residents and staff. Moreover, SARS-CoV-2 testing detection could have been improved by testing multiple sites, such as the nose and throat, and repeated testing, but this was impractical in our cohort. We also only tested staff who were working at the care home at the time of the investigation and, therefore, may have missed testing those who were symptomatic and self-isolating at home [according to national guidance]."*

3.38 PHE delivered further studies into asymptomatic transmission including the investigation into the COVID-19 outbreak at a London Army barracks [SH/M6/022 – INQ000591504][14]. On 30 March 2020, 304 of the barracks population were tested for SARS-CoV-2, with follow up five weeks later. Nearly two thirds of the initial participants (22/304) who had laboratory confirmed infection remained asymptomatic throughout. WGS was possible for 17 participants confirmed as positive. This showed at least six and potentially nine separate introductions of virus to the

[13] Text in square brackets does not feature in the original paper but has been added for clarification.
[14] Entry 'April 2020'

barracks, and two clusters of four individuals with identical genomes, demonstrating that multiple incursions were occurring to closed settings rather than a single strain causing widespread transmission. Taken together, this suggested potential for asymptomatic spread in closed communities, something which was likely to be reflected in other residential settings. The study had some limitations, including the inability to sample people who were not on site due to self-isolation for symptoms or isolating as a potential contact of a case and therefore a higher proportion of those detected asymptomatically than might be observed if the whole population were tested. Further, the population group was relatively homogenous, consisting in greater part of participants who were young, white, healthy men. There was also a lack of previous testing data on some suspected cases from earlier in the outbreak before the investigation began.

3.39 Whilst I discuss the VIVALDI studies in more detail below (see paragraph 3.48ff), it is relevant to refer to a finding in the first of these studies, VIVALDI 1, which ran from 26 May to 20 June 2020. This found that 5,455 out of 6,747 residents who took part in the Whole Care Home Testing Programme and tested positive for COVID-19 were asymptomatic at the time of the sample collection.

3.40 Finally, on the issue of asymptomatic transmission, it was not until 9 July 2020 that WHO published a report acknowledging asymptomatic transmission but concluding that the scale of it remained unknown.

Transmission in ASC settings

3.41 As already mentioned, evidence reviews were important sources in developing understanding of the transmission of COVID-19, as well as corresponding interventions. This included transmission of COVID-19 within the ASC sector owing to its characteristics.

Rapid evidence reviews

3.42 PHE/UKHSA's COVID-19 Rapid Evidence Service aimed, *inter alia,* to identify and examine evidence of the transmission of COVID-19 within care homes and domiciliary care. Four rapid evidence reviews were conducted by the COVID-19 Rapid Evidence Service. Rapid evidence reviews are streamlined versions of systematic evidence reviews which allow for delivery in a shorter timescale (often

weeks rather than months). To achieve this, they may for example use a number of relevant prior evidence reviews, as opposed to all prior primary evidence.

3.43 The first review searched up to 13 May 2020 for studies that examined the factors associated with COVID-19 in care homes and domiciliary care, and the effectiveness of interventions. (No studies were identified from domiciliary care settings). The review findings were published by PHE on 15 May 2020 [SH/M6/023 – INQ000591506]. The conclusions are summarised at page 16 of the report and briefly set out here:

3.43.1 *"There is consistent evidence from multiple observational studies conducted in different settings and with different populations that main characteristics of care homes* [size, type of care provided and region] *and their staffing practices are linked to transmission, incidence or prevalence of COVID-19 in these settings."*

3.43.2 In relation to staffing, "*Use of bank or agency staff, lower levels of nurse staffing and staff working in multiple care homes were linked to increased COVID-19.*"

3.43.3 In relation to other care home characteristics: *"larger and crowded facilities, 'for profit' status, facilities scoring lower on quality and in areas of high community prevalence were significantly linked to increased COVID-19*".

3.43.4 *"There is limited evidence on the effectiveness of interventions for reducing COVID-19 in care homes, and available evidence is weak."* However, *"regular wide testing followed by isolation and the voluntary confinement of staff within care homes were associated with significantly lower levels of COVID-19."*

3.43.5 "… inequalities were not the main focus of any included studies" but the review concluded that *"it will be important to understand the characteristics of care homes within lower socio-economic areas."*

3.44 The second review searched up to 2 June 2020 for studies that examined the risk of transmission of COVID-19 when delivering domiciliary care, and how effective interventions that aimed to minimise that risk were. It was published by PHE on 29 June 2020 [SH/M6/024 – INQ000591539]. The main messages from the review are particularised at page 3 of the report. Namely, no studies were found describing the risk of transmission of COVID-19 or the effectiveness of interventions that aim to

reduce the spread of COVID-19 when delivering domiciliary care. Further, *"professional opinions on how to safely deliver domiciliary care were identified in the literature"*, and supported *"the application of general IPC practices, the use of risk assessments, ensuring staff are appropriately trained and employing an 'only when necessary' approach to face-to-face contact"*.

3.45 The third review searched up to 31 August 2020 for studies that examined factors associated with COVID-19 in care homes, and interventions to minimise the extent of COVID-19: limiting staff movement and cohorting of residents to reduce transmission. The review was published by PHE on 28 October 2020 [SH/M6/025 – INQ000591540]. The review identified some low-level evidence from COVID-19 outbreaks suggesting the restriction of staff movement and cohorting of residents could help reduce the spread of COVID-19 within care homes. However, the main message was that more high-quality research was needed to fully understand the effectiveness of these interventions.

3.46 The fourth review searched up to 8 July 2021 for studies that examined interventions to reduce COVID-19 transmission in ASC settings [SH/M6/026 – INQ000591507]. No evidence from domiciliary care or day centres was identified. The main messages of the review are particularised at page 3 of the report. Briefly, the review identified evidence of the following:

3.46.1 *"… strategies based on facility-wide testing and isolation of identified cases was likely to reduce COVID-19 transmission in care home settings";*

3.46.2 *"… staffing policies such as cohorting staff to infected or to non-infected residents, not employing agency staff and having statutory sick pay were associated with lower risk of COVID-19 transmission";*

3.46.3 Conflicting PPE results: *"the findings on PPE training and auditing and PPE supply were mixed, with some studies reporting no association and others suggesting a decrease in transmission"; and*

3.46.4 *"… limiting the use of shared space, restricting group activities, and hand sanitiser availability were associated with small or non-significant association with COVID-19 results."*

3.46.5 Also, results on resident cohorting were mixed and results on cleaning practices were conflicting.

3.47 A final message following the review was: *"The evidence on the effectiveness of IPC measures remains limited".* However, this was partly due to study design and unaccounted factors which were likely to have impacted the results.

The VIVALDI studies

3.48 I briefly discussed the VIVALDI 1 study in the context of asymptomatic transmission above. However, the suite of VIVALDI studies went much further in understanding COVID-19 transmission between residents and staff in ASC settings and the management of such.

3.49 In May 2020 the 'VIVALDI 1' study began, with the aim of measuring the prevalence of COVID-19, and the use of disease control measures in care settings, with a view to informing the UK's approach to testing. The study was commissioned by DHSC and NHS Test and Trace, as a collaboration between PHE, the Office for National Statistics ("ONS"), UCL, Ipsos MORI and the NHS Foundry. 9,081 care homes in England which were registered with CQC for the care of older adults (over 65) and/or dementia care were invited to participate, with 56% (5,126) taking part.

3.50 The study first involved a telephone interview with care home managers between 26 May and 20 June 2020. Interviews were undertaken to identify: (i) the number of residents and staff of all categories; (ii) care home characteristics; (iii) the period prevalence (the percentage of people who had experienced COVID-19 since the beginning of the pandemic); and (iv) the disease control measures used, including the use of staff (such as agency workers). Questions were later asked on whether whole home testing had taken place, and about residents returning from hospital. This information was linked with a subset of survey results to COVID-19 testing data, obtained from the Whole Care Home Testing Programme which tested 9,081 homes via 'pillar 2'[15] between 11 May and 7 June 2020, to calculate disease prevalence.

3.51 The initial results and methods of VIVALDI 1 were published by the ONS, together with the linked testing results, on 3 July 2020 [SH/M6/027 - INQ000106159]:

[15] [There were 5 testing pillars announced in the pandemic. Pillar 2 describes the mass-swab testing [COVID-19 PCR testing] for critical key workers in the NHS, social care, and other sectors].

"The weighted period prevalence of infection in:

- *Residents was 10.5% (95% confidence interval: 9.9% to 11.1%)*
- *Staff was 3.8% (95% confidence interval: 3.4 to 4.2%)*

Based on analysis of test results from the Whole Care Home Testing Programme (of all 9,081 homes tested via pillar 2 between 11 May and 7 June):

- *2.4% of all tests were positive (9,674 out of 397,197)*
- *3.9% of residents tested positive (6,747 out of 172,066)*
- *3.3% of asymptomatic residents tested positive (5,455 out of 163,945)*
- *80.9% of residents who tested positive were asymptomatic (5,455 out of 6,747)*
- *1.2% of asymptomatic staff tested positive (2,567 out of 210,620)."*

3.52 The study concluded that regular use of temporary staff, who work in multiple settings, was an important risk factor for infections in both residents and staff. The Easter 6 study had similarly confirmed that working in more than one care home greatly increased the chance of staff being infected. Furthermore, the study concluded that staff were more likely to transmit infections to residents than residents to staff, although transmission in both directions could occur. Limited data and an inability to adjust for all factors meant that the study could not provide robust evidence that the number of new admissions, and residents returning to care homes from hospital, was a confirmed risk factor for infection in residents and staff so it was highlighted as a potential signal requiring further investigation. The paper observed: "*this has only been tested in unadjusted analysis due to a high proportion of missing data across these variables*".

3.53 These results were produced rapidly and helped PHE to understand the impact of COVID-19 in care homes. They provided an initial indication of the importance of both testing and limiting staff movements between care homes and informed subsequent policy decisions related to testing, staff movement, and informed guidance to care homes. I discuss the policy decisions in relation to testing in greater detail below at section 6 of this statement. In respect of the movement of staff between care homes, on 15 May 2020 DHSC published the following guidance: "*Based on the latest evidence of significant asymptomatic transmission in care homes, providers should take all possible steps to minimise staff movement between care homes, to stop infection spreading between locations. Subject to maintaining safe staffing levels, providers should employ staff to work at a single location*" (see [SH/M6/027a -

INQ000325278]).

3.54 The existence of the survey data, together with the Whole Home Testing Programme data, provided an opportunity for more detailed and nuanced analysis on a larger sample. Therefore, VIVALDI 1 was further extended by linking the May – June 2020 survey data to the Whole Home Testing Programme data covering 13 April – 13 June 2020 [SH/M6/028 - INQ000223826]. The purpose of this new analysis was to further inform testing policy and infection control advice through a better understanding of the factors associated with COVID-19 infection in residents and staff. It confirmed that protective factors against infections included: employers paying sick pay; infrequent or no use of agency/temporary staff; lower staff to bed ratios (i.e., more staff to the numbers of beds); and cohorting staff to look after only infected or uninfected residents. Increased rates of infection were linked to having staff who often worked elsewhere and the inability to isolate residents (for example, due to dementia). These findings confirmed and extended the initial conclusions which had been used to inform policy on staff movements and testing.

3.55 In May 2020, PHE contributed to the design and planning of the DHSC funded and commissioned 'VIVALDI 2' study. This aimed to understand COVID-19 in the context of care homes for older adults, in particular the immune response and later the effectiveness of vaccination. The study was set up in June 2020. It differed from VIVALDI 1 in that it was a cohort study, where only a selected group of care homes for adults were studied (around 100 care homes) and the residents followed over a period of time. In addition to the routine COVID-19 testing data available and previously used in VIVALDI 1, VIVALDI 2 took a series of swabs and blood samples for COVID-19 positivity and measures of immunity. Researchers also analysed: demographic data on residents and staff; dates of care home entry and exit; the number of suspected and confirmed COVID-19 cases; and care home characteristics. This data was also linked to hospitalisation and deaths data. The full design of the study is described in the study protocol [SH/M6/029 – INQ000591536]. A number of reports emanated from VIVALDI 2:

3.55.1. VIVALDI 2 COVID-19 reinfection in care homes, 6 May 2021 [SH/M6/030 –INQ000220174]. This covered the period from 1 October 2020 to 1 February 2021. It included residents and staff of care homes who had previously been infected with COVID-19. It excluded anyone who had had a first vaccine more than 12 days previously. The study showed that

only 4 residents and 10 staff out of 2,111 had reinfections. The risk of later infection was 61% lower in staff, and 85% lower in residents, than in people who had not already been infected. The study showed a high level of immunity in staff and residents of care homes for older adults at the time vaccination began to be rolled out.

3.55.2. VIVALDI 2 COVID-19 vaccines in care homes study, 7 May 2021 [SH/M6/031 – INQ000591549]. This explored the effectiveness of vaccines in care home residents comparing the Pfizer and the Oxford/Astra-Zeneca vaccines. The study showed that a single vaccine dose was effective at preventing 56% of infections by 4 weeks and 62% by 5 weeks.

3.55.3. VIVALDI 2 new variant COVID-19 in care homes, 7 May 2021 [SH/M6/032 – INQ000591534]. This study showed the rapid emergence of the Alpha (B.1.1.7) variant which rose from 12% to 60% of positive cases among care home residents and staff in the two-week period, 23 November - 7 December 2020. This finding demonstrated the ongoing potential for rapid transmission of this newly identified variant of the virus.

3.56 Further studies, referred to as 'VIVALDI 3', used the same cohort of care homes and explored COVID-19 immune responses, and the impact of boosters on immune responses in care home residents and staff. The VIVALDI 3 reports were as follows:

3.56.1 VIVALDI 3 COVID-19 antibody and cellular immune response in care homes, 10 December 2021 [SH/M6/033 – INQ000591548]. This used blood samples from December 2020 to June 2021 and showed that responses in care home residents and staff who had not had natural COVID-19 infection were lower than in those who had been infected.

3.56.2 VIVALDI 3 Boosters and COVID-19 immune response in care homes, 23 December 2021 [SH/M6/034 – INQ000591535]. This used blood samples from 25 May 2021 to 18 November to explore the impact of booster vaccination on antibody response. It showed that booster doses strongly enhanced antibody response, largely making up the gap between those who did not have evidence of prior COVID-19 infection and those who did.

Infectiousness of the disease

3.57 The extent to which a pathogen can cause infection is another important characteristic when seeking to understand a new novel pathogen. The table at Annex B (taken from my Module 3 corporate witness statement [INQ000410867]) sets out how knowledge of the infectiousness of COVID-19 developed during the pandemic, linking this to public health actions taken, such as isolation periods.

Possibility of reinfection

3.58 Similarly, the likelihood of a virus to cause reinfection is another important characteristic. I set out below relevant paragraphs from my Module 3 statement, which outlines the work done by PHE, and subsequently UKHSA, in this regard.

> *124. Active identification and follow up of possible cases of re-infection was initiated by PHE's Epidemiological and Surveillance Cells, on 10 June 2020, based on positive SARS-CoV-2 samples taken more than 60 days apart in the Second-Generation Surveillance System (SGSS). SGSS is the national laboratory reporting system used in England to capture routine laboratory data on infectious diseases and antimicrobial resistance. Follow up was initially via surveillance forms sent to the microbiologist in the reporting lab to help distinguish between persistent infection, errors in data records and probable re-infections.*
>
> *125. From 14 September 2020 Pillar 2 possible reinfection patients on SGSS were followed up directly by email through direct contact with the individual affected.*
>
> *126. On 18 September 2020 a 90-day interval definition of re-infection was introduced, replacing the previous 60-day definition, and this was applied in the follow up of cases based on positive SARS-CoV-2 testing from 28 September 2020 onwards. The 90-day interval was introduced following reviews of data generated from people who had tested positive 30, 45, 60 and ultimately 90 days apart, along with data generated from the SIREN and Oxford hospital studies. Based on these reviews it was decided that the 90-day definition was likely to pick up true cases of reinfection but not cases with repeat positive testing that was from the same episode.*

127. *A paper dated 27 October 2020 was presented by PHE at NERVTAG on 30 October 2020 on the approaches to detecting SARS-CoV-2 reinfection in England [Exhibit: SH3/149 - INQ000120235]. Approaches included a whole population study (using SGSS data), Healthcare workers via the SIREN study, Elderly (via the PHE care homes cohort), Children and the Immunocompromised. Additionally, exhibited here is a table setting out the advice provided to SAGE, its sub-groups and NERVTAG which PHE/UKHSA authored or contributed to, on the nature and spread of COVID-19 including reinfection [Exhibit: SH3/31- INQ000348133]. Papers on the nature and spread of COVID-19.docx].*

128. *The earliest estimates of protective effect from previous infections were from two studies - one involving staff at Oxford University Hospitals (a single centre study) with PHE collaborators [Exhibit: SH3/150 - INQ000348182]. Antibody status and incidence of SARS-CoV-2 infection in health care workers.pdf] and the second a UK wide multicentre cohort study - the SIREN study, which is discussed in more detail at paragraphs 189-206[16]. The Oxford study compared SARS-CoV -2 infection rates, over a six-month period, based on regular PCR testing, in healthcare workers who had evidence of prior SARS-CoV-2 infection when they entered the study with healthcare workers who did not have evidence of prior infection. The rate of infection was substantially lower in those with evidence of prior infection.*

129. *In addition, PHE scientists contributed to a retrospective study of the period from 1 March 2020 - 31 December 2020, Protective effect of a first SARS-CoV-2 infection from reinfection: a matched retrospective cohort study using PCR testing data in England [Exhibit: SH3/151 - INQ000348183]. This was a retrospective population- based matched observational study which identified the first PCR positive of primary SARS-CoV-2 infection case tests between 1 March 2020 and 30 September 2020.*

130. *Amongst individuals testing positive by PCR during follow-up, reinfection cases had 77% lower odds of symptoms at the second episode and 45% lower odds of dying in the 28 days after reinfection. Prior SARS-CoV-2*

[16] The SIREN study is discussed further below.

infection offered protection against reinfection in this population. There was some evidence that reinfections increased with the alpha variant compared to the wild-type SARS-CoV-2 variant, highlighting the importance of continued monitoring as new variants emerge.

134. *PHE contributed to articles on this topic published between January 2021 and December 2021 [Exhibit: SH3/145 - INQ000348177] and [Exhibit: SH3/154 - INQ000348186]. The studies exhibited looked at the duration of protection and risk of reinfection of SARS-CoV-2 in care home residents who had already been infected. The research found that the antibodies to SARS-CoV-2 protected care home residents against reinfection.*

135. *In March 2021, PHE published information on the UKHSA website which detailed the work that was being undertaken to investigate the possibility of people who had previously tested positive for SARS-CoV-2 infection being infected again [Exhibit: SH3/155- INQ000348187] [Exhibit: SH3/156- INQ000348188].*

136. *PHE, using national surveillance data to collect information on all SARS-CoV-2 primary infection and suspected reinfection cases between January 2020 until early May 2021, looked at reinfection cases in those who had a positive COVID-19 PCR or antigen test, 90 days after their first COVID-19 positive test. They found that deaths reported within 28 days of testing positive were 61% lower in suspected COVID-19 reinfection than primary infection cases. The paper, the abstract of which is exhibited here, was published on 22 April 2022 [Exhibit: SH3/156 - INQ000348188].*

137. *In the unvaccinated cohort reinfections were associated with 49% lower odds of hospital admission in cases aged 50 to 65 years in the population not identified at risk of complication for COVID-19, and 34% in those at risk i.e. those with underlying chronic or long-term conditions. There was a 76% reduction in the likelihood of an ICU admission at reinfection compared to primary infection. Individuals at risk and those aged below 50 years, who received at least 1 dose of vaccine against COVID- 19, were 62% and 58% less likely to get admitted to hospital at reinfection, respectively.*

138. *On 17 June 2021 the first routine reinfections information was published in the*

UKHSA national flu and COVID-19 surveillance report and updated monthly thereafter until the dashboard incorporating reinfections was launched [Exhibit: SH3/157 - INQ000348189].

139. On 2 July 2021 PHE contributed a paper Serological Profile of reinfection to NERVTAG. [Exhibit: SH3/158...; INQ000120358] summarising the acquired knowledge from studies at this time.

140. In addition, on 2 July 2021 the Reinfections/ COVID Episodes Working Group was established to review the implications of a move to reporting reinfections within SGSS and overseeing the necessary implementation changes. The Terms of Reference are exhibited here [Exhibit: SH3/159 - INQ000348191].

141. On 10 December 2021 UKHSA routine reinfection data were included in the SARS-CoV-2 variants of concern and variants under investigation in England Technical briefing 31 for the first time [Exhibit: SH3/160 - INQ000257175].

142. On 31 January 2022 the COVID-19 daily dashboard, incorporating reinfections, was launched.

3.59 As mentioned in the extract above, PHE, and subsequently UKHSA, was responsible for the conceptualisation and development of the SIREN study which helped the UK evaluate the immune response to COVID-19, build understanding of the protection offered by vaccines, and provided insight into COVID-19 reinfections. SIREN was a nationwide call to action to 135 acute NHS hospitals to participate in a large-scale cohort to understand the level of risk to patient facing healthcare workers in the UK from COVID-19. This study did not involve healthcare workers in ASC. As such, it is difficult to translate the findings of the SIREN study to the ASC sector given the difference in the makeup of acute hospital trusts versus care homes and domiciliary care. However, the study provided relevant insights into the protective effect of previous infection early in the pandemic; the effect of COVID-19 vaccine on infection and illness rates; and higher rates of infection among the lowest paid NHS staff (which demonstrated the importance of considering vulnerabilities outside of the workplace, i.e., from socio economic factors, when assessing overall risk).

Variants

3.60 The paragraphs below are taken from my Module 3 corporate witness statement [INQ000410867] and briefly explain PHE's understanding of the variants which emerged during the pandemic (variants under investigation ("VUI") and variants of concern ("VOC")). The Inquiry is referred to paragraphs 143 – 158 of my Module 3 corporate statement in their entirety should further detail be required:

> *144. PHE also convened regular meetings with public health and academic teams to examine joint genomic and epidemiological data. These took place on a fortnightly basis or more frequently if required if PHE judges there was significant new data or if they had received an ask for an analysis, for example from public health teams. On 8 December 2020 PHE had received a request to examine the emerging epidemiology in Kent and at the meeting the unusual mutation profile of the genomes from Kent cases was identified.*
>
> *145. On 11 December 2020 the variant was discussed at NERVTAG [Exhibit: SH3/162 - INQ0001203901] and on 17 December 2020 at SAGE [Exhibit: SH3/163 INQ000075522] On 18 December 2020 VUI2020012/01 was redesignated as a variant of concern with the number VOC202012/01, B.1.1.7. This was subsequently named by the WHO as the Alpha variant.*
>
> *146. Following briefings to NERVTAG, PHE established a 'variant technical group' of PHE teams and academic partners to coordinate analyses to characterise the variant. A framework for variant risk assessment and methodologies for evaluating changes in properties such as transmissibility and antigenic properties (triggering an immune response) was established. PHE (and subsequently UKHSA) used this technical group and framework to maintain biological surveillance of the SARS-CoV-2 virus through analysis of UK and global genomic surveillance data, epidemiological studies using UK data, modelling analyses, and laboratory data from academic partners [Exhibit: SH3/164 - INQ000203642].*
>
> *147. The Variants and Mutations Taskforce (VAM) was also established to coordinate operational delivery. The VAM Taskforce (from February 2021 the Variants of Concern Bronze level meeting) took place on a fortnightly basis or more frequently if required. [Exhibit: SH3/165 - INQ000203632]."*

151. *International monitoring of VOCs continued. By 13 February 2021, three further VOCs had been identified. VOC 202012/02 (the 'Beta' variant), first detected in South Africa, was designated as a VOC on 24 December 2020. VOC 202101/02 (the 'Gamma' variant), first detected in Japan amongst travellers from Brazil, was designated a VOC on 13 January 2021. VOC 202102/02, first detected in Southwest England on 26 January 2021, was designated as a VOC on 5 February 2021. [Exhibit: SH3/172 INQ000348200].*

153. *VOC2111/01 (the 'Omicron' variant) was designated a VOC on 26 November 2021. It was not possible to compare the risk of hospitalisation or death with other variants at that stage as no known cases had been hospitalised or died [Exhibit: SH3/175 - INQ000262627].*

154. *UKHSA published a risk assessment for the Omicron variant on 3 December 2021 [Exhibit: SH3/176 - INQ000348204], flagging the variant as at least as transmissible as other variants and the mutations as suggestive of reduced protection from both natural and vaccine-derived immunity. The risk assessment [Exhibit: SH3/177 - INQ000348205]; [Exhibit: SH3/178-INQ000348206]; [Exhibit: SH3/179 - INQ000348207] was updated regularly until 12 January 2022, when it was flagged that Omicron remained at least as transmissible as Delta, with substantial immune evasion properties displayed, though there was a reduction in the relative risk of hospitalisation amongst adults [Exhibit: SH3/180 - INQ000348208].*

155. *UKHSA published details of studies regarding hospitalisation and vaccine effectiveness in respect of Omicron on 31 December 2021 [Exhibit: SH3/181 - INQ000348209].*

156. *As of 1 April 2022, UKHSA amended its variant classification system to give a clearer indication of which variants had potentially significant changes in biological properties compared to the dominant variant(s). Previous VOCs which no longer met the criteria were re-designated [Exhibit: SH3/182 - INQ000348210].*

3.61 PHE analysed the characteristics of these variants and published 23 technical

briefings regarding the monitoring of SARS-CoV-2 variants between December 2020 and 17 September 2021. PHE commented on variant transmissibility, likelihood of reinfection, disease severity, hospitalisation, fatality, and provided comparison with other variants. The briefings were supported by risk assessments, necessarily informed by the scientific and clinical evidence available to it as a public health body at that time. In total, PHE, and subsequently UKHSA, published 55 technical briefings up to 22 September 2023.

Section 4: Advice and guidance provided by PHE/UKHSA in relation to the ASC sector

Pre-pandemic guidance for ASC settings

4.1 Prior to the pandemic, it was extensively documented that respiratory viruses are a major cause of hospitalisation, morbidity, and death in the elderly – which can be exacerbated if that individual has pre-existing vulnerabilities. It was also understood that viruses can spread quickly through care homes. Extant and effective guidance for ASC settings already covered a range of interventions and was designed to be flexible given the range of local settings and to supplement individual risk assessments undertaken by care providers.

4.2 For the purposes of this statement, the following definitions are used:

4.2.1 Healthcare settings: a broad range of settings where healthcare services are administered, e.g., acute care hospitals, and urgent care centres.

4.2.2 Residential care: long-term care that is provided in a residential setting (e.g., a care home). A care home is defined by the CQC as "*a place where personal care and accommodation are provided together. People may live in the service for short or long periods. For many people, it is their sole place of residence and so it becomes their home, although they do not legally own or rent it. Both the care that people receive and the premises are regulated*".

4.2.3 Supported living: for individuals who remain living in their own homes but are provided with personal care via contractual arrangements.

4.2.4 Domiciliary care: care delivered to individuals living in accommodation that is owned or occupied by the individual receiving the care.

4.3 Pre-pandemic, guidance was available to support the ASC sector in dealing with incidents of acute respiratory illness or an outbreak caused by an identified pathogen such as influenza or MERS.

4.4 October 2012: PHE published '*Managing outbreaks of acute respiratory illness in care homes*' [SH/M6/035 – INQ000539000]. This guidance provided information and advice for health protection units in preventing, investigating, managing, and reporting acute respiratory illnesses. It linked to specific guidelines for the management of outbreaks of pneumococcal disease, Legionnaires' disease, and tuberculosis. This guidance was subsequently updated in 2016 and 2018.

4.5 February 2013: PHE published *'Prevention and control of infection in care homes – an information resource'* [SH/M6/036 - INQ000528402]. The guidance aimed to assist staff in using best practice to protect residents and staff from acquiring infections, as well as providing IPC advice. This guidance sat alongside DHSC's *Infection Control Guidance for Care Homes* (2006) and *The Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance* (2010), which described requirements for registered providers to report outbreaks in a timely manner.

4.6 October 2018: PHE published '*Guidance on the management of outbreaks of influenza-like-illness in care homes*' [SH/M6/037 - INQ000223342]. This was an update to the October 2012 guidance. The guidance was for staff in PHE HPTs to assist them in advising care homes on the identification and management of respiratory illness in the event of an outbreak, stating as follows:

4.6.1 "*Respiratory viruses are transmitted primarily by close contact, via droplet transmission or through direct interpersonal contact, but can also be transmitted through aerosols (e.g. produced by cough) and through indirect contact, with some evidence suggesting that respiratory viruses may remain on inanimate surfaces for several hours. Infection control precautions are therefore based on limiting and avoiding contact, aerosol and droplet transmission, as well as environmental cleaning.*"

4.6.2 In terms of risk assessments, the guidance stated (at p.9): "*When an acute respiratory outbreak is initially notified to a PHE health protection team (HPT), a range of information (see box below) will be required to inform a local risk assessment. This information will help assess the likelihood of influenza, the severity and extent of the outbreak, and guide control measures such as partial/full closure of care home to new admissions, options for patient isolation etc.*"

4.6.3 In respect of infection, prevention, and control, the guidance referred users to the October 2016 guidance.

4.6.4 The guidance stated that symptomatic residents should be cared for in single rooms or, where not possible, alongside residents "*with compatible symptoms*" (p.13). The guidance suggested that staff members who display symptoms of influenza-like-illnesses be excluded from work until they recover (p.14). Similarly, symptomatic visitors were advised to stay away from care settings.

4.6.5 This guidance specifically addressed managing an outbreak, rather than general preventative measures to be used at all times. For instance, it advised of the importance of respiratory and cough etiquette as a key IPC measure to reduce transmission between staff and patients (see section 5.1.4 of the guidance as an example).

4.7 There was also (i) more general guidance, and (ii) specific, incident-linked background advice, published by PHE applicable to the ASC sector.

4.8 September 2016: PHE published '*Middle East Respiratory Syndrome (MERS-CoV) Infection, Prevention, and Control Guidance'* [SH/M6/038 - INQ000022734]. This provided specific IPC guidance on the identification and management of suspected/confirmed cases of MERS, which is a High Consequence Infectious Disease ("HCID"). In line with the management of HCIDs, all individuals with a confirmed case of MERS would be hospitalised.

4.9 October 2016: PHE published '*Infection control precautions to minimise transmission of acute respiratory tract infections in healthcare settings v.2*' [SH/M6/039 - INQ000348300]. This guidance included a list of aerosol generating procedures

("AGPs"). It was withdrawn in February 2023 and replaced by the National Infection Prevention and Control Manual.

4.10 Pre-pandemic guidance for health protection professionals focused on supporting individual care settings by providing comprehensive information about respiratory viruses (including modes of transmission) with suggested considerations for preventing and managing outbreaks in care homes. It was reiterated in several pieces of guidance that effective IPC measures are ones where transmission-based precautions and associated PPE are implemented. Creating such measures relied on local operational policies and undertaking robust tailored risk assessments to ensure that appropriate IPC measures were put in place. PHE's guidance was high-level so that it was adaptable for a range of care settings; it made clear that it was to supplement, but not replace, risk assessments. The guidance encouraged seeking advice from the local IPC team to inform any risk assessments undertaken by the provider. All pre-pandemic IPC guidance for the ASC sector was made available on the GOV.UK website and distributed via the PHE (now UKHSA) HPTs.

The production of guidance

4.11 This section outlines the areas for which PHE, and subsequently UKHSA, was responsible for providing advice and guidance as part of the response of the ASC sector to the COVID-19 pandemic. It is useful to begin with the following extract from my Module 3 corporate witness statement [INQ000410867]:

> *272. At the start of the pandemic, in PHE, COVID-19 guidance was drafted and published by the Clinical and External Guidance Cells set up in January and February 2020 respectively and these merged to become the Advice and Guidance team in September 2020. An overarching function for PHE's Advice and Guidance team, Behavioural Science, Modelling, Rapid Evidence Service and Senior Medical Advisors and Senior Public Health Advisors (PHAGE) was stood up on 19 October 2020. PHAGE aimed to maximise the expertise of the different specialist teams, ensuring public health outputs were evidence-based, aligned, and consistent.*
>
> *273. PHAGE published guidance documents on GOV.UK for the public, for clinical audiences and for specific settings. Between September 2020 and December 2022, the team alone produced over 60 separate detailed*

evidence-based guidance documents, in addition to those produced by OGDs. PHAGE also published the UK Infection Prevention and Control (IPC) guidance on behalf of the Four Nations IPC cell. Further details can be found in paragraphs 288 onwards in this section.

274. In the early months of the pandemic, guidance for the public and non-clinical settings was cleared through the Incident Director, PHE's Director of Health Protection and Medical Director [who was also the COVID-19 Strategic Director and subsequently the Senior Responsible Officer for COVID-19 in PHE] and Department of Health and Social Care and No.10 [Exhibit: SH3/231 - INQ000224010]. Initially, clinical guidance was cleared through the Incident Director with wider input provided from PHE, NHSE, DHSC, CMO and DCMOs, and DAs, where requested.

4.12 The term "non-clinical settings" referred to in the extract above would include locations such as school and prison settings.

Triple lock clearance

4.13 The Inquiry has asked for an explanation of the cross-government triple lock clearance process. Guidance acted as a tool or framework for the sector to support decision making and action to reduce the risks associated with COVID-19 within the care sector. The responsibility for management of individual (or chains of) care homes remained with the person with managerial responsibility for that provider and decisions about the implementation of guidance rested with them also. At the beginning of the pandemic, DHSC commissioned PHE to develop guidance for the ASC sector. This work brought together expertise and input from a range of PHE cells, external experts, clinicians and stakeholders (including the Association of Directors of Public Health, DCMO and CMO, and wider international understanding from the WHO and ECDC).

4.14 The Adult Social Care Cell was established on the 25 March 2020 to ensure coordination of the guidance function specifically for the ASC sector. This cell was led by the PHE ASC SRO. Guidance produced was signed off via the Incident Director, PHE Medical Director (who was the Strategic Director for COVID-19), and the DCMO/CMO, before being submitted to DHSC who co-ordinated sign-off within other government departments and Ministerial sign-off. Whilst these various levels of

review, amendment and sign-off were important to ensure appropriate oversight, challenge and comment, this could at times lead to significant lengthening of the planned publication timeline.

4.15 At times during the development of early guidance, this meant publication was delayed for a number of days after a document had left PHE due to the need for government departments to capture wider narratives, adjust as required and sign-off. For instance, the March PHE guidance (discussed in detail below) was shared by PHE several days earlier but was still being actively reviewed the day prior to publication across government. This also meant that at times it was difficult for PHE to remain clearly sighted on any changes made at government department level and to provide further advice or comment – for example, PHE was consulted on early drafts of the hospital discharge policy developed in March, but the final published policy and decisions related to it were made by NHSE and DHSC.

4.16 To ensure consistency and improve the turnaround of guidance sign-off, the triple lock process was introduced on 25 May 2020. This consisted of three elements: (1) PHE and DHSC clearance to ensure that the health advice appearing in guidance documents was technically accurate and consistent; (2) Government Digital Service clearance to ensure that guidance met set standards in terms of its presentation, clarity and accessibility; and (3) No.10 clearance in order to ensure coherence with government policy.

4.17 In July 2020, it was agreed that there were certain circumstances in which the formal triple lock clearance process was not required. The situations where this would arise included updates to already published guidance or the production of easy read versions of guidance. This was used in exceptional circumstances.

Interaction between national IPC guidance (inc. the Four Nations IPC cell) and the ASC sector

4.18 As set out in section 2 of this statement, the Four Nations IPC Cell was established in January 2020 to discuss and produce standardised guidance across the four nations wherever possible; it was led by NHSE, with membership from all four public health agencies and the NHS. The IPC Cell was responsible for the delivery of the agreed guidance document for UK wide IPC guidance for COVID-19 for most of the relevant period. The practical publication process would then usually be carried out by PHE only after the Four Nations IPC Cell sign off.

4.19 My Module 3 corporate witness statement [INQ000410867] explains PHE's role within the Four Nations IPC Cell:

> *71. PHE and subsequently UKHSA attended the NHS emergency response structure meetings. The COVID-19 National Incident Response Board was the key operational arm of this with PHE Incident Director regularly attending to provide situational and organisational updates as well as other clinical or operational leaders from PHE/NHSTT/UKHSA as required.*
>
> *72. From 10 January 2020 when the first UK IPC guidance was published by PHE, an initial information-exchange infection prevention and control working group was set up between PHE and NHSE with daily calls. The IPC cell was more formally established on 23 January 2020 after the Wuhan Novel Coronavirus IMT meetings convened by PHE.*
>
> *73. The IPC Cell function was to provide infection prevention and control advice and review and/or develop guidance for the NHS and NHS commissioned services. NHSE was the lead organisation and acted as the secretariat. Roles were discussed on 5 February 2020 [Exhibit: SH3/32 INQ000348134]. The IPC Cell Terms of Reference were not formally established until several months into the pandemic [Exhibit: SH3/33 – INQ000348135] [Exhibit: SH34/INQ000348136] [Exhibit: SH3/35 – INQ000348137].*
>
> *74. PHE's role, alongside the other Public Health Agencies, was to provide scientific evidence and act as advisers to the IPC cell. IPC cell membership included representatives from the NHSE, four nations public health agencies (including PHE), and DHSC, with representatives from equivalent bodies in Wales and Scotland joining the calls in early February 2020. Northern Ireland followed later. The Senior Responsible Officer (SRO) for the cell was initially the Chief Nursing Officer for England who was the NHSE Head of IPC. In 2021, Public Health Wales took on Chair responsibilities.*
>
> *75. NHSE was responsible for producing the first drafts of the IPC guidance for NHS and health services, incorporating changes and was responsible for managing the consultation process with stakeholders, as well as signing off the guidance. PHE was assigned responsibility for continued publishing of*

the guidance, on behalf of the Four Nations IPC cell and DHSC, on gov.uk webpage. Therefore, while the IPC guidance was published by PHE on gov.uk, the content of the guidance was the consensus of the Four Nations as coordinated by the cell and chair. This was a consensus based on the majority position of the organisations contributing and, consequently, did not always fully reflect the view from PHE officials contributing to the discussions. Further information on the IPC Cell and guidance produced is provided at Section 3.

4.20 This statement on behalf of PHE and UKHSA will address the formation of key pieces of guidance in detail but, in general, the guidance produced during the period of February – March 2020 was commissioned by DHSC, drafted by PHE, and signed-off by DHSC as per the *'Process for developing COVID-19 guidance (for non-healthcare settings)'* [SH/M6/040 - INQ000363703].

4.21 The IPC guidance produced by the Four Nations IPC Cell was written primarily for the healthcare sector. It set out principles that were applicable across health and social care settings. Nonetheless, it was appropriate that there was additional sector-specific guidance to enable the broad principles to be appropriately operationalised within the context of ASC settings and services.

4.22 It is important that guidance reflects the breadth of ASC provision, particularly that many residential social care settings are people's homes, where individuals live on a long-term basis, and that social care services are also delivered in an individual's own home, both formally and informally. People who use social care services often have a wide variety of needs which may include, but are rarely limited to, healthcare matters.

4.23 As early as February 2020, DHSC commissioned PHE to write COVID-19 guidance specifically for the ASC sector and to support DHSC in developing its own sector-specific guidance pieces. Guidance became increasingly focused to better support specialised areas of ASC provision such as care homes, domiciliary care, supported living and unpaid carers. This enabled advice to be directly relevant and allowed for the integration of guidance and policy into single documents. For example, in the '*Admission and Care of Residents during COVID-19 Incident in a Care Home*' ('the April Admissions guidance') [SH/M6/041 - INQ000528401], information on the use of PPE could be combined with information on supply, funding and distribution of PPE

specific to care homes.

4.24 This flexible approach enabled the language and tone of ASC guidance to be better focused on and responsive to the needs of the sector, for example avoiding the use of healthcare terminology such as "patients" and "clinical hand-wash basin" where it was not appropriate. In March 2022, the application of context appropriate language was used when reinforcing the hierarchy of controls concept to ASC sector-specific IPC guidance. The hierarchy of controls had been added to ASC guidance to align with the UK Four Nations IPC guidance (published in November 2021). This concept originated from the field of health and safety and increased the importance of interventions other than PPE (such as ventilation). Other examples include the provision of easy reads, illustrated guides and posters that are not based on hospital environments. UKHSA has recently been commissioned by DHSC to produce a bespoke IPC resource for the ASC sector. That work is currently taking place.

4.25 In August 2020, the Four Nations IPC Cell produced guidance on the remobilisation of services within health and care settings [SH/M6/042 - INQ000299582]. I addressed this in my Module 3 corporate witness statement:

> *324. On 21 August 2020, PHE published updated IPC guidance on behalf of the Four Nations IPC cell. [Exhibit: SH3/307 – INQ000348364]. In recognition of 'new ways' of working required as healthcare services remobilised, NHSE developed the concept of three different COVID-19 pathways – high, medium, and low risk – through which patients were to be managed. [Exhibit: SH3/308 INQ000348365] [Exhibit: SH3/309 - INQ000348366] and attachment [Exhibit: SH3/309 INQ000348367]. Reflecting this, the guidance stated patients on a low risk pathway required standard IPC precautions for surgery or procedures and set out enhanced protections for medium and high risk patients.*

4.26 The complex nature of the ASC sector, and the particular challenges that it faced, led to a formal request in August 2020 for the sector to diverge from the Four Nations IPC cell's remobilisation guidance. This was discussed in emails between DHSC and PHE, with the Secretary of State approving the publication of the remobilisation guidance with an explicit statement that the guidance did not apply to the ASC in England [SH/M6/043 – INQ000591502], [SH/M6/043a – INQ000606874]. This

decision reflected the fact that the ASC sector did not need to remobilise in the same way as the NHS did. There were also concerns that the planned guidance may cause confusion within the ASC sector, particularly when there was an existing tailored approach to managing outbreaks in care homes and emphasis on local risk assessments undertaken by care providers. From January 2020 to January 2021, the national IPC guidance covered all health and care sectors. In January 2021, Ministers decided to formally separate the guidance and determined that DHSC should commission PHE to produce IPC guidance specifically for the care sector. This continues to date.

Guidance produced during the pandemic for ASC settings

4.27 As set out in section 2, DHSC, as the lead organisation responsible for the ASC sector, managed formal stakeholder engagement. This was to ensure co-ordinated channels of communication and to prevent mixed messaging. DHSC commissioned responses from PHE for questions raised by the sector which DHSC would then pass on. PHE did not manage this process nor respond to the sector. This remains the approach taken.

4.28 The Inquiry has asked whether the following issues were brought to the attention of PHE/UKHSA during the pandemic, namely the ability of care homes to:

4.27.1 effectively isolate or socially distance symptomatic individuals;
4.27.2 properly implement IPC measures including effective cleaning of the environment;
4.27.3 cohort symptomatic residents and/or staff;
4.27.4 access adequate supplies of PPE; and
4.27.5 ensure that care home staff can properly don and doff PPE.

4.29 The clinical guidance produced by PHE/UKHSA applied to all providers across England. Such guidance made it clear that it was intended to supplement and not replace a local risk assessment and to support care home managers in their responsibilities. Issues such as the ability of staff in a care home to 'don and doff PPE' are operational matters to be addressed by the employer following an appropriate risk assessment. PHE/UKHSA was not responsible for ensuring that care home employers had adequate risk assessments in place and were complying with health and safety legislation; that is a matter for the HSE and the CQC. From working

with multiple partnerships at local, regional and national level, PHE/UKHSA received detailed information of how the sector (or parts of it) were experiencing challenges and/or barriers and would factor this in to both the content and prioritisation of the guidance produced.

Guidance produced solely by PHE/UKHSA

The January PHE Guidance

4.30 On 10 January 2020, less than two weeks after the Chinese authorities declared the incident in Wuhan, PHE published the first national COVID-19 IPC guidance focused on the health service, "*Wuhan novel coronavirus (WN-CoV) infection prevention and control guidance"* ('the January PHE guidance') [SH/M6/044 - INQ000101202]. The guidance was based on the extant PHE MERS-CoV guidance from 2016 [SH/M6/038 - INQ000022734] as there was limited COVID-19 specific knowledge. At this point in the pandemic, this guidance was developed for the NHS as the institution with the highest likelihood of dealing with COVID-19 cases. The January PHE guidance was updated as more information about COVID-19 emerged.

4.31 The January PHE guidance was updated to include seasonal respiratory infections on 22 November 2021. It was renamed *'Infection, prevention, and control for seasonal respiratory infections in health and care settings (including SARS-Cov-2) for winter 2021 to 2022*' [SH/M6/046 - INQ000348420]. It explicitly referred ASC providers in England to the existing guidance (the '*How to work safely' guidance*). It also noted that the guidance was of 'a general nature' and that employers should *'consider the specific conditions of each individual place of work and comply with all applicable legislation and regulations*'.

4.32 The January PHE guidance was updated several times. It consistently referred ASC providers to the '*How to work safely'* guidance, which was tailored to the ASC sector.

4.33 This guidance was withdrawn on 27 May 2022, following its transfer to DHSC. DHSC and UKHSA jointly agreed to withdraw the illustrated guides for community and social care settings (original published in July 2020) and the illustrated guides for unpaid carers (originally published in November 2021). DHSC replaced the illustrative guides with text only versions.

The February PHE Guidance

4.34 On 25 February 2020, having been commissioned by DHSC, PHE published the first piece of COVID-19 guidance targeted specifically at the ASC sector titled *'Guidance for social or community care and residential settings on COVID-19'* ('the February PHE guidance') [SH/M6/047 - INQ000223341]. Drafts were shared with relevant bodies including DHSC itself, OCMO, the Association of Directors of Adult Social Care, representatives of the ASC sector and NHSE&I for review and comment. The guidance received sign-off from DHSC, and OCMO was sighted [SH/M6/048 – INQ000591436], [SH/M6/049 – INQ000049424].

4.35 The February PHE Guidance was intended to complement the existing routine guidance on managing outbreaks of respiratory pathogens in care homes, not replace it, and to provide advice specifically for COVID-19.

4.36 Pre-pandemic guidance had not generally been pathogen specific and was primarily focused on acute respiratory infection ("ARI") outbreaks within care homes. As set out above, such guidance informed the actions of the PHE HPTs.

4.37 It must be remembered that, in February 2020, the understanding of SARS-CoV-2 was less than it became later, and so guidance produced at this time was informed necessarily by what was known of other respiratory pathogens. The February PHE guidance was drafted with the knowledge that care settings therefore would have had available pre-existing guidance for managing outbreaks of respiratory viruses. This was the first COVID-19 pathogen specific guidance but the pre-existing care home outbreak guidance (referred to at paragraphs 4.5 - 4.8) still applied.

4.38 The February PHE guidance provided advice to care settings around the identification and management of suspected cases of COVID-19. This included identifying potentially infected persons and care workers as well as enhanced cleaning, social distancing, and respiratory hygiene and mitigation measures. As with all guidance produced by PHE, it was intended to supplement and inform, rather than replace, a local risk assessment.

4.39 Whilst this guidance specifically dealt with challenges faced by the ASC sector, it supplemented national guidance (which was hyperlinked within the guidance) – for instance, the February PHE guidance did not explicitly state that staff should not

attend work following travel from Wuhan because that was set out in national guidance [SH/M6/050 - INQ000119620]. At this time, SARS-Cov-2 was classified as an HCID. This meant that all confirmed cases even where the disease was mild were to be managed by specialist infectious disease units in the NHS. Therefore, care settings were not expected to care for any resident who had been identified as a COVID-19 case.

4.40 It noted that, based on knowledge of other coronaviruses, the spread of SARS-Cov-2 was most likely to occur when there was close contact with an infected person. IPC advice focused on limiting and avoiding contact, as well as decontamination of the environment.

4.41 In terms of modes of transmission, in the early stages of the pandemic, there was significant uncertainty about the exact mode of transmission of SARS-Cov-2. The existing medical literature at the time suggested that the virus was spread by direct close contact or at short range (within 2 metres), as well as indirect contact e.g., from surfaces or shared equipment These factors made it likely that the dominant mode of transmission was via droplet but did not rule out other modes such as aerosol. The guidance reflected this position whereby it stated *"From what we know about coronaviruses, spread of COVID-19 is most likely to happen where there is close contact (within 2 metres) with an infected person. It is likely that the risk increases the longer someone has close contact with an infected person. Respiratory secretions containing the virus are most likely to be the most important means of transmission; these are produced when an infected person coughs or sneezes, in the same way colds spread".* The guidance did not use terminology such as 'droplet' or 'aerosol' and instead focused on practical explanations of likely means of spread. The 2-metre advice applied to the potentially infected person, and this reflected good hygiene practices, local risk assessments, and IPC measures already embedded in guidance for the care sector, prior to the pandemic, to prevent the spread of infection. This reflected that closer contact was associated with increased transmission; the guidance made clear that any required close contact would be subject to local risk assessment. As with all advice, it was not designed to be one-size-fits-all and was subject to local risk assessment to recognise that not all individuals would be able to receive care without close contact.

4.42 PHE based its guidance on the information and evidence known at the time. As such, the February PHE guidance began with the following paragraph: "*This guidance is*

intended for the current position in the UK where there is currently no transmission of COVID-19 in the community. It is therefore very unlikely that anyone receiving care in a care home, or the community will become infected. This is the latest information and will be updated shortly". This was based on the evidence that the risk to the community was perceived to be low. At this point in the pandemic, there were few cases of COVID-19; there were only 13 confirmed cases of COVID-19 in the entirety of the UK on 23 February 2020 and none of the relevant transmissions had taken place within a care home [SH/M6/051 – INQ000591501]. All measures at this point were focused on containing the virus and preventing its onward spread. Whilst the risk was perceived as low, the guidance stated what measures care homes should take to protect residents so that they could plan and prepare. It provided detailed guidance on the virus and its management. Those who had contracted COVID-19 were being closely monitored.

4.43 It advised that face masks were recommended for infected individuals *"when advised by a healthcare worker"* - thereby leaving decisions about face masks to local discretion/risk assessment as there were concerns that the balance of benefit and harm from face masks being used by an infected person in a care setting would vary significantly on an individual basis (e.g., a person with dementia).

4.44 The guidance noted that "*there is currently little evidence that people without symptoms are infectious to others*". PHE had recently drafted a paper on asymptomatic transmission [SH/M6/006 - INQ000074909], which assessed current evidence for asymptomatic transmission of what came to be known as SARS-Cov-2. The paper concluded that the likelihood of asymptomatic individuals transmitting the infection was low; it stated *"the currently available data is not adequate to provide evidence for major asymptomatic/subclinical transmission"* of SARS-Cov-2. This paper was discussed at SAGE on 4 February 2020 [SH/M6/052 - INQ000051925]. The SAGE minutes detail that "*asymptomatic transmission could not be ruled out and transmission from mildly symptomatic individuals is likely*". Reflecting the understanding of asymptomatic transmission at that time, the guidance recognised that, if a person was asymptomatically infected, then the risk of asymptomatic transmission was considered to be low, if a person displayed symptoms (however mild), they would be treated in line with the advice for symptomatic individuals.

4.45 Linked to the above, there were no restrictions or special control measures required for an asymptomatic member of staff or resident who was waiting for a laboratory test

result. The guidance noted that *"the NHS are currently testing a very large number of people who have travelled back from affected countries, the vast majority of whom test negative"*. If a member of staff or a resident were symptomatic, they would be required to inform the HPT or self-isolate.

4.46 As set out in section 2, PHE had regular stakeholder engagement to ensure that it was aware of operational challenges faced by the sector. The introduction of support measures, such as financial support (e.g., sick pay and/or isolation pay), was a matter for ministers, though PHE and NHSTT teams inputted into policy briefs and submission in relation to this. It was for the CQC to ensure that each provider was able to implement the public health measures recommended by PHE. Each care provider was responsible for looking after its staff, PPE stock, and other operational measures.

4.47 Professor Harries' Module 2 corporate statement [INQ000251906] to the Inquiry sets out PHE's position in respect of the formation of the February PHE guidance:

> *358. On 25 February 2020 "Guidance for social or community care and residential settings on COVID-19" was published on PHE's website (the "February PHE Guidance") [Exhibit: JH2/263 - INQ000223341]. This guidance was commissioned by DHSC and brought together contributions from across government, NHSE/I and the adult social care sector, to articulate clearly: infection prevention protocols; when to notify the PHE HPTs; decontamination advice; and current understanding of symptoms and isolation requirements.*
>
> *360. Whilst the risk was perceived as low, the guidance stated what measures care homes should take to protect residents so that they could plan and prepare. It provided detailed guidance on the virus and its management, including section 17, which was headed "Specific actions for social and community care staff visiting patients…providing care to residents".*
>
> *361. PHE had pre-existing guidance on management of cases and outbreaks of acute respiratory infections in care homes (and other settings) which informed the actions of Health Protection Teams [JH2/264 - INQ000223342]. Care homes were familiar with this guidance and its recommendations. This*

included advice on isolation of infected patients and on testing suspected cases and management of contacts. The February PHE guidance approach built on existing good practice for managing infectious disease in care homes, including guidance on the circumstances in which self-isolation was required, both in respect of staff and care home residents, infection prevention protocols and decontamination advice.

362. The February PHE Guidance was following the "case definition" applicable at the time, in line with WHO data and UK surveillance. The case definition was based on whether a person had travelled to, or worked in, one of fifteen specific countries/regions which had been particularly affected by COVID-19, as set out in the Chief Medical Officer Alert issued on 25 February 2020 [Exhibit: JH2/265 - INQ000087259]. The CMO Alert linked to guidance that PHE had developed in collaboration with the NHS on: initial assessment and investigation of cases; infection prevention and control guidance; guidance on diagnostics; guidance for primary care.

363. The scientific understanding at the time was that there was very limited evidence of transmission from asymptomatic cases and the February PHE Guidance stated, "there is currently little evidence that people without symptoms are infectious to others." It was not until April 2020 that the scale of asymptomatic transmission between individuals was better evidenced and understood.

364. The February PHE Guidance built on existing PHE outbreak and flu guidance for care homes and applied this to the current available evidence regarding COVID-19. At this stage the UK was still in the 'contain' phase (i.e., seeking to isolate all contacts through pre-existing methods of local contact tracing and isolation of suspected cases), and this guidance reflected the state of knowledge of the virus and transmission rates within the country at the time. It was not until 12 March 2020 that the government announced that it was moving its COVID-19 response from the 'contain' to the 'delay' phase, after the UK's CMOs raised the risk to the UK from moderate to high. As a result, on 13 March 2020 the February PHE Guidance was withdrawn, and superseded by the March PHE Guidance, which reflected the changing phases of the pandemic.

The March PHE Guidance

4.48 Further guidance for the ASC sector was commissioned by DHSC and involved wider conversations with other departments – such as OCMO, No.10, and DHSC. With growing understanding of the virus, new policies began to be developed for specific groups. DHSC requested separate guidance for care homes, domiciliary settings, and supported living settings to ensure individuals in these different groups (e.g., those requiring shielding, or in due course, those requiring vaccination) could be best supported. The intention was that guidance should more accurately reflect the needs of the various settings in periods of sustained transmission of the virus.

4.49 Between the end of February, and prior to the 'delay' phase of the pandemic announced on 12 March 2020, SAGE advised that the pandemic was advancing, and the February PHE guidance needed to be updated to ensure it was fit for purpose. It was recognised that the virus could no longer be contained, and the guidance needed to focus on mitigating risks and protecting staff and residents.

4.50 On 2 March 2020, PHE contacted DHSC to offer PHE's assistance in developing a response for the social care sector, particularly in respect of engagement on a local level with ASC stakeholders. PHE's Communications Director wrote to DHSC with proposals for simplifying existing and upcoming guidance including care home guidance to make it more accessible to the public in tone [SH/M6/52a – INQ000606869]. This email included a draft version of the care home guidance dated 3 March and followed an earlier email from DHSC confirming that all guidance needed clearance from the CMO's office and SoS' office. The addendum minutes from a SAGE meeting on 3 March gave an action for "*PHE to begin drafting public guidance on potential interventions, informed by evidence of what constitutes effective guidance (including from behavioural science) – and to advise where there are evidence gaps requiring rapid research*" [SH/M6/053 - INQ000119719].

4.51 On 8 March 2020, DHSC emailed raising concerns that the February PHE guidance was not *"meeting the needs of the care sector"* and asked for a plan for updating the guidance) [SH/M6/055 – INQ000593184]. In the same email chain, Professor Harries noted that the guidance was being revised following comments from the SoS to ensure it was user friendly. There were further conversations between officials at DHSC and PHE regarding the need to update the guidance for care homes collaboratively.

4.52 On 9 March 2020, DHSC emailed PHE to provide comments on the development of the updates to the February PHE guidance. It was explained that the version shared did not "*cover quite a lot of things that I know the care sector would like to see, if Covid-19 becomes more widespread. This is where the need for more detailed guidance [sic]*" [SH/M6/056 – INQ000325229].

4.53 Later that day, officials from PHE and DHSC (alongside Professor Harries) met to agree the formation of the first pieces of specific guidance for the ASC sector [SH/M6/056 - INQ000325229]. At this stage, queries were still being addressed in the draft guidance.

4.54 PHE also finalised its paper on '*Transitioning from Containment to Delay; PHE's Approach*' which set out how the organisation proposed to target its resources in order to respond to the pandemic [SH/M6/058 - INQ000591467].

4.55 On 13 March 2020, three pieces of guidance were published, replacing the 25 February 2020 guidance ('the March PHE guidance'). As per the above, the February PHE guidance was withdrawn, and superseded by the March PHE guidance, which reflected the changing phases of the pandemic and engagement with sector stakeholders.

4.56 The first piece of guidance was '*COVID-19: guidance on residential care provision*' [SH/M6/059 - INQ000300278] for local authorities, clinical commissioning groups, and registered providers of accommodation for people who need personal or nursing care – this included registered residential care and nursing homes:

4.56.1 The guidance recommended that care home providers "*review their visiting policy, by asking no one to visit who has suspected COVID-19 or is generally unwell, and by emphasising good hygiene for visitors*". The WHO guidance did not advise full restrictions on visiting; it only recommended limiting visiting when COVID-19 transmission was documented [SH/M6/060 - INQ000325328].

4.56.2 The PHE guidance provided additional guidance on infection, prevention, and control measures to support the practices already familiar to care homes in dealing with other viral outbreaks. If a resident had symptoms

of COVID-19, the guidance stated: "*All staff will be trained in hand hygiene. Much of the care delivered in care homes will require close personal contact. Where a resident is showing symptoms of COVID-19, steps should be taken to minimise the risk of transmission through safe working procedures. Staff should use personal protective equipment (PPE) for activities that bring them into close personal contact, such as washing and bathing, personal hygiene and contact with bodily fluids. Aprons, gloves and fluid repellent surgical masks should be used in these situations. If there is a risk of splashing, then eye protection will minimise risk*". The guidance highlighted the components of infection prevention and control including isolation, cleaning, PPE and hand hygiene several times throughout, as part of wider information on IPC measures directed at reducing transmission between residents in the care home, those who were newly admitted, and care home staff.

4.56.3 In terms of isolating a resident who has symptoms of COVID-19, the guidance recognised that care homes "*should implement isolation precautions when someone in the home displays symptoms of COVID-19 in the same way that they would operate if an individual had influenza*". Care workers were advised to self-isolate at home and not to provide care if they were concerned that they may have symptoms of COVID-19. It also provided recommendations for both NHS and local authority stakeholders to support care settings in planning, outbreak management, and ensuring clinical support.

4.56.4 As with the February PHE guidance, the March PHE guidance reflected the scientific understanding at the time that there was very limited evidence of transmission from asymptomatic cases. It was not until April 2020 that asymptomatic transmission between individuals began to be better evidenced and understood.

4.57 The second piece of guidance within the March PHE guidance was '*COVID-19: guidance on home care provision*' [SH/M6/061 - INQ000325235] for those who support and deliver care to people in their own homes, including community health services. It provided advice on safe working practices, and advice to inform the local risk assessment undertaken in respect of each individual receiving care:

4.57.1 The guidance set out that if a care worker was concerned that they had COVID-19, they should follow NHS advice and, if advised to self-isolate, to follow the 'stay at home' guidance. It also set out advice to consider when undertaking a risk assessment if the individual receiving care had symptoms of COVID-19 (e.g., PPE, cleaning, and laundry).

4.57.2 The guidance noted that if neither the individual or care worker had symptoms of COVID-19 then PPE was not required above and beyond normal good hygiene practices. The social distancing guidance (which would have applied to domiciliary care) was published on 16 March. This guidance is set out at paragraph 4.61.

4.57.3 It was expected that those providing home care would continue to implement general interventions (i.e., those that were not specifically referred to in the guidance) that are applied to prevent all respiratory viruses regardless of whether a person is symptomatic or not. The guidance was not an exhaustive list of recommendations and sat alongside general IPC principles that those working in the ASC were familiar with.

4.57.4 This guidance was withdrawn on 6 April and superseded by the April Admissions guidance.

4.58 The third piece of guidance was '*Guidance on Supported Living'* [SH/M6/062 - INQ000325234]. It was aimed at local authorities, clinical commissioning groups ("CCGs"), community health services and providers of care and support delivered within supported living environments.

4.58.1 The guidance set out that if a care worker was concerned that they had COVID-19, they should follow NHS advice and, if advised to self-isolate, to follow the 'stay at home' guidance [SH/M6/063 – INQ000591449].

4.58.2 It also set out advice to consider, when undertaking a risk assessment, if the individual receiving care had symptoms of COVID-19 (e.g., PPE, cleaning, and laundry).

4.58.3 Similarly to the *home care guidance,* if neither the care worker nor the

individual receiving care and support were symptomatic then no PPE was required above and beyond normal good hygiene practices.

4.59 The final timepoint for publication of any guidance was decided by the Cabinet Office and, as such, PHE did not have input into that decision. There was significant work going on between the publication of the February PHE guidance and the publication of the March PHE guidance. As set out above, there were ongoing discussions about the development of guidance between different organisations up until the point of publication. Interim guidance was not considered at the time because efforts were focused on agreeing consistent cross-government guidance that could best address the concerns of the sector balanced against pressures on the healthcare system.

4.60 The March PHE guidance was updated on 19 March to link to *COVID-19: guidance for households with possible coronavirus infection* [Residential: SH/M6/064 - INQ000539001, Supported: SH/M6/065 - INQ000539002, Home: SH/M6/066 - INQ000539003].

Further guidance published

4.61 On 16 March 2020, PHE published guidance that specifically addressed social distancing ('*Guidance on social distancing for everyone in the UK and protecting older people and vulnerable adults'* [SH/M6/067 - INQ000348029]), which provided advice on good social distancing practices for those vulnerable to COVID-19 (e.g., the elderly or the immunosuppressed).

4.62 On 21 March 2020, PHE published '*Guidance on shielding and protecting people defined on medical grounds as extremely vulnerable from COVID-19*' [SH/M6/068 – INQ000106266]. This was the first iteration of the guidance on shielding. This guidance advised that people in the clinically extremely vulnerable ("CEV") group would be contacted separately by letter and were advised to stay at home for at least 12 weeks. PHE's role was to provide public health advice, not to develop the policy reflected in the guidance for the CEV or CV groups. An easy read of this guidance was published on 24 March 2020.

4.63 On 29 March 2020, PHE published '*Guidance for the public on the mental health and wellbeing aspects of coronavirus (COVID-19)*' [SH/M6/069 - INQ000348091]. This guidance provided advice on ways to alleviate the mental

health challenges presented by the pandemic. It signposted NHS recommended helplines and tips for healthy eating and exercise, and as well provided advice on getting essential supplies and managing financial concerns.

4.64 '*Guidance for those who provide unpaid care to friends or family*' (published 8 April 2020) was drafted and published by DHSC [SH/M6/083 - INQ000327821] - PHE provided public health advice to DHSC in the development of this guidance.

4.65 On 10 April 2020 DHSC published its 'Covid-19: Personal Protective Equipment (PPE) Plan' which had three strands: guidance, distribution and future supply [SH/M6/070 - INQ000050008].

4.66 On 18 May 2020, the '*COVID-19 management of exposed staff and patients in health and social care settings*' ([SH/M6/071 - INQ000563707]) was published. An earlier iteration of this guidance was published on 4 April, but this May version contained information on social care settings. It recommended that staff who developed symptoms of COVID-19 should follow the 'stay at home' guidance and provided information on isolation for those who tested positive, regardless of symptoms. In terms of residents, the guidance stated:

> *Residents who are known to have been exposed to a confirmed COVID-19 patient (an exposure similar to a household setting), should be isolated or cohorted only with residents who do not have COVID-19 symptoms but also have been exposed to COVID-19 residents, until 14 days after last exposure.*
>
> *If symptoms or signs consistent with COVID-19 occur in the 14 days after last exposure then relevant diagnostic tests, including for SARS-CoV-2, should be performed. If they have been cohorted with other individuals, the other residents follow-up period recommences from the date of last exposure.*

4.67 On 7 August 2020, PHE published '*COVID-19 Epidemiological Definitions of Outbreaks and Clusters in Particular Settings'* which provided the agreed definition of an outbreak within several settings, including an institutional residential setting (for example, a care home):

> ***Outbreak criteria***
>
> *Two or more test-confirmed cases of COVID-19 or clinically suspected cases of*

COVID-19 among individuals associated with a specific setting with illness onset dates within 14 days.

***Note:** If there is a single test-confirmed case, this would initiate further investigation and risk assessment. An outbreak would be declared if the investigation ascertained a second COVID-19 case (test-confirmed or clinically suspected).*

End of outbreak

No test-confirmed cases with illness onset dates in the last 28 days in that setting.

4.68 On 18 August 2020, the '*COVID-19 management of exposed staff and patients in health and social care settings*' guidance was updated to explain when health and social care staff can be exempt from being considered a contact for the purposes of Test and Trace ([SH/M6/072 - INQ000566356]).

4.69 On 9 June 2021, PHE published '*PPE guide for community and social care settings including care homes What PPE to wear and when – an illustrative guide'* ([SH/M6/073 - INQ000591498]). This guide has been owned by DHSC since 31 March 2022.

4.70 On 12 August 2021, the *Management of staff and exposed patients or residents in health and social care settings* was updated to set out that, if staff members are a contact of a COVID-19 case, they were not required to self-isolate if they were fully vaccinated but should inform their line manager or employer immediately if they were required to work in the 10 days following their last contact with a COVID-19 case.

4.71 In November 2021, UKHSA published its illustrated guide for unpaid carers, available in 27 language translations [SH/M6/074 – INQ000591468].

The 'How to Work Safely' Guidance

4.72 On 17 April 2020, PHE published '*How to work safely in care homes'* ([SH/M6/075 - INQ000303275). This document provided practical information about PPE usage. In particular, it set out how care homes can manage those who were CEV/shielding (at page 7):

Individuals with certain serious health conditions (such as those with particular cancers, lung diseases and with suppressed immune systems) are considered extremely vulnerable to COVID-19. Shielding is a measure to protect people who are extremely vulnerable by minimising all interaction between them and others.

As a minimum, residents in the extremely vulnerable group should be separated from others (e.g. reside in a single room). It is important that when providing care to a resident considered extremely vulnerable that you wear PPE including as a minimum, disposable plastic apron, fluid resistant surgical mask and disposable gloves; and practice excellent hand hygiene to minimise risk of infection. In practice, there is no difference in PPE guidance between providing care to a resident in the extremely vulnerable group and others (though the primary purpose in this case is to protect the vulnerable resident). It is helpful to be aware of who is most vulnerable in your care home. Your manager will help you identify which of your residents is in the extremely vulnerable group.

4.73 Further updates on PPE were added to '*Guidance: COVID-19 personal protective equipment (PPE)'* and '*How to work safely as a home carer: taking off personal protective equipment'* ([SH/M6/076 – INQ000563016], [SH/M6/077 - INQ000050173]) on 24 April 2020. The '*How to work safely in care homes'* guidance was updated to simplify the information on PPE and provide additional FAQs ([SH/M6/078 - INQ000562995] on 27 April 2020.

4.74 Similar guidance was created for domiciliary care (published 27 April 2020) [SH/M6/079 - INQ000303276]. The '*How to work safely*' guidance for care homes and domiciliary care were both renamed on 15 June 2020 to '*Personal protective equipment (PPE) – resource for care workers working in care homes during sustained COVID-19 transmission in England*' ([SH/M6/080 - INQ000528396]) and '*Personal protective equipment (PPE): a resource for care workers delivering homecare (domiciliary care) in England*' respectively [SH/M6/80a – INQ000606876]. The former guidance was updated to provide specialist advice relating to the care of individuals with learning disabilities and/or autism, to include the specification of surgical mask types (as defined by the HSE Medicines and Healthcare products Regulatory Agency ("MHRA")), the PPE tables were reduced from three to two, and more detail on filtering facepiece ("FFP")2/FFP3 respirators for AGPs. There was also the addition of support materials. The latter guidance received the same amendments in respect

of individuals with learning disabilities and the specifications of surgical masks. It also was amended to provide further support materials ([SH/M6/081 - INQ000110565]).

4.75 On 20 July 2020, both '*Personal protective equipment (PPE) – resource for care workers working in care homes during sustained COVID-19 transmission in England*' and '*Personal protective equipment (PPE): resource for care workers delivering homecare (domiciliary care) in England*' were updated to introduce universal masking in care homes and domiciliary care ([SH/M6/082 - INQ000565810; SH/M6/82a – INQ000606877].

4.76 On 16 April 2021, '*Personal protective equipment (PPE) – resource for care workers working in care homes during sustained COVID-19 transmission in England*' was updated to advise on sessional use of PPE [SH/M6/082b – INQ000606886].

4.77 '*Personal protective equipment (PPE) – resource for care workers working in care homes during sustained COVID-19 transmission in England*' was updated on 17 May 2021 to clarify the meaning of sessional use and the difference between source control and PPE to clarify the safe use of face masks and when to use them [SH/M6/082c – INQ000606882]. '*Personal protective equipment (PPE): a resource for care workers delivering homecare (domiciliary care) in England*' was updated the following day with a note explaining the infographics were being reviewed and would be updated shortly [SH/M6/082d – INQ000606898].

Guidance that PHE/UKHSA contributed to

4.78 Guidance teams in UKHSA and its predecessor organisations were involved in the drafting and publication of the government's COVID-19 guidance and were consulted for advice on much of the guidance produced by a number of other government departments that was ultimately owned by those departments. There were pieces of guidance that PHE was not consulted on at all.

4.79 In minutes of the Four Nations IPC Cell from 10 February 2020 [SH/M6/084 - INQ000398211], it was noted that the consensus position was that domiciliary care should not be included at that time *"as any confirmed case would not be managed at home".* This reflected COVID-19's status at this point as an HCID meaning that any cases would be cared for in an infectious disease centre, not at home.

4.80 On 19 February 2020, PHE published '*COVID-19 Infection, Prevention, and Control Guidance*' [SH/M6/085 - INQ000348304] on behalf of the Four Nations IPC Cell. The guidance amended the description of aerosol generating procedures ("AGPs"). It adopted the list of AGPs provided in the extant PHE MERS-CoV guidance, which was derived from a list the WHO published in 2007 following SARS-CoV-1 and updated in 2014 ([SH/M6/086 - INQ000114293]). Given the uncertainty about the transmission of SARS-CoV-2 in mid-February 2020, as stated above, it was considered reasonable to adopt the WHO list of AGPs.

4.81 The Four Nations IPC Cell minutes on 26 February 2020 [SH/M6/087 - INQ000398133] show discussions in the AOB section about nursing homes and learning disability areas. Unfortunately, due to the passage of time, there is no corporate memory as to the details of the discussions more than that which is contained within the minutes [SH/M6/088 - INQ000470587].

4.82 On 2 April 2020, PHE published 'Sessional use of PPE' ([SH/M6/089 - INQ000348324], [SH/M6/090 - INQ000117822], [SH/M6/091 - INQ000348327], [SH/M6/092 - INQ000117824], [SH/M6/093 - INQ000348329]), which set out recommended PPE for a variety of settings (including social care) alongside the other public health bodies in the UK and the NHS. This table formed part of the guidance produced by the Four Nations IPC Cell. The following excerpt from my Module 3 witness statement provides further detail on this guidance:

> *308. On 2 April 2020, on behalf of the Four Nations IPC Cell, PHE published updated "COVID-19 Personal Protective Equipment" guidance as part of broader IPC guidance. [Exhibit: SH3/276 – INQ000348325]. PHE had led the production of this guidance, widely consulting on it including with unions and the AoMRC and getting the endorsement of all four nations' CNOs and CMOs. The updated guidance provided enhanced PPE recommendations, advice on both sessional use of PPE (that is, use of specific items of PPE by a health and social care worker during a single period of time where they are undertaking duties in a specific clinical care setting or exposure environment, such as a ward round, which ends when they leave the clinical care setting or exposure environment) and guidance on the use of PPE in a range of scenarios, including during periods of sustained community transmission. It outlined the advice to all health and social care staff to utilise PPE, including fluid repellent surgical masks, gloves, and aprons when*

delivering all close contact care (i.e., within 2 metres) for both individuals with confirmed and suspected COVID-19 and those with no symptoms. It advised that respirators, type IIR FRSMs, eye protection and long-sleeved disposable fluid repellent gowns could be subject to single sessional use in specific, outlined circumstances. This guidance also made recommendations for PPE when case status was unknown or high levels of COVID-19 were circulating. Providers were advised to undertake a risk assessment within the setting, and "where staff consider there is a risk to themselves or the individuals they are caring for they should wear a fluid repellent surgical mask with or without eye protection".

309. The guidance included four tables:

a. Table 1 – Recommended PPE for healthcare workers by secondary care clinical context [Exhibit: SH3/277– INQ000348326];

b. Table 2 – Recommended PPE for primary outpatient and community care [Exhibit: SH3/278 – INQ000348327];

c. Table 3 – Recommended PPE for ambulance, paramedics, first responders and pharmacists [Exhibit: SH3/279 – INQ000348328];

d. Table 4 - provided further advice on PPE where there was sustained community transmission. It advised the use of PPE for all direct episodes of care both within hospital settings and in the wider community whether or not an individual was known to be symptomatic. [Exhibit: SH3/280 – INQ000348329].

e. Further detail on the updates to PPE guidance is set out in the exhibited table here [Exhibit: SH3/269 – INQ000348315] and also at paragraph 304.

4.83 The April Admissions guidance was published on 2 April 2020 and is addressed in detail in the section 7 of this statement.

4.84 On 6 April 2020, the Four Nations IPC Cell guidance was updated to provide further advice on PPE in care settings, and what to wear in times of sustained community transmission across all settings ([SH/M6/094 - INQ000563006]).

4.85 On 6 April 2022, DHSC's *'Overview of adult social care guidance on coronavirus (COVID-19)'* was withdrawn and replaced by a DHSC/UKHSA publication titled *'Infection prevention and control: resource for adult social care*'. This consolidated

and replaced all previous COVID-19 guidance for the ASC sector.

Reflections on the guidance published

4.86 There were several iterations of guidance throughout the pandemic. Scientific evidence of the novel coronavirus emerged rapidly during the pandemic. Understanding of the virus constantly developed as a result of accumulating data and scientific studies. This knowledge and understanding informed the guidance which was based on what was known at that particular point in time. As new scientific evidence emerged, guidance was constantly reviewed and updated as appropriate to reflect the latest understanding.

4.87 Emerging scientific evidence, internationally and in the UK, can be contradictory. It was important that such evidence was assessed within the context of an emergency.

4.88 Developing guidance at pace and scale due to the nature of a pandemic, within the context of continuously emerging evidence for a novel pathogen was highly challenging. Due to intense demand, high volumes of guidance were produced by or with support from PHE, and PHE teams worked relentlessly over an unprecedented period of demand to meet the requests placed on them.

4.89 The process of triple lock provided a streamlined process with greater cross-government consistency for guidance and ministerial approval in a timely manner. It was important to share and consider the needs, feedback, and concerns of the sector in developing guidance to ensure the guidance that was published and disseminated was appropriate to their needs.

4.90 The principles of IPC are the same across health and social care settings, but the language, application, and implementation will necessarily differ. Consultation and feedback supported the development of guidance throughout the pandemic that was tailored to the specific characteristics and needs of the ASC sector and different ASC settings.

Section 5: PHE/UKHSA's role in PPE guidance and policy

5.1 Early in the pandemic, it was apparent that central Government would also need to play a role in distribution to a wider range of settings. Several strategies were

adopted, focused specifically on getting PPE to the social care sector, whilst recognising that the sector had existing, independent access to wholesalers for PPE. Officials from PHE provided public health advice to such strategies - for instance, I commented on draft plans prepared by DHSC in April 2020 [SH/M6/095 – INQ000592580].

5.2 As part of the DHSC ASC Strategy, the Secretary of State for Health requested that PHE delivered case studies of sessional use of PPE, including different types of social care settings e.g., care homes, home care and supported living, and an interactive video of donning and doffing of PPE and appropriate use. These videos and illustrative guides were distributed to the sector via the PHE HPTs and later became incorporated to the '*How to work safely guidance*' to provide PPE advice specifically to the ASC sector. DHSC was key in making the sector aware of the resources created. Prior to the pandemic, PPE was commonly used in the care sector – mostly gloves and aprons. The use of FRSMs was less common in the sector before the pandemic and this was a change in practice. In response, PHE created illustrative guides and videos to ensure that PPE was donned and doffed safely to avoid self-contamination.

5.3 In minutes of the Four Nations IPC Cell from 3 March 2020 [SH/M6/088 - INQ000470587], it was noted that there were concerns about a disparity between guidance for donning and doffing guides. After some investigation, there was an extra step recommended for eye protection and the respirators in the posters compared to the guidance text [SH/M6/096 - INQ000591438].

5.4 Employers have a duty to protect staff in accordance with the Health and Safety at Work Act 1974, which is enforced by the HSE. Use of PPE for extended periods of time can require adjustment, both physically and physiologically. Providers in the ASC sector are aware that regulation 14 of the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014 requires them to meet the nutritional and hydration needs of service users. Compliance is measured and enforced by the CQC. PHE/UKHSA therefore has the responsibility for the health and safety of employees of its organisation only. As has been set out in the previous section, the guidance produced by PHE/other organisations supplemented local risk assessments to protect both staff and individuals receiving care. What was appropriate needed to be tailored to the specific circumstances presented. For instance, if an individual could not tolerate staff wearing face masks, other IPC measures would need to be

implemented to minimise the risk of transmission.

Section 6: Testing

6.1 This section provides an overview of PHE/UKHSA's role in: (a) developing a specific test for COVID-19; (b) increasing testing capacity; and (c) the scaling up of testing on a mass scale. These matters will be subject to detailed examination in Module 7 of the Inquiry, the hearings of which are due to take place before this module. UKHSA has provided a corporate witness statement for Module 7.

Developing a specific PCR test for COVID-19

6.2 Polymerase Chain Reaction ("PCR") is a laboratory test (sometimes called an assay) used to detect specific genetic material of a virus. PCR tests are seen as offering a "*gold standard*" for the detection of viruses and bacteria including SARS-CoV-2. The test is very sensitive because it amplifies a virus's genetic material and so can detect small traces of a virus in a sample. It is undertaken in the laboratory and requires specialist equipment and personnel.

6.3 Developing a specific PCR test for, what was in January 2020, a novel coronavirus was the first step in the journey towards rolling out PCR testing in the workplace and home. Throughout that month, working with international collaborators, PHE played a leading role in developing a specific PCR test for SARS-CoV-2. China deposited the first viral genome sequence on 10 January 2020 and four further genomes on 12 January 2020 in the viral sequence database curated by the Global Initiative on Sharing All Influenza Data ("GISAID"). Using this genome sequence and information from related viruses, PHE - in collaboration with lab partners in Europe, the UK and Hong Kong - was able to develop a specific PCR test. This was in use from 21 January 2020, and the methodology was shared publicly on 23 January 2020.

6.4 This new assay was used at the Colindale laboratory to diagnose the first case in England on 31 January 2020 alongside the previously developed pan-coronavirus assay. PHE isolated and grew the SARS-CoV-2 virus from the first UK diagnosed case, which provided essential control material for the expanded use of the PHE assay. Shipments of live SARS-CoV-2 virus, containing control materials, from PHE Colindale to partners in academia, other government institutes and industry, began on 17 February 2020, as soon as this material was available, so supporting the

development of commercial diagnostic assays and wider capability.

6.5 Key development points in testing are discussed further below but the overarching chronology of testing in the early part of the pandemic can be outlined as follows:

6.5.1 10 January 2020 – 10 February 2020: all testing in the UK was carried out by PHE at Colindale, using a diagnostic test developed by PHE working with international partners.

6.5.2 11 February - 17 February 2020: the diagnostic test was rolled out to the network of PHE and PHE affiliated microbiological laboratories ("hereafter labs") undertaking public health microbiological work (the "Regional labs") as well as providing protocols and material to support the devolved administrations. The effect was an increase in diagnostic lab capacity.

6.5.3 7 March 2020 – early April 2020: testing continued to be provided by PHE through the Regional labs, and the specialist lab at Porton Down. PHE began to roll out the PCR tests to NHS labs which could undertake such work using non-commercial PCR tests.

6.5.4 From mid-March 2020 onwards: the first commercial PCR test kits were becoming available, and capacity was increasing in the NHS, although issues such as the supply of reagents and the capacity to stop other types of non-COVID related testing were limiting factors.

6.5.5 April 2020 onwards: a Lighthouse Laboratory network was established to increase testing capacity, with facilities brought online to manage initial testing growth and then variable demand. The Lighthouse Labs were higher throughput diagnostic testing facilities purposefully created to only process COVID-19 samples, following input from PHE specialists and other specialist stakeholders. Lighthouse Labs later became part of the NHSTT laboratory network.

Difference in testing carried out at NHS hospitals and PHE laboratories

6.6 This part of this statement draws upon UKHSA's Module 5 Corporate Witness

Statement (Science and Technical) dated 15 November 2024 (hereafter "the Science and Technical Statement") [INQ000518354]. Microbiological testing can be used to determine if a person is infected and is a critical factor in understanding the characteristics of a virus and its transmission. It takes two forms. The first is clinical diagnostic testing which allows a clinician to make a diagnosis and so informs the care to be given to a patient. Save for rare exceptions (an imported pathogen such as Ebola being an example), such testing is undertaken by the NHS through its own pathology networks. The second form is public health microbiology and surveillance which aims to detect, monitor and control infectious diseases in a population including the identification and management of an outbreak. PHE delivered public health microbiology, reference and other specialist microbiology. These services are now delivered by UKHSA.

6.7 Public health microbiology is utilised to perform surveillance in specific populations, determine the underlying causative pathogen in an unusual outbreak and to determine whether an individual has eradicated a dangerous or serious pathogen. PHE delivered public health microbiology, with some work co-located in NHS facilities, and ran national specialist reference laboratories where testing was required for surveillance and some other specialist roles. PHE laboratories had specific roles in developing novel assays where commercial assays were unavailable. PHE did not usually have the facilities for large-scale population diagnostic testing.

Increasing testing capacity

6.8 The Government's Advisory Committee on Dangerous Pathogens ("ACDP") sets the classifications for biological agents according to an expert assessed level of risk of infection to humans, based on evidence provided by the secretariat and members. ACDP met on 13 February 2020 and concluded that existing safe systems of work for similar Hazard Group 3 (HG3) Coronaviridae (SARS-CoV-1 and MERS-CoV) could be used to effectively manage the risks of SARS-CoV-2 [SH/M6/214 – INQ000606891]. Based on the information available to them at the time, ACDP agreed a provisional classification for SARS-CoV-2, as an HG3 pathogen (where HG4 is the highest, e.g., Viral Haemorrhagic Fevers, such as Ebolavirus). The handling of HG3 pathogens occurs in a 'closed' environment, requiring stringent safety measures and making them unsuitable for large-scale processing. This meant testing was required to be carried out in the Containment Level 3 (CL3) facilities in PHE or NHS laboratories. These laboratories are much smaller in footprint and are

run by experienced scientists with significant biosafety training. This meant that at this stage in the pandemic the majority of laboratory scientists were not suitably trained to perform tests for SARS-CoV-2.

6.9 On 21 February 2020, PHE began working with NHS laboratories to establish COVID-19 testing capacity outside PHE, on behalf of all four nations of the UK.

6.10 On 1 March 2020, the HSE's Chief Scientific Adviser wrote to PHE to advise that, having consulted with ACDP, the HSE supported testing being carried out at Containment Level 2 (the biosafety provisions used for Hazard Group 2 pathogens) provided that appropriate controls were put in place. In other words, this recommendation facilitated developing guidance for diagnostic laboratories and was the critical step for the safe opening up of laboratory capacity more widely. The guidance document 'COVID-19: safe handling and processing for samples in laboratories' was subsequently published on 12 March [SH/M6/215 - INQ000223411]. It meant that swab testing could now be carried out more widely across the NHS, universities and commercial laboratories, as well as paving the way for the design and development of new testing facilities, such as Milton Keynes, Manchester and Glasgow.

6.11 On 8 March 2020, PHE reported to the Secretary of State that the current testing capacity within PHE was 2,100 tests per day. It was predicted that with the addition of a first phase of NHS labs that capacity would increase to 4,500 tests per day over the next four weeks. The addition of NHS labs in all 29 pathology regions was predicted to add an additional 3,000 to 4,000 tests giving a total of 7,100-8,000 tests per day [SH/M6/216 - INQ000119505].

Scaling up of testing on a mass scale

6.12 On 12 March 2020, the Prime Minister announced that the UK was moving into the Delay Phase of the Coronavirus (COVID-19) Action Plan, published on 3 March 2020. This signalled a change in strategy to try to slow the spread of COVID-19, and, if it did take hold, to try to lower the peak of the impact and push it away from the winter season. By this date, with the agreement of DCMOs, DHSC, and NHS, PHE had developed a strategy for the prioritisation of COVID-19 testing based on clinical and epidemiological need. Thereafter, PHE continued to focus on increasing PCR testing across PHE and NHS laboratory sites, the evaluation of prospective commercial PCR

assays, and on surveillance work. This would come to be the largest laboratory project ever established in the UK. In March 2020, PHE had partnered with Roche, a commercial diagnostic company, to deliver wider testing. By the end of April 2020, the availability of the Roche test had increased total daily PCR capacity by approximately 5,000 tests per day - see slide 12 of the report exhibited here [SH/M6/217 - INQ000223435].

6.13 On 4 April 2020, DHSC published "Coronavirus (COVID-19) Scaling up our testing programmes" which set out the Government's strategy for scaling up testing capacity [SH/M6/218 - INQ000106325]. The strategy had five pillars:

Pillar 1: Scaling up NHS PCR testing for those with a medical need and, where possible, the most critical key workers utilising PHE and NHS laboratories;

Pillar 2: Mass-swab testing (COVID-19 PCR testing) for critical key workers in the NHS, social care, and other sectors;

Pillar 3: Mass-antibody testing to help determine if people have immunity to the coronavirus;

Pillar 4: Surveillance testing to learn more about the disease and help develop new tests and treatments; and

Pillar 5: Spearheading a Diagnostics National Effort to build a mass-testing capacity at a completely new scale.

6.14 The strategy document announced an ambitious objective to, across the whole system, *"immediately scale up our testing levels to 100,000 tests per day from all five pillars*" by the end of April 2020. To deliver this expansion, the Government intended to enter into partnership with universities, research institutes and private companies to create a "*mass testing infrastructure in the UK through the creation of a network of new labs and testing sites across the UK*."

6.15 In April 2020, DHSC created the National Testing Programme ("NTP") as part of the Government's ambition to scale up testing capacity and distribute tests more widely through a phased approach, beginning with patients, NHS workers and their families, other critical key workers, and then expanding to the wider community over time (see the five pillars listed above). NTP refers to both the programme and the unit charged with delivering that programme. NTP initially operated within DHSC and brought

together supply chain, logistics and procurement expertise from across government, the military and private sector. It was integrated into NHSTT upon the latter's establishment in May 2020.

6.16 Increasing access to tests necessarily required an increase in laboratory capacity (and the broader infrastructure of testing sites) so that returned tests could be analysed. PHE supported the NTP to establish the Lighthouse Labs. The first such lab was set up in Milton Keynes, followed by labs at Alderley Park and Glasgow in April 2020. The rapid increase in laboratory capacity utilising both the NHS and the Lighthouse Labs enabled the phased expansion of testing in healthcare settings.

6.17 By the summer of 2020, work was already underway to identify testing technologies such as LFD (explained in the Science and Technical Statement), LAMP2, and LamPORE3, that could facilitate effective mass population testing by providing a result outside the laboratory environment. The New Technologies Assessment Group ("NTAG"), led by Professor Sir John Bell, Regius Professor of Medicine at Oxford University and the Virus Detection Technology Assessment Group ("VTAG") were formed in the first six months of the Inquiry's Relevant Period. These groups reported to DHSC. Subsequently, the functions of these two groups were incorporated into Technologies Validation Group ("TVG") formed by DHSC. Led by Professor Dame Sue Hill, then Chief Scientific Officer in NHSE and Director for Testing Technologies, Validation and Regulatory Compliance in NHSTT, TVG brought together experts from PHE, NHSTT, MHRA and the Royal College of Pathology. TVG provided a singular mechanism to review the available scientific, clinical and operational data on testing solutions proposed by potential suppliers for use across the NHSTT COVID-19 testing programme and to provide advice and make recommendations to NHSTT.

6.18 The commercial procurement of testing technologies was considered in Module 5 and is not repeated here. It is useful to outline the technical evaluation of the products that was undertaken. The Inquiry is referred to paragraphs 4.13 to 4.29 and 4.39 to 4.40 of the Science and Technical Statement for more context but in brief:

6.18.1 On 15 August 2020, Lord Bethell, Parliamentary Under Secretary for Innovation, commissioned PHE labs at Porton Down to establish a time-limited COVID-19 test development and evaluation programme for LFDs. The purpose of the programme was to assess if LFD tests, developed and offered by suppliers, performed with sufficient sensitivity and

specificity to be used safely. An evaluation protocol was developed, agreed by DHSC Ministers, and published on GOV.UK. This had the following phases: (1) desktop review; (2) pre-clinical evaluation; (3a) secondary care evaluation; (3b) community care evaluation; and (4) pilot programmes [SH/M6/219 - INQ000223448].

6.18.2 This programme was carried out in partnership with the University of Oxford. Oversight of the LFD evaluation programme was provided by the Lateral Flow Device Technical Oversight Committee (also known as the LFD Oversight Group), chaired by Professor Bell.

6.18.3 By September 2020 only Abbott Panbio, Innova, SD Biosensor Saliva, and Orient Gene's tests had passed the first technical evaluation. By November 2020, 45 products had been evaluated in Phase 2 with a further five being evaluated at Phase 3a, and another five being put through to Phase 3b. A joint PHE/University of Oxford preliminary report on the evaluation process was published on 8 November [SH/M6/220 INQ000396180]. It noted that of those LFDs tested, only a small number had met the necessary criteria. Phase 4 evaluations had been completed for the Innova test.

6.18.4 By 19 February 2021, 90 LFDs had been evaluated, 13 of which had demonstrated performance characteristics suitable for effective COVID-19 infection detection purposes.

6.18.5 Between August 2020 and November 2022, Porton Down evaluated 171 LFDs with more under review. A majority failed evaluation at Phase 2. A report summarising the evaluations undertaken during this time period is exhibited here (this is the iteration updated as at 27 August 2023) [SH/M6/221 - INQ000504166].

6.19 As they became available the results of the evaluations were shared with DHSC who was responsible, with NHSTT, for purchasing decisions and rollout nationally. The legal manufacturer of each successful product was responsible for meeting the associated regulatory requirements of the MHRA with regard to point of care testing devices, including self-use by the public. NHSTT (on behalf of DHSC) took on the role of legal manufacturer and submitted the regulatory documents to MHRA to use

Innova LFD tests in 3 test and 7 test packs within public testing programmes. Further explanation of the requirements for regulatory approval is found at paragraphs 4.33 to 4.37 of the Science and Technical Statement.

6.20 As well as being able to procure testing technologies, such as LFDs, that could give results outside a laboratory environment, there was also a need to assess how they worked in real-world situations. Between November 2020 and July 2021, a series of pilots took place in a range of settings to gather and evaluate data on the biological, behavioural and systems aspects of community testing and its public health impacts. NHSTT worked in partnership with local authorities, academia and Directors of Public Health with operational support from PHE, NHS and the military [SH/M6/222 - INQ000496267]. The methodology adopted in these pilots and the resulting evaluation was reviewed by NHSTT's Testing Initiative Evaluation Board with external experts to provide scientific review and challenge of the methodologies and the results. DHSC, who sponsored the pilot, published a summary of the key findings in the interim evaluation report on 14 January 2021 [SH/M6/223 – INQ000606880] and in the full report on 7 July 2021 [SH/M6/224 - INQ000223452]. NHSTT also supported similar whole area pilots in Wales and Scotland.

6.21 The last laboratory to join the network was the Rosalind Franklin Laboratory ("RFL") in Leamington Spa. This was an NHSTT-operated facility that began processing PCR tests in June 2021. RFL's 220,000 square-foot site was the largest of its kind in the UK, and one of the largest in Europe. At full capacity, RFL was able to process up to 150,000 tests a day, with a peak testing day of 77,000 in Spring 2022. RFL had completed 8.6m tests in total when it ceased testing on 16 January 2023. The facility delivered diagnostic testing at high volume and reduced the processing cost per test.

6.22 Processing capacity for PCR testing rose in line with both Government targets and demand based on estimated prevalence of COVID-19. Processing capacity on establishment of NHSTT was 200,000 PCR tests per day. This rose to 500,000 in October 2020 and by January 2021, NHSTT, as requested by Government, had expanded its maximum laboratory PCR testing capacity to 800,000 tests per day.

6.23 There were short periods when demand exceeded capacity to process tests. During those periods steps were taken to procure additional capacity either from overseas or from private providers based in the UK. For example, when demand exceeded capacity during Winter 2020 and during the Omicron wave in Winter 2021, short term

additional PCR capacity was procured from private sector providers to supplement the capacity provided by the Lighthouse Laboratory network. These "surge laboratories" were managed within the Lighthouse Laboratory operational framework. The Inquiry should note that this framework was distinct from the private to market framework used for laboratories conducting travel testing. "Private to market" refers to PCR testing undertaken as part of paid travel testing at the border that was independent of NHSTT operations.

6.24 The emergence of the Omicron in November 2021 required a significant operational ramp up of UKHSA's testing network owing to an increase in overall demand driven by the public's behavioural response.

6.25 On 3 December 2021, the Secretary of State accepted a submission from UKHSA to add additional PCR capacity into the laboratory network to increase resilience. This proposal required contracting additional capacity from the existing Lighthouse Lab network and from surge laboratories to a maximum capacity of c.960k tests per day with 24hour turn-around-times by mid-January. The advice provided to and accepted by the Secretary of State is exhibited here [SH/M6/225 - INQ000223462].

6.26 By February 2022, the size of the laboratory network had been reduced in line with demand. The Lighthouse Lab network was also reduced in size in line with the testing demand profile but retained contractual capacity to respond effectively to new waves given the inherent uncertainty in the future trajectory of the virus. By the end of July 2022, the period under examination by the Inquiry, all Lighthouse Labs had been closed for COVID-19 testing and all COVID-19 processing of PCR samples was being conducted by the RFL.

Advice on prioritisation of testing capacity

6.27 On 1 March 2020, PHE produced an internal report titled "*Laboratory testing capacity and prioritisation of testing"* [SH/M6/226 - INQ000223394]. This outlined that current PHE laboratory demand was beginning to approach capacity levels at a number of PHE laboratories. The report stated that increases in testing capacity were likely to be slower than increase in demand. PHE began to develop an outline prioritisation approach in the event that capacity was reached, or turnaround times of testing declined. This was based on criteria established in the 2009-2010 influenza pandemic and using modelling data of likely demand. On 8 March 2020, PHE advised that

demand for testing was projected to outstrip capacity within 6-8 weeks (mid-April to May) [SH/M6/216 - INQ000119505].

6.28 Limited testing capacity meant that DHSC had to make decisions on prioritising testing for those where a diagnosis was required to assist management and treatment and to support surveillance, such as those hospitalised, and, in the event of an outbreak, in a vulnerable setting. Reference has been made to the prioritisation developed by PHE, NHS and DCMOs, based on clinical and epidemiological need. This prioritised testing capacity into a number of groups as follows:

6.28.1 Group 1 (test first): Patients requiring critical care for the management of pneumonia, acute respiratory distress syndrome ("ARDS") or influenza-like illness ("ILi"), or an alternative indication of severe illness has been provided, for example severe pneumonia or ARDS;

6.28.2 Group 2: All other patients requiring admission to hospital for management of pneumonia, ARDS or ILi;

6.28.3 Group 3: Clusters of disease in residential or care settings e.g., long-term care facility, prisons, boarding schools;

6.28.4 Group 4: Community patients meeting the case definition and not requiring admission to hospital - over 60 years or risk factors for severe disease (recognising that this is challenging); over 60s should be prioritised over other risk factors;

6.28.5 Group 5: Community patients meeting the case definition and not requiring admission to hospital - under 60 years and no risk factors for complication;

6.28.6 Group 6 (test last): Contacts of cases.

6.29 In late March 2020, PCR testing started to become available for NHS workers displaying symptoms of COVID-19. This allowed those with recent past symptoms of cough or fever to be tested for SARS-CoV-2 on PCR and where this was negative, and they were well enough, including the resolution of fever, they could return to work. Testing became available to other 'key workers' as testing capacity increased.

6.30 On 15 April 2020, the Government announced that PCR testing would be available to all symptomatic care residents, all patients discharged from hospital before going into care homes; and all symptomatic social care staff [SH/M6/099 - INQ000498546]. Testing was to be booked online, and eligibility was expanded on 28 April to anyone in the wider population with symptoms and their household who either had to leave home, go to work, or was aged over 65 years [SH/M6/227 - INQ000512824].

6.31 On 13 May 2020, DHSC confirmed the roll out of a programme of whole care home PCR testing in England, in phases starting with care homes whose primary clients were older people or those with dementia.

Preventative testing

6.32 Consideration was given to preventative testing in the form of visitor testing, discharge testing and also asymptomatic testing.

6.33 Testing of suspected outbreaks in care homes took place from the very beginning of the pandemic. This was in line with already existing procedures for the management of respiratory infections in such settings.

6.34 However, from 20 April 2020, the NTP established a testing service designed specifically for the needs of the ASC sector. It was designed and coordinated through the NTP's Satellite and Vulnerable Communities channel.

6.35 The NTP built a bespoke website allowing eligible providers across the UK to register, order, receive and report on tests, which launched on 11 May 2020. The portal also allowed the CQC to refer care workers for testing. Provider eligibility changed over time, as asymptomatic testing was expanded to different parts of the care sector. Initially when the portal was launched, only CQC registered care homes whose primary demographic was residents aged 65 and over (an age group or service user band (as described by CQC), which was sometimes labelled in communications as residents 'over 65') or those with dementia, were eligible to register on the portal. The remaining CQC registered care homes for adults became eligible on 7 June 2020.

Expansion of testing in care homes

6.36 The most significant factor that limited testing in care homes was overall testing capacity available for the UK, especially in the early months of the pandemic. Given the size of the ASC in England (c.1 million staff working across residential and domiciliary care), testing this size of population required very significant capacity and regular testing. Therefore, the expansion that is described below was only possible in line with the overall expansion in testing.

6.37 As noted above, on 15 April 2020, DHSC published the Coronavirus (Covid-19) Adult Social Care Action Plan, which outlined steps to minimise infection in care homes [SH/M6/099 - INQ000498546]. It included the following significant changes:

6.37.1 Resident testing: There was not yet sufficient capacity to test the entire care home population routinely. The new Plan included moving towards testing of all symptomatic residents, rather than simply the first 5 cases of a cluster whereas routine practice individuals who were in close proximity with the similar symptoms most likely had the same diagnosis and would be managed similarly for clinical care and infection prevention and control. Testing for all individuals discharged from hospital to a care home was announced, regardless of whether they had displayed COVID-19 symptoms. The NHS was responsible for testing these individuals in advance of discharge.

6.37.2 Staff testing: The Adult Social Care Action Plan also included the announcement that *"In order to support those working in the sector to return to work as soon as it is safe to do so, we will enable the testing of social care workers and those in their household who have symptoms consistent with COVID-19".* An Employer Referral Portal was subsequently launched on 23 April 2020 on GOV.UK (replacing the extant manual booking system) to facilitate easier test bookings for essential workers. Employers could contact DHSC via a designated mailbox to obtain access to the portal, where they could upload the names and contact details of self-isolating essential workers. The essential worker would then receive a text message with a unique invitation code to book a test for themselves or their household member(s), if symptomatic. On 24 April 2020, an essential worker self-referral portal was also made available to essential workers to book their own tests or tests for the household member(s), again, if symptomatic.

6.38 NTP delivered single-occurrence (whole-care home once) asymptomatic testing and later repeat (whole-care home regularly: staff weekly/residents monthly) testing. It began with a maximum test capacity of 2,800 per day on 18 April 2020. This was piloted on 20 April 2020, when NTP sent the test kits to 17 care homes through the satellite delivery channel to determine what challenges care homes would face, and how best to support them. This capacity rapidly increased over the following weeks to 30,000 tests a day in the middle of May to between 70-80,000 a day in June and July.

6.39 Alongside this increase in capacity, NTP provided guidance, communications, webinars, and an online training portal with a testing competency assessment for the whole sector. These were regularly updated to continue to respond to new insights gained from experience of testing in care homes and that of homes and providers. Regular provider forums were also set up, first with the biggest three operators, and then with the largest 25 operators [SH/M6/228 – INQ000606896].

6.40 On 13 May 2020, DHSC confirmed the roll out of a programme of whole care home PCR testing in England. This was to be delivered in phases starting with care homes whose primary clients were older people or those with dementia. On 18 May 2020, DHSC published a press release stating that anyone with symptoms of COVID-19 would be eligible to receive a PCR test, booking online (in addition to the whole care home PCR testing offer), as well as a target of increasing daily PCR testing capacity to 200,000 a day by the end of May 2020.

6.41 By 6 June 2020, all eligible care homes with residents over 65 and/or with dementia had been offered enough testing kits to test all their residents and staff once, with or without symptoms. A million testing kits had been delivered to almost 9,000 care homes.

6.42 On 6 June 2020, increased overall capacity for testing meant that asymptomatic testing was opened to all residents and staff of the remaining 5,000 CQC registered care homes for adults [SH/M6/229 - INQ000051152]. This included care homes for adults with learning disabilities or mental health issues, physical disabilities, acquired brain injuries, and other categories for younger adults under 65 years. Overall PCR testing capacity for hospitals and community testing was 186,455. NTP processing

capacity for pillar 2 at this time was about 125,000 tests a day, of which 80,000 were available for care homes for asymptomatic testing. Additional symptomatic, and outbreak, testing was available through Health Protection Teams (pillar 1).

6.43 On 6 July 2020, the roll out of regular repeat asymptomatic testing to care homes for adults began, starting first with care homes caring primarily for older people and those with dementia (9,000), and then rolling out regular testing to the remaining care homes for adults. This regular testing regime involved testing residents every 28 days and testing staff every week. This responded to SAGE advice that we should endeavour to move towards re-testing care homes on a weekly basis.

6.44 Cumulatively, from April 2020 to 21 April 2021, nearly 29 million PCR kits and nearly 63 million Lateral Flow Tests ("LFTs") were dispatched to care homes.

Staff and recipients of care in other ASC settings including in domiciliary care and unpaid carers

6.45 On 22 May 2020 DHSC first published guidance for those providing personal care to people living in their own home during the coronavirus outbreak. The guidance stated that every social care worker, including those who worked in the home care sector, who needed a COVID-19 test because they had symptoms, should self-isolate and access testing through the self-referral or employer referral portals. This applied to home care staff, domiciliary carers and unpaid carers [SH/M6/230 – INQ000502362]. Updates to this guidance are set out in the table below:

Date	**Update**
24 June 2020	Updated 'hospital discharge and testing' section to state *"anyone experiencing coronavirus symptoms can now be tested, which includes individuals receiving home care. This can be accessed through the digital portal or by calling 119 to book testing".*
7 August 2020	Updated 'shielding and care groups' section (now titled 'Clinically extremely vulnerable people and care groups') and 'annexes A and B' to reflect wider changes to shielding advice. Updated 'social care

	recruitment' section to include further details about the new online recruitment platform for social care.
2 September 2020	Added a new section on how home care providers can support the NHS Test and Trace service. Updated links to hospital discharge service guidance.
4 November 2020	Added note that this guidance will be updated soon and directed users to guidance updated ahead of the 5 November national lockdown.
8 December 2020	Updated to include relevant links to the guidance on the local restriction tier system in place in England since 2 December.
22 December 2020	Updated to reflect that the 14-day isolation period is now 10 days.
24 December 2020	Updated to reflect current policy for how providers should access PPE.

6.46 On 20 November 2020 DHSC published guidance on a testing service for homecare workers [SH/M6/231 – INQ000606892]. The guidance stated that NHSTT would make weekly COVID-19 testing available to all homecare workers in England, with the service due to be extended to all homecare workers in ASC, including unregistered organisations, live-in carers, and personal assistants. The guidance was further updated on 1 December 2020.

Section 7: Hospital discharge

PHE's role in the production of guidance on hospital discharge

7.1 PHE's National Infection Service strategy document issued on 24 February 2020 (albeit the document itself says 2019) set out steps NHS/PHE would take in the event of a cluster of COVID-19 cases (which, at this point, was classified as an HCID) in healthcare settings in England. This document advised that individuals with COVID-19 would not be discharged from hospital until they had tested negative (including to care or residential homes), in line with the management of HCIDs [SH/M6/097 - INQ000074910].

7.2 As set out in my Module 3 corporate witness statement:

> *300. On 17 March 2020 NHSE/I issued a letter requesting every part of the NHS to free-up the maximum possible inpatient and critical care capacity. [Exhibit:* SH3/263 - INQ000087418*] and on 19 March 2020 the Government's COVID-19 Hospital Discharge Service Requirements set out the actions that should be taken to enhance discharge arrangements [Exhibit: SH3/264 -* INQ000049702*]. PHE was not formally consulted regarding these requirements nor their impact on the wider system.*

7.3 The NHSE/I letter, and the March discharge requirements are together known as 'the March discharge policy'. Care homes were asked to accept admissions if they had PPE and IPC measures in place so that individuals could recover in the care home rather than risk nosocomial infections from remaining in hospital settings. Such discharge would also free up bed capacity for other patients who required critical care. It was well recognised across the healthcare system, including in PHE, that there were likely to be significant pressures on critical care bed capacity in the first wave of the pandemic.

7.4 It was, and continues to be, best practice to discharge individuals from hospital (either into the community or into care settings) once acute care needs have been met, as delayed discharge or prolonged hospital stays can lead to higher risk of infection, mental and physical deconditioning, and increased risk of falls. If an individual is clinically fit for discharge, remaining in hospital is usually not beneficial for them.

7.5 Following the announcement of the March discharge policy, DHSC commissioned PHE to develop guidance on how best to manage admissions into care homes safely. PHE worked with NHSE/I and DHSC, as well as other organisations, to develop guidance for the ASC sector to mitigate any risk of infection. This guidance became '*Admission and Care of Residents during COVID-19 Incident in a Care Home*' ('the April Admissions guidance') [SH/M6/041 - INQ000528401].

7.6 The Coronavirus Action Plans (published 3 March 2020 [SH/M6/098 - INQ000057508] and 15 April 2020 [SH/M6/099 - INQ000498546]) were owned by DHSC. PHE did not contribute to the March Action Plan. On 11 April 2020, ahead of

the publication of the April Action Plan, DHSC officials circulated draft wording to PHE officials on dealing with outbreaks in care settings for PHE to provide comments from a public health perspective [SH/M6/100 - INQ000591447]. The version circulated noted that the testing policy within care homes moving forward would be to test all symptomatic residents, as opposed to just the first five during an outbreak. PHE officials noted that whilst it would be theoretically possible to test all symptomatic patients in care homes, there were logistical challenges that needed to be addressed (e.g., delivery of swabs and tests, and their collection). I stated that testing in care homes was critical for both staff and residents.

7.7 On 14 April 2020, DHSC, NHSE, Cabinet Office, PHE and the CQC met to discuss the CMO's request to move to a policy of testing all individuals prior to admission into a care home and testing all symptomatic residents in a care home. The final version of the April Action Plan reflected a policy change to test all symptomatic residents and testing all residents prior to admission into care homes [SH/M6/099 - INQ000498546].

7.8 PHE provided clinical advice to the policy changes initiated by DHSC and NHSE/I. The policy decision remained with DHSC. Public health advice is independent and based on best practice and evidence. It was for PHE to advise on the risks and benefits of different policy options, but not to make the policy decision. PHE does not audit the extent to which other departments follow and implement scientific advice. That is for those departments to speak to.

Guidance produced solely by PHE/UKHSA

7.9 PHE's pre-pandemic '*Guidelines on the management of outbreaks of acute respiratory illness in care homes*' in October 2012 [SH/M6/035 - INQ000539000] contained advice on discharging patients with influenza from hospital into a care home. The guidance stated:

> *Care home residents admitted to hospital with a diagnosis of influenza, or other respiratory viral infections such as respiratory syncytial virus (RSV), may remain infectious to others even after discharge from hospital, and infection control measures as outlined in PHE guidance are indicated to prevent transmission to others.*

Residents may be discharged from hospital at any point when the following criteria are satisfied:

- *in the view of the treating clinical staff, the resident has clinically recovered sufficiently to be discharged to a care home. Note that there is no requirement for the resolution of all symptoms or a minimum period of treatment.*
- *all appropriate treatment will be completed after discharge.*
- *appropriate infection control measures to prevent transmission of infection, including single room dwelling or cohorting, will be continued outside hospital until a minimum of five days after the onset of symptoms. Note that in some circumstances (see below) it may be considered necessary to continue infection control measures for longer than five days.*
- *the discharge is planned in accordance with local hospital policy.*

Care homes may close wholly or in part to new admissions during outbreaks of influenza or other respiratory viruses. Where all the above criteria are satisfied and appropriate outbreak control measures have been taken at the care home, residents hospitalised with a respiratory viral infection may return home during a period of closure occasioned by an outbreak of the same type of respiratory virus.

7.10 On 9 April 2020, PHE published '*Guidance for stepdown of infection control precautions and discharging COVID-19 patients*' [SH/M6/102 - INQ000106344]. This guidance advised that if a person is being discharged into a care facility, the provider should follow the April Admissions guidance (set out in greater detail in following section).

7.11 My corporate witness from Module 3 [INQ000410867] provides further information about this guidance:

> *311. On 9 April 2020, PHE published "Guidance for stepdown of infection control precautions and discharging COVID-19 patients." ("Stepdown guidance") [Exhibit: SH3/285 - INQ000106344]. The guidance aimed to complement existing infection control guidance to provide advice, on appropriate IPC precautions for COVID-19 patients recovering or recovered from COVID-19 and remaining in hospital or being discharged to their own home or residential care. It specifically provided clarity for clinicians around the necessary periods for isolation of COVID-19 positive cases and testing*

requirements.

312. The Stepdown guidance recommended, "a precautionary approach with more stringent rules for ending isolation and infection control precautions". The need to ensure safe discharge was explicitly outlined: "it is important to note that patients (can and [sic]) should be discharged before resolution of symptoms provided they are deemed clinically fit for discharge in a rapid, but safe, manner". It outlined that patients should be given clear safety-netting advice for what to do if their symptoms worsened, that individuals must follow the "stay at home guidance" and complete the recommended isolation periods.

313. The Stepdown guidance was drafted with input from individuals with specialist knowledge in Microbiology, Virology and Infectious Diseases and developed with consultation from NHSE. During the development of the guidance, alongside clinical input, NHSE was also consulted on the content, wording and format [sic] [Exhibit: SH3/286 - INQ000348334] and attachment INQ000348335]. Between 28 March 2020 and 8 April 2020 PHE received feedback from NHSE regarding whether information contained within the guidance was required given recently published Infection Control Guidance, email [Exhibit: SH3/287 - INQ000348336] and attachment INQ000348337]. In emails on the 5 April 2020 PHE highlighted continued requests from infection control clinical leads for the publication of the guidance in order to support safe discharge. [Exhibit: SH3/288 - INQ000348338]. The draft guidance was sent to the Four Nations IPC Cell for review and comment on 9 April 2020 and PHE received confirmation of signoff from NHSE on the same day. [Exhibit: SH3/289 - INQ000348339]. PHE and subsequently UKHSA updated the Stepdown guidance throughout the pandemic.

7.12 Discharging those who no longer met the criteria to remain in hospital and were clinically fit for discharge (i.e., no longer needed acute hospital care) is promoted as good practice. Doing so in a rapid, but safe, manner means making the necessary transfer as quickly as is possible whilst still adhering to IPC principles at all times.

7.13 The Stepdown guidance was updated several times:

7.13.1 On 18 April 2020 to clarify the position regarding testing prior to discharge

to care homes, as well as administrative changes ([SH/M6/103 - INQ000563004]). It was updated further on 23 April 2020 to clarify previous iterations in respect of testing capacity ([SH/M6/104 - INQ000563005]).

7.13.2 On 20 May 2020, with updates to sections 2, 3 and 4; inclusion of detail on requirements for discharge to a single occupancy room in care facilities, including nursing homes and residential homes (section 5); updated with addition of 'a loss of, or change in, normal sense of taste or smell (anosmia)' as a symptom (section 5) (SH/M6/105 - INQ000563706]).

7.13.3 On 30 July 2020, amendments to the self-isolation policy for all admitted patients to continue a 14-day isolation period and to include the provision of written instructions for ongoing isolation when discharging patients ([SH/M6/106 - INQ000565824]).

7.13.4 On 17 January 2022, updated to "*reflect change in isolation period in hospitals from 14 to 10 days for cases and contacts of cases of COVID-19, as well as clarification of isolation period for severely immunocompromised patients*". The isolation period remained at 14 days for inpatients with COVID-19 being discharged to a care facility / designated setting. For the severely immunocompromised, it was recommended that any isolation period was at least 14 days.

Guidance that PHE/UKHSA contributed to:

The April Admissions guidance

7.14 On 2 April 2020, the April Admissions guidance was published by DHSC on behalf of itself and PHE, CQC, and the NHS. It was guidance designed to support care home providers on the admission and management of individuals who had been in hospital, as well general infection, prevention, and control advice. As set out above, it was drafted to support the implementation of the March discharge policy.

7.15 As set out, a driver for this guidance was the need to ensure inpatient and critical care capacity was available in the event of a significant wave of COVID-19. In April,

the NHS started to develop guidance relating to patient discharge, which inevitably intersected with the guidance required in the ASC sector - this is set out in further detail below.

7.16 Prior to this, PHE had routinely been developing its own internal operational guidance for UKHSA HPTs to effectively manage outbreaks within, and discharges to care settings. At this time the latest guidance under development was titled *'Advice on managing COVID-19 cases and outbreaks in care homes'* [SH/M6/108 - INQ000591442] and included advice to support standardised management of transfers in and out of care homes and associated infection prevention and control by PHE HPTs. The following measures in respect of care home transfers were included:

> ***g) Transfers in and out of the care home:***
> *Decisions on transfers need to be carefully considered depending on local risk assessment on a case by case basis. This will need to take into account the local epidemiology and capacity across the system. The threshold for transferring an unexposed person into care home with a possible or confirmed outbreak of COVID-19 would have to be extremely high because of the risk that it poses to that individual and every attempt should be made to accommodate the individual somewhere else with co-ordinated action across all organisations.*
>
> *The local health system should consider developing a tracking system of all care homes with cases of COVID-19 and consider 'cohorting of care homes' without cases. The protection of susceptible unexposed vulnerable population groups is of utmost importance and all efforts should be made locally to manage this in the best possible way minimising risk to the vulnerable residents.*
>
> *General principles to be considered are:*
>
> ***1) Transfers out of the care home:*** *If a resident with coronavirus (COVID-19) symptoms needs to go to hospital for essential treatment, follow IPC guidelines for patient transport, and ensure that receiving healthcare facility is made aware so they can receive patient into appropriate area.*
>
> ***2) Transfers into the care home:***
> - ***Care home with an ongoing outbreak of COVID-19:***

*PHE advises against **any** transfers of asymptomatic patients into a care home affected by a COVID-19 outbreak (suspected or confirmed outbreak). This is to avoid exposure risk to unexposed residents coming into the home.*

- ***Care homes with a single case of COVID-19:***

If a care home has a single possible or confirmed case of COVID-19, ideally, all transfers in should be avoided to protect new residents to COVID-19. If appropriate facilities for isolation and cohorting of asymptomatic contacts can be assured, transfers into the home can be considered at local level on a case by case basis.

- ***No case of COVID-19 in the care home:***

a) Previously confirmed cases of COVID-19 who are no longer symptomatic, have been isolated in the hospital for 7 days after onset of symptoms and assessed as fit for discharge can be transferred to a care home which does not have any cases of COVID-19.

b) Confirmed case of COVID-19 medically fit for discharge but not yet beyond 7 day isolation period:
PHE advises against any transfers of confirmed COVID-19 cases into a care home which does not have any case of COVID-19. This is to avoid exposure risk to the unexposed residents within the home.

c) Residents or Patients who have been exposed to confirmed cases of COVID-19 and are advised to be isolated for 14 days should not be admitted to a home which does not have cases of COVID-19 to protect the existing residents in the home. However, if facilities for strict isolation can be assured, these residents may be accepted into the care home, provided they can be restricted to their own en-suite rooms.

d) A patient/resident without COVID-19 symptoms being transferred to a care home without a COVID-19 outbreak (suspected or confirmed): No restrictions recommended.

7.17 On 23 March 2020, the SRO for the PHE ASC Cell emailed DHSC to loop in PHE officials on the NHS's drafting decisions, noting *"this must be consistent with current social care guidance we advised on last week and the new shielding guidance"* [SH/M6/109 - INQ000591456]. As it became clear that PHE and the NHS were

developing their own pieces of internal guidance, DHSC commissioned PHE and the NHS to create a single piece of guidance for the sector that incorporated outbreak guidance and would be signed off by both organisations.

7.18 There were discussions between the organisations in the course of formulating the guidance, with the aim of achieving consensus and producing one cohesive piece of guidance. There were concerns raised by NHSE/I and sector stakeholders that the discharge elements and outbreak advice would create blocks in the system, and that the focus ought to be on reducing the risks in care homes rather than refusing transfers from hospitals ([SH/M6/110 - INQ000591443]). It was noted in an email following a call between NHSE and PHE that the original drafting by PHE on transfers was not agreed with NHS "*understandably to meet the system pressures*". There was a further meeting to discuss the guidance where it was noted that NHSE had *"major concerns with the guidance for infection prevention and control in care homes will lead to the sector being too risk adverse, creating blocks in the system*".

7.19 A meeting took place on 24 March 2020 between PHE officials and NHSE in which concerns about the guidance were discussed highlighting the challenges on acute hospitals and admissions to care homes. On 25 March, recognising the pressures on acute beds, PHE "*agreed that we go ahead with the NHSE proposed changes in the transfer section*" [SH/M6/111 - INQ000591444]. The version that went up to the Minister for Care reflected the updated consensus position. Following comments from the Minister, the draft guidance was further amended by PHE to reflect comments received [SH/M6/112 – INQ000591500]) and once the consensus was reached, the guidance was shared for sign-off by DHSC and NHSE on 25 March.

7.20 At this point in the pandemic, there was insufficient testing capacity to test all individuals discharged from hospital and a negative test did not provide assurance that the individual was not incubating infection. This position was set out by PHE's Deputy Director for Health Protection, [SH/M6/113 - INQ000591445] on 26 March 2020:

> *We have consistently pushed back on this saying that a negative test is not required given that:*
>
> - *The lack of capacity for undertaking such testing and tests needing to be prioritised for those who have symptoms to confirm or refute diagnosis so they can be treated appropriately.*

- *There is no point testing asymptomatic people as it only gives you a result for that moment in time – they could develop symptoms in the next few hours/days.*

7.21 PHE therefore confirmed that *"there still is not a requirement for a negative test before discharge to care homes, but I can see that the wording on this page is a little confusing – a negative test is not mandated but if there is capacity to test, then it can be done..."* [SH/M6/114 - INQ000591446].

7.22 Similarly, NHSE/I London queried with PHE whether there was an expectation that patients being discharged to a care home would be tested for COVID-19. On 1 April 2020, PHE confirmed that there was no expectation people would be tested on discharge but, if there was testing capacity, *"given these are vulCerable [sic] settings, we would want them tested if there is the ability to do this"* [SH/M6/114a-INQ000606872]. The expectation was that if individuals could be tested, that would be the preferred position. However, the realities of that period of the pandemic meant that routine testing was not possible. The challenges presented by testing have been set out in section 6 of this statement.

7.23 PHE is aware that the consensus position formed the basis of the guidance that went to the Minister for Care for her consideration, who provided comments on the draft which were actioned by DHSC officials. The guidance was eventually signed-off by the Minister on 2 April and published the same day.

7.24 The final version of the April Admissions guidance set out that *"the care sector also plays a vital role in accepting patients as they are discharged from hospital – both because recuperation is better in non-acute settings, and because hospitals need to have enough beds to treat acutely sick patients. [...] Some of these patients may have COVID-19, whether symptomatic or asymptomatic. All of these patients can be safely cared for in a care home if this guidance is followed"*.

7.25 The COVID-19 status of an individual would be determined during the process of transfer from a hospital to a care home, with testing prioritised for certain categories of patient. Any symptomatic residents were advised to isolate for 14 days from the onset of symptoms. If an individual came into contact with a possible or confirmed case, a risk assessment was advised based on the duration and nature of the contact, with a 14-day isolation period being the preferred option. As was set out in the March

PHE guidance, care homes were not expected to have dedicated isolation facilities but should implement isolation precautions following a local risk assessment.

7.26 Individuals who did not have symptoms were subject to IPC measures, social distancing, and good hygiene practices. This was in line with the understanding about asymptomatic transmission at the time, which was that those not exhibiting symptoms were unlikely to be able to transmit the virus. Following a meeting of the Senior Clinicians Group ("SCG") on 23 March 2020, it was agreed that only absolutely necessary visitors should be allowed [SH/M6/115 - INQ000591465].

7.27 As the Inquiry will be aware, there was a judicial review in respect of version one of the April Admissions guidance, as well as the February PHE guidance[17].

7.28 The April Admissions guidance was updated several times subsequently:

7.28.1 20 April 2020: a note was added indicating the guidance was being reviewed following the publication of the COVID-19 adult social care action plan [SH/M6/116 - INQ000408077].

7.28.2 19 May 2020: a loss of, or change in, sense of smell or taste as a symptom of coronavirus was added.

7.28.3 19 June 2020: updated in line with the care homes support package announced on 15 May [SH/M6/117 - INQ000509887] and the latest advice on testing and IPC measures [SH/M6/118 - INQ000564991]. It included the advice that "*care home residents will be tested as a matter of course prior to their discharge from hospital, and results should be included in discharge documentation*". All residents being discharged from hospital or interim care facilities to the care home, and new residents admitted from the community, should be isolated for 14 days within their own room. This should be the case unless they have already undergone isolation for a 14-day period in another setting, and even then, the care home may wish to isolate new residents for a further 14 days. If new residents are admitted part way through an isolation period, they should as a minimum complete the remaining isolation period within their own

[17] *R (Gardner and Harris) v Secretary of State for Health and Social Care, NHS England and Public Health England* [2022] EWHC 967 (Admin)

room in the care home.

7.28.4 31 July 2020: amended to reflect the self-isolation period for staff and visitors with symptoms of coronavirus had changed from 7 days to 10 days and added link to recent updated guidance on visiting care homes during coronavirus [SH/M6/119 - INQ000565815]. The isolation period for residents remained at 14 days.

7.28.5 14 August 2020: a further section on testing individuals moving from the community into care homes (Annex K).

7.28.6 27 August 2020: updated links to hospital discharge service guidance were added [SH/M6/120 - INQ000566350].

7.28.7 2 September 2020: an additional section on how care homes could support the NHSTT service was included.

7.28.8 4 November 2020: added note that this guidance will be updated soon and directed users to guidance updated ahead of the 5 November national lockdown [SH/M6/120a – INQ000606893].

7.28.9 26 November 2020: relevant links to guidance on local restrictions via the tier system were included [SH/M6/120b – INQ000606885].

7.28.10 23 December 2020: updated advice on monitoring residents for COVID-19 symptoms and supporting residents who have been exposed to a COVID-19 case, as well as updated advice on isolation of residents on admission [SH/M6/121 - INQ000591495][18].

7.28.11 24 December 2020: additional link to guidance on designated settings for people discharged to a care home. Further advice on the provision and use of PPE was included to reflect the policy in place at the time [SH/M6/122 - INQ000591494].

[18] There were two updates on 23 December 2020 but, for ease, these have been grouped together when summarising the changes.

7.28.12 29 January 2021: updated sections on 'Testing staff and residents in care homes' in reference to staff testing and special arrangements for people who work in the NHS, Annex B on the definition of 'contacts' and Annex F to reflect the extension of free PPE until the end of June 2021 [SH/M6/123 - INQ000591493].

7.28.13 23 March 2021: removed PDF version of the guidance [SH/M6/123a – INQ000606884].

7.28.14 01 April 2021: linked the guidance to restrictions in place from 29 March 2021 [SH/M6/124 - INQ000591492].

7.28.15 17 May 2021: updated to reflect the new variant of concern [SH/M6/125 - INQ000591491].

7.28.16 4 June 2021: updated to reflect the change in procedure of reporting COVID-19 cases and outbreak management in care homes [SH/M6/126 - INQ000591490].

7.28.17 18 June 2021: additional information on visiting policy for residents attending medical appointments out of care homes, the role of essential caregivers during a resident's isolation period and the removal of the requirement for new residents from the community to isolate for 14 days upon admission into the care home provided they satisfy the criteria set out in guidance [SH/M6/127 - INQ000591489]. This guidance specified that all hospitalised care home residents who had previously tested negative for COVID-19, with a PCR test, should be tested again 48 hours before discharge from hospital back to their care setting (with exemptions applying if tested positive in last 90 days). There were exemptions from self-isolation for new residents admitted from the community (e.g., fully vaccinated, no known contact with a COVID-positive person, and/or a negative PCR within 72 hours).

7.28.18 22 June 2021: amended to include information about VOC-21APR-02 (known as the Delta variant).

7.28.19 23 June 2021: an update to clarify that admissions into a care home from

the community are able to take a test up to 72 hours in advance (rather than 48 hours previously recommended) [SH/M6/128 - INQ000591488].

7.28.20 16 July 2021: clarified that local risk assessments should be undertaken to determine whether a resident being admitted from another care home or care facility needed to self-isolate [SH/M6/129 - INQ000591487].

7.28.21 17 August 2021: staff who were fully vaccinated were no longer required to self-isolate if they had confirmed contact with a positive case of COVID-19, as long as they had relevant negative PCR tests and received daily negative LFD tests for the duration of what would have been the isolation period [SH/M6/130 - INQ000591486]. Fully vaccinated care home residents returning from hospital following an overnight stay for elective (planned) care were no longer required to self-isolate. Criteria applied - e.g., negative PCR test on return to the home, they were not a contact of a confirmed case, local prevalence. The individual was advised to avoid contact with highly vulnerable residents. Isolation was required after an emergency hospital admission regardless of vaccination status.

7.28.22 20 January 2022: updated to clarify the advice on admission and self-isolation of residents, as well as signposting testing guidance and vaccination advice [SH/M6/131 - INQ000591485].

7.28.23 4 February 2022: added note that this guidance will be updated and directed users to press release 'Government eases social care restrictions after booster success' [SH/M6/131a – INQ000606883].

7.28.24 14 February 2022: updated to reflect the change in the self-isolation period for residents from 14 days to 10 days [SH/M6/132 - INQ000591484]. The requirement for fully vaccinated care home residents returning from hospital following an overnight stay for elective (planned) admission, to have a negative PCR test on return to the home removed.

7.28.25 24 February 2022: updated to reflect the changes to self-isolation regulations [SH/M6/133 - INQ000591483].

7.28.26 09 March 2022: updated to reflect the Government had committed to provision of free COVID-19 PPE to the ASC sector until March 2023 (or until the guidance on PPE usage for COVID-19 is either withdrawn or substantially amended) [SH/M6/134 – INQ000591482].

7.28.27 22 March 2022: updated to reduce the duration of outbreak management in care homes from 14 days to 10 days [SH/M6/135 – INQ000591481].

7.29 The April Admissions guidance was updated 28 times following its publication on 2 April 2020.

7.30 As is set out in detail in section 3, scientists were grappling with the evidence on the important question of the extent to which individuals who had not exhibited symptoms could transmit the virus to others. Recording and studying asymptomatic cases was challenging at this point in the pandemic because of the lack of significant testing capacity, the presence of the virus not necessarily inferring transmissibility, and because it was difficult to deduce the initial source of an outbreak.

7.31 Prior to April 2020, there were reported individual studies and case reports primarily comprising anecdotal evidence. There was no scientific consensus that a significant amount of pre-symptomatic and/or asymptomatic transmission was taking place.

7.32 From April 2020, an evidence base was beginning to develop. The CDC study based on outbreaks in care homes in Washington was a significant first piece of evidence. In order to triangulate the findings and understand the implications for UK settings, PHE conducted its own studies in care homes, once testing capacity was sufficient to support this work. Similarly, PHE's own paper on asymptomatic transmission [SH/M6/136 - INQ000348271] found that the evidence to date (including the CDC study) suggested that presymptomatic and asymptomatic transmission was occurring but its contribution to the overall picture of transmission was not known. It was not until the Easter 6 Study that the dynamics of asymptomatic transmission became much clearer. As a result, the April Admissions guidance reflected the scientific consensus on asymptomatic transmission at the time, which was built upon information garnered from studies like the CDC study and the PHE paper referred to.

7.33 The April Admissions guidance was updated several times throughout the pandemic in line with the changing scientific picture. Whilst it is accepted that frequent guidance

changes create a possibility of confusion for the ASC sector, the relevant information and insight into risk and potential mitigations changed rapidly and therefore rapid updates were essential. The number of iterations reflected the evolution of scientific understanding during the pandemic, and it was PHE's position that it was most useful to have more frequent updates reflecting the most up-to-date scientific position. Each piece of updated guidance included a summary of changes so that it was clear to the reader what had been amended. It was right that the ASC sector was given the most up to date public health advice to ensure that patients and staff were kept safe.

Further guidance

7.34 In September 2020, DHSC published 'Adult Social Care – our Covid-19 Winter Plan 2020/21' [SH/M6/137 - INQ000591470]. PHE was asked to comment on drafts of this document and did so by suggesting issues to be covered (for example, the need to provide input on the issues to be covered in the plan e.g., the challenge presented by co-circulating influenza), suggested text for DHSC's consideration and shared already published PHE guidance which might be of relevance. The content of the published document was ultimately for DHSC.

7.35 On 16 December 2020, *'Discharge into care homes: designated settings'* [SH/M6/138 - INQ000234652] was co-produced by NHSE, PHE, CQC, and in consultation with the LGA, ADASS, care provider associations and user groups. The guidance set out a designation scheme to support discharge of patients into care homes to minimise the risk of spread and transmission of COVID-19.

7.35.1 At 2.5, the guidance stated "*in relation to confirmed COVID-19 positive cases, no care home will be forced to admit an existing or new resident to the care home if they are unable to cope with the impact of the person's COVID-19 illness. All residents should be discharged to a designated setting in the first instance*". The DHSC and CQC identified specific care homes that could act as designated settings to ensure that anyone who tested positive (and/or was likely to be infectious) could be discharged into the designated care setting to undertake a period of isolation prior to moving to a care home.

7.35.2 The guidance also set out the requirements of testing 48 hours prior to discharge from a healthcare setting into their residential care home.

Those who received a negative test result could be discharged into a care home in line with the admissions guidance.

7.36 On 31 March 2022, DHSC published *'Infection prevention and control in adult social care: COVID-19 supplement'* [SH/M6/139 - INQ000591496] which replaced all guidance on the admissions of residents into care homes. PHE shared its evaluation work on the *'How to work safely'* guidance to inform the production of this guidance.

Impact of hospital discharges on care home outbreaks

7.37 In a report published on 20 July 2020, the House of Commons Public Accounts Committee recommended that DHSC and NHSE&I should review which care homes had received patients discharged from hospital and how many had subsequently had an outbreak of COVID-19 and report the outcome back to the Committee. PHE was commissioned by DHSC and the SAGE Social Care Working Group to "*investigate outbreaks in care homes that had received COVID-19 positive patients discharged from hospital and subsequently experienced an outbreak*." These were defined for the purpose of the investigation (as "hospital associated seeding of care home outbreaks"). The results were set out in a report dated 1 July 2021: '*A data linkage approach to assessing the contribution of hospital-acquired SARS-Cov-2 infection to care home outbreaks in England 30 January to 12 October 2020*' [SH/M6/140 - INQ000234332].

7.38 The work was undertaken by the PHE Epidemiology Cell. Various data sources (including surveillance and address data) were used to estimate the number and proportion of care home residents who developed a hospital associated COVID-19 infection and the proportion of potential seeding of care-home outbreaks by hospital acquired cases.

7.39 The investigation found that, from 30 January to 12 October 2020, 43,398 care home residents tested positive for COVID-19, as confirmed by a laboratory test. This equated to 8.4% of the 514,428 of the laboratory confirmed positive COVID-19 tests in that period.

7.39.1 Of these 43,398 positives, 35,740 (82.4%) cases were linked to a care home outbreak, equivalent to a total of 5,882 outbreaks.

7.39.2 1.6% of these outbreaks were identified as being potentially seeded from hospital associated COVID-19 infection. This comes to 97 outbreaks and a total of 804 (1.2%) care home residents with confirmed infection associated with these outbreaks.

7.39.3 The majority of these potentially hospital-seeded care home outbreaks were identified in March to mid-April 2020, with none identified from the end of July until September where a few recent cases emerged. The study noted that, given the timescales, changes to hospital discharge testing policy may have supported the decline.

7.40 The data linkage paper utilised the best data available at that time. PHE did not present the findings as scientific confirmation to be treated as offering a binary conclusion, but as one study in a range of studies then being undertaken. It built on a synthesis of a range of studies required to develop scientific consensus and understanding. The report set out the limitations to its findings, including poor address data meaning some care home cases may have been missed and some cases being lost on account of no follow-up secondary user service admission records.

7.41 The relevant public health bodies in the other four nations also published studies on hospital discharge:

7.41.1 In Scotland, *Discharges from NHS Scotland Hospitals to Care Homes between 01 March - 31 May 2020* (published 21 April 2021) concluded that the size of a care home was the strongest predictor for an outbreak of SARS-CoV-2. It found that there was no statistically significant correlation between hospital discharge and the occurrence of a care home outbreak [SH/M6/141 – INQ000591537].

7.41.2 In Wales, *Risk Factors for Outbreaks of COVID19 in care homes following hospital discharge - national cohort analysis* (published May 2021) found that outbreaks in care homes during the first pandemic surge correlated with general community transmission and infection rate. The study did not find exposure to hospital discharge to be associated with a significant increase in risk of a new outbreak [SH/M6/142 – INQ000213185].

7.41.3 In Northern Ireland, *Clinical Analysis of Discharge Patterns from HSC*

Hospitals in Northern Ireland (12 November 2020) concluded that there was no evidence to support the proposition that ministerial/departmental decisions around discharge during the first pandemic surge, including decisions to discharge people into care homes, changed consultants' clinical decisions to discharge on a case-by-case basis [SH/M6/143 - INQ000348240].

7.42 On 21 September 2020, PHE and others participated in a scientific symposium which had been convened by the SCWG. The consensus view of the participants was recorded in a paper dated 23 September 2020 [SH/M6/143a – INQ000074994]. It concluded that: "*the weight of evidence is stronger in some areas than others, however evidence of staff to staff transmission has emerged in the genomic analysis (high confidence). Weak evidence on hospital discharge (…) does not suggest a dominant causal link to outbreaks from (this) source*". The paper was considered at the SAGE meeting on 24 September 2020 [SH/M6/144 – INQ000422314]. SAGE noted (paragraphs 50 and 51) that "*there is evidence for multiple routes of infection spread into care homes including hospital to care home, direct admission of residents, through staff, and through visitors. Understanding the different routes of transmission and their relative impact is critical"* and *"Current evidence suggests discharge from hospitals may be less significant, and transmission from staff may be more significant, but quantification is difficult without better data linkage*." [SH/M6/144a – INQ000275970].

7.43 Subsequent published studies, such as the *Impact of non-pharmaceutical interventions on SARS-CoV-2 outbreaks in English care homes: a modelling study* (Rosello et al, 2022[19]) [SH/M6/145 – INQ000591463], have corroborated the findings of the earlier studies set out above that hospital discharge was not the main driver of outbreaks within care homes and that instead it was likely via the community importation of SARS-Cov-2 through staff.

7.44 The SAGE SCWG (published 26 May 2022) produced *'Consensus statement on the association between the discharge of patients from hospital and COVID in care homes'* [SH/M6/146 – INQ000215624]. PHE formed one of a range of members within the group who contributed to this statement. Its conclusions were as follows:

[19] Rosello, A., Barnard, R.C., Smith, D.R.M. et al. *Impact of non-pharmaceutical interventions on SARS-CoV-2 outbreaks in English care homes: a modelling study.* BMC Infect Dis 22, 324 (2022).

a. *Any person infected with COVID-19 going into a care home could introduce infection into the care home. Hospital discharge to care homes connects 2 high contact environments, where contact rates with carers in the course of care are high, and potential consequences of COVID-19 in vulnerable populations severe.*

b. *Overall, we interpret the identified studies as showing that at least some care home outbreaks were caused or partly caused or intensified by discharges from hospital.*

c. *However, based on the very much larger associations between care home size (a proxy for all footfall) and outbreaks, hospital discharge does not appear to have been the dominant way in which COVID-19 entered care homes.*

d. *Hospital discharge of people to care homes without testing early in the pandemic is highly likely to have caused some outbreaks or been one of the often multiple introductions of infection to care homes which experienced an outbreak. However, it is highly unlikely to have been the dominant driver of all care home outbreaks in wave 1.*

7.45 Evidence regarding causes of infection in care homes has demonstrated a direct correlation between care home incursions and community levels of infection. Taking into account all the studies that have considered the impact of hospital discharge on outbreaks in care homes, the evidence suggests that hospital discharge was not the dominant cause of outbreaks and that outbreak levels were broadly consistent with infection rates in the community.

Section 8: Visiting guidance

8.1 Several pieces of guidance for visiting were produced at pace during the pandemic. The majority of the visiting guidance was drafted by DHSC, with contributions from other organisations. PHE produced some discrete pieces of advice that covered visiting as part of its IPC guidance for the ASC sector. PHE/UKHSA's primary remit was to provide the evidence base and associated scientific and public health advice. DHSC retained responsibility for policy formulation and individual care providers for implementation.

8.2 I have set out the IPC guidance for the ASC sector produced by PHE, or contributed

to by PHE, in section 4 of this statement, however the below is a summary of how that guidance produced (or contributed to) by PHE addressed visiting specifically. As the organisation with policy responsibility for the ASC sector, DHSC 'owned' visiting guidance for the sector and will be able to provide further evidence to the Inquiry on the formation and any amendments of that guidance.

8.3 Before I set out the primary visiting guidance for the ASC sector, I will first set out other IPC guidance that affected visiting restrictions.

IPC guidance relevant to visiting

8.4 As the Inquiry is aware, the first piece of IPC guidance for the ASC sector was the February PHE guidance. At this point there was no community transmission of COVID-19, so the guidance did not provide explicit recommendations on visits from friends, family or loved ones, nor was specific guidance provided for those health and social care professionals who provided services less frequently (such as GPs, podiatrists, pharmacists or CQC inspectors) or professional visitors (such as hairdressers, faith leaders). The February PHE guidance existed alongside the October 2018 'Guidance on the management of outbreaks of influenza-like illness in care homes' [SH/M6/037 - INQ000223342] which specifically dealt with managing outbreaks in care homes. At this time, the standard practice for the management of outbreaks of ARI in care homes was to undertake a risk assessment, provide advice on infection prevention and control, and where appropriate, test the first five symptomatic residents to confirm the cause of the outbreak. As per the October 2018 guidance, advice on visiting during an outbreak was:

> ***5.1.3 Visitors*** *Symptomatic visitors should be excluded from the home until no longer symptomatic and visitors with underlying health conditions and at risk of more severe infection (as defined in the Green Book[13]) should be discouraged from visiting during an outbreak. Consistent with patient welfare, visitor access to symptomatic residents should be kept to a minimum. Any visitors should be provided with hygiene advice as in Section 5.1.4. Non-urgent visits should be rescheduled until after the outbreak is over.*
>
> ***5.1.6 Care home closures to new admissions*** *...Visits or other transfers to acute medical facilities should be considered based on medical necessity and the destination facility should be warned in advance about the infection risk.*

8.5 The guidance also emphasised the importance of hand and respiratory hygiene for visitors.

Visiting guidance owned by PHE

8.6 The guidance titled '*COVID-19 guidance on residential care provision*' [SH/M6/059 - INQ000300278], which formed one of the three pieces published as part of the March PHE guidance (as set out in section 4), recommended:

> *To minimise the risk of transmission, care home providers are advised to review their visiting policy, by asking no one to visit who has suspected COVID-19 or is generally unwell, and by emphasising good hand hygiene for visitors. Contractors on site should be kept to a minimum. The review should also consider the wellbeing of residents, and the positive impact of seeing friends and family.*

8.7 It also advised that staff who were concerned they might have COVID-19 to self-isolate at home. They should not visit or care for individuals until safe to do so.

8.8 The sections of the March PHE guidance which covered supported living and domiciliary care (where individuals receive care in their own home) did not provide specific recommendations on visits from others. Those receiving care in their own home were considered as other members of the wider community and were subject to the same advice and requirements as the general public. The March PHE guidance on residential care was updated. There were no epidemiological or wider contextual changes requiring the guidance to be updated at this point or that required the section on visiting to be amended.

8.9 On 16 March 2020, '*Guidance on social distancing for everyone in the UK and protecting older people and vulnerable adults*' [SH/M6/067 - INQ000348029] was published ('the social distancing guidance'). This was separate to the March PHE guidance. The guidance was for everyone, but emphasised that older people and those with underlying health conditions were at increased risk of severe illness from COVID-19. It recommended the following social distancing measures to reduce the transmission of COVID-19:

1. *Avoid contact with someone who is displaying symptoms of coronavirus (COVID-19). These symptoms include high temperature and/or new and continuous cough*
2. *Avoid non-essential use of public transport, varying your travel times to avoid rush hour, when possible*
3. *Work from home, where possible. Your employer should support you to do this. Please refer to employer guidance for more information*
4. *Avoid large gatherings, and gatherings in smaller public spaces such as pubs, cinemas, restaurants, theatres, bars, clubs*
5. *Avoid gatherings with friends and family. Keep in touch using remote technology such as phone, internet, and social media*
6. *Use telephone or online services to contact your GP or other essential services*

8.10 In respect of visitors to care homes, the social distancing guidance stated:

What is the advice for visitors including those who are providing care for you?

You should contact your regular social visitors such as friends and family to let them know that you are reducing social contacts and that they should not visit you during this time unless they are providing essential care for you. Essential care includes things like help with washing, dressing, or preparing meals.

If you receive regular health or social care from an organisation, either through your local authority or paid for by yourself, inform your care providers that you are reducing social contacts and agree on a plan for continuing your care.

If you receive essential care from friends or family members, speak to your carers about extra precautions they can take to keep you safe. You may find this guidance on home care provision useful.

It is also a good idea to speak to your carers about what happens if one of them becomes unwell. If you need help with care but you're not sure who to contact, or if you do not have family or friends who can help you, you can contact your local council who should be able to help you.

8.11 Guidance on shielding was introduced on 21 March 2020 ('*Guidance on shielding and protecting people defined on medical grounds as extremely vulnerable from COVID-19*') [SH/M6/068 - INQ000106266] and advised individuals to stay at home, to avoid any face-to-face contact for the next 12 weeks, and to minimise all non-essential contact with other members of the household. In respect of visiting for members of the public living at home (i.e., not receiving residential care support), the guidance stated:

> *Contact regular visitors to your home, such as friends and family to let them know that you are shielding and that they should not visit you during this time unless they are providing essential care for you. Essential care includes things like help with washing, dressing, or feeding.*
>
> *If you receive regular health or social care from an organisation, either through your local authority or paid for by yourself, inform your care providers that you are shielding and agree a plan for continuing your care.*
>
> *If you receive essential care from friends or family members, speak to your carers about extra precautions they can take to keep you safe. You may find this guidance on home care provision useful.*
>
> *Speak to your carers about backup plans for your care in case your main carer is unwell and needs to self-isolate. If you need help with care but you're not sure who to contact, or if you do not have family or friends who can help you, you can contact your local council who will be able to help you and assess any social care needs you might have. Please visit gov.uk/coronavirus-extremely-vulnerable to register for support that you need.*

8.12 There was also advice for informal carers on how to reduce the risk of the person for whom they were caring contracting COVID-19, including emphasising good hygiene, providing only essential care, and not to visit if feeling unwell. The guidance emphasised that it applied to CEV individuals living in long-term care facilities and that those care providers should discuss the shielding advice with families, carers, and specialist doctors caring for individuals.

8.13 The '*How to Work Safely in Care Homes*' guidance (by this point called '*Personal protective equipment (PPE) - resource for care workers working in care homes during*

sustained COVID-19 transmission in England') [SH/M6/082 - INQ000565810] was updated on 20 July 2020. It advised that visitors should wear a face covering whenever they were in the care home to prevent the spread of infection from visitors to others. The guidance advised that homemade or cloth masks were suitable for visitors, but not for staff.

The April Admissions Guidance

8.14 The April Admissions guidance (set out in detail in section 7) promoted good hygiene for visitors, alongside staff and service users. It also set out the following considerations for visitors and non-essential staff:

- *Family and friends should be advised not to visit care homes, except next of kin in exceptional situations such as end of life. Follow the social distancing guidance.*
- *Visitors should be limited to one at a time to preserve physical distancing.*
- *Visitors should be reminded to wash their hands for 20 seconds on entering and leaving the home and catch coughs and sneezes in tissues.*
- *Visitors to minimise contact with other residents and staff (less than 15 minutes / 2 metres etc.)*
- *Alternatives to in-person visiting should be explored, including the use of telephones or video, or the use of plastic or glass barriers between residents and visitors.*
- *Visitors should visit the resident in their own room directly upon arrival and leave immediately after the visit.*
- *Cancel all gatherings and plan alternative arrangements for communal activities which incorporate social distancing.*

8.15 The April Admissions guidance was updated on 19 June 2020 [SH/M6/118 - INQ000564991]. The section set out above was removed. The guidance addressed visitors throughout rather than in one single section, such as recommending that visitors were supported to wear PPE during an outbreak (section 3) and visiting for those on end-of-life care (section 4).

8.16 The April Admissions guidance was updated on 4 June 2021 to say that outbreak visiting restrictions could be lifted after 14 days (rather than 28 days) if the recovery testing on day 14 did not detect any new cases, and no variant of concern was

identified.

Guidance owned by DHSC

8.17 There were several iterations of visiting guidance produced and published by DHSC throughout the pandemic. The key pieces of guidance were as follows:

8.17.1 'Updates on policies for visiting arrangements in care homes'

8.17.2 'Visiting arrangements in care homes for the period of national restrictions'

8.17.3 'Visiting care homes during COVID-19'.

8.17.4 'Guidance on care home visiting'.

8.17.5 'Visits out of care homes'.

Updates on policies for visiting arrangements in care homes

8.18 On 22 July 2020, the first piece of guidance exclusively on visiting in care homes during the pandemic was published ('*Updates on policies for visiting arrangements in care homes*') [SH/M6/150 - INQ000325285]. PHE contributed clinical and public health input prior to its publication [SH/M6/151 – INQ000591448]. There was recognition in all guidance development, including this one, that a balance of risks needed to be achieved considering the harmful impact of the virus and the wellbeing of residents derived from socialisation and receiving visitors. The guidance emphasised the importance of local approaches (considering the circumstances of an individual care home and its locality) and dynamic risk assessments when developing visiting policy which, in particular, involved the local authority Director of Public Health.

8.19 This guidance was first updated on 31 July 2020, to state that no one should enter a care home if they were experiencing symptoms of COVID-19. It also recommended that visitors should walk or cycle, if possible, to reduce the likelihood of infection in closed transport scenarios [SH/M6/152 – INQ000565825].

8.20 When updated on 15 October 2020, the guidance increased the number of visitors permitted per resident to two. It also reflected the measures introduced as part of the ASC winter plan. The guidance noted that the rate of community transmission had reduced so care homes ought to develop a policy for visiting, based on dynamic risk

assessment noting the significant vulnerability of residents in care homes [SH/M6/153 – INQ000325289].

8.21 Prior to publication, PHE had advised DHSC that the rationale for the two-visitor policy (as opposed to allowing more visitors) was informed by a pragmatic approach '*based on principles of infection control*'. Both the DCMO and PHE confirmed that the SAGE SCWG was also considering the issue and would shortly be publishing a consensus statement on the available evidence [SH/M6/154 - INQ000591451].

8.22 On 2 November 2020, the SAGE SCWG published *'Consensus statement on family or friend visitor policy into care home settings'* [SH/M6/155 - INQ000536541]. Professor Harries had commissioned the working group in her role as co-Chair to consider the advantages and disadvantages of different approaches to visiting and isolation compared against infection risk. Representatives from PHE sat on the working group and contributed to the consensus statement in their capacity as public health and clinical experts. The key findings were as follows:

8.22.1 There was a lack of evidence on the risk of introduction and transmission of infection from visitors, although this may have been partly due to the timing of policy changes in the first wave of the pandemic.

8.22.2 Social isolation had a negative impact on the quality of life. Given that there was weak evidence that visitors increased cases of COVID-19 in a care home by statistically significant numbers, policy decisions ought to consider the harm caused by isolation in the future.

8.22.3 There was a lack of suitable frameworks to measure both harm and benefit to inform policy development.

Visiting arrangements in care homes for the period of national restrictions

8.23 On 5 November 2020, the DHSC visiting guidance was updated [SH/M6/156 - INQ000591510] to reflect visiting arrangements in care homes whilst national restrictions were in place. PHE advised on the content, in particular the need for *'well ventilated indoor rooms with separate entrance which are used by one family and their visitor only at a time'* [SH/M6/157 - INQ000591452].

Visiting care homes during COVID-19 and visits out of care homes

8.24 On 1 December 2020, DHSC published *'Visiting care homes during COVID-19'* [SH/M6/158 - INQ000591455] to supersede all previous visiting guidance and to align with national restrictions in accordance with the COVID-19 Winter Plan [SH/M6/137 – INQ000591470]. Prior to its publication, PHE highlighted the likely increase in numbers of visitors to care homes during the Christmas period and that community incidence of the virus was still high. Public health advice remained that testing negative should be part of the consideration of visiting indoors in care homes. In terms of risk mitigation, PHE noted *'the ambition remains to allow more visiting by more people in more places but as ever balance is required'* [SH/M6/159 - INQ000591453]. This approach was supported by the DCMO (Professor Harries), particularly in light of increased testing capacity and the raised Covid alert.

8.25 Alongside the '*Visiting care homes during COVID-19*', DHSC published guidance to support residents in care homes conducting visits outside of the care home, titled *'Visits out of care homes'*. The first iteration of this guidance was published on 1 December 2020 [SH/M6/160 - INQ000528406].

8.26 On 4 December 2020, the SRO of the PHE ASC Cell attended a meeting with the SoS on ASC. A readout was provided to senior PHE officials with the key point that 28% of care homes had outbreaks so would not be enabling visiting over Christmas [SH/M6/161 - INQ000591454].

8.27 On 19 December 2020, the guidance was updated to advise care home providers in Tiers 1, 2, and 3 that they could – except in the event of an active outbreak – seek to enable indoor visits [SH/M6/162 – INQ000591541]. This was not applicable in areas of the UK that were in Tier 4. On 22 December 2020, *Visits out of care homes* was updated to reflect the same information [SH/M6/163 – INQ000591473].

8.28 On 12 January 2021, the guidance reflected the 6 January 2021 national restrictions (a return to lockdown) [SH/M6/164 – INQ000591542]. The guidance set out that all care homes, except those experiencing outbreaks, should seek to enable outdoor/screened visiting. Visits in exceptional circumstances, such as for end-of-life care, would remain enabled. On the same day, *Visits out of care homes* guidance was updated to mirror the changes [SH/M6/165 – INQ000591474].

Guidance on care home visiting and visits out of care homes

8.29 On 4 March 2021, reflecting the third national lockdown coming to an end, DHSC published '*Guidance on care home visiting*' [SH/M6/166 – INQ000591543]. This reflected the announcements in the roadmap made on 22 February 2021. It permitted every care home resident a single named visitor who would be able to regularly visit. The guidance provided advice on IPC measures to be taken by the named visitor.

8.30 There were further updates on 9 March 2021 [SH/M6/167 - INQ000591509]. The guidance highlighted that an individual's status on the Shielded Patient List did not prevent that individual from receiving visitors in the same way as other residents. *Visits out of care homes* also included the same changes [SH/M6/168 – INQ000591475].

8.31 The next iteration of the guidance was published on 6 April 2021 in line with stage 2 of the roadmap. The updated guidance stated that, from 12 April, residents could nominate two people to regularly visit them (an increase from one). This was the same for the *Visits out of care homes* guidance [SH/M6/169 – INQ000591476]. PHE inputted public health advice into the guidance prior to its publication [SH/M6/170 – INQ000591457]. PHE's advice focused on the continued need for a 14-day isolation period after a visit out of a care home, and the need to get the balance right taking account of the mental health/wellbeing of individuals. PHE also provided advice on PPE requirements for both essential care givers and visitors in care home settings [SH/M6/171 – INQ000591458].

8.32 On 22 April 2021, the guidance was updated to reflect the availability of self-testing for visitors and, on 28 April 2021, named visitors were required to test using LFTs on the day of every visit [SH/M6/172 - INQ000591514], [SH/M6/173 - INQ000591515].

8.33 On 1 May 2021, *'Visits out of care homes: supplementary guidance'* was published [SH/M6/174 - INQ000325329].

8.34 On 11 May 2021, DHSC asked PHE to clarify a query from the Minister for Social Care about the number of nominated visitors for visits out of care homes. PHE was asked for its position on whether residents on visits out from care homes should be advised not to meet up with people who are not one of their nominated visitors or their essential caregiver. PHE advised that visits out are less controlled than visits in

but if COVID-19 secure protocols were followed then the risk should not be excessive, and this would be further mitigated if supported by a nominated visitor. It also reiterated that '*visits in are restricted in number especially because care homes are closed settings, with mixing between visitors, staff and other residents a risk for transmission of infection in an outbreak prone setting*' [SH/M6/175 - INQ000591459].

8.35 On 14 May 2021, the guidance was amended to note, from 17 May, care home residents would be able to nominate up to five visitors for regular visits [SH/M6/176 - INQ000591516]. That same day, the *Visits out of care homes* guidance was updated to reflect that care home residents were able to leave their care home to spend time outdoors and take part in outdoor exercise not involving close contact with others. Residents were also able to attend certain locations (e.g., medical appointments or day centres) without needing to self-isolate on their return [SH/M6/177 – INQ000591477].

8.36 On 27 May 2021, DHSC sent a submission to the Minister for Social Care, incorporating PHE clinical advice, which recommended a more cautious approach to lifting visiting restrictions [SH/M6/178 - INQ000593181]:

a. *PHE has advised that 21st June is not the appropriate date to stand down current restrictions. Waiting some weeks later for changes in care home IPC is both appropriate and proportionate to assess the level of threat from any rebound in community infection rates consequent to societal unlock. PHE has advised that changes in care homes should not be in lockstep but rather a step behind given levels of community infection are a key risk in care home outbreaks.*
b. *PHE has advised the purpose of self-isolation of residents is to protect other vulnerable people in the care home from the risk of transmission of infection. Self-isolation during the potential incubation period is a standard public health intervention to prevent infection, which is especially important in closed settings with highly vulnerable people. Fourteen days recognises the evidence of prolonged infectiousness in this cohort and the consequences of outbreaks in these closed settings.*
c. *COVID-19 infection, especially in older people in care settings, has often been severe, resulting in high numbers of deaths and hospitalisations, in the past. Even with vaccination, we have seen cases in care homes, including some with severe illness. We are continuing to understand the protective*

impact of vaccination, including how much full vaccination (two doses) further reduces the risk of both infection and severe consequences in care home populations. In addition, the evidence, for example on visitor numbers and overnight stays are either poor or lacking, which means data to underpin decisions or identify the impact of removing restrictions can lack robustness.

d. *Because of these factors, changes which involve people moving in and out of care home settings need to be introduced cautiously, recognising that these activities increase the risk of incursion of infection.*

e. *PHE advice is that participation in visiting opportunities which do not require self-isolation on return should only happen in circumstances where:*

   i. *the resident participates in all appropriate testing protocols associated with that setting;*

   ii. *where full vaccination status is part of a specific risk assessment; and,*

   iii. *when there are no threats, such as increasing levels of infection and/or VOCs.*

f. *Overnight stays involve higher levels of risk of transmission of infection as this is more likely in indoor spaces especially with prolonged exposure. Given the specific environment and vulnerability of residents in care homes activities which may be associated with higher risk of infection (including overnight stays), PHE advises that the requirement to isolate for 14 days on return to a care home should be retained.*

g. *For overnight stays in hospital, the risks are greater due to the risk of prolonged exposure and a wider range of contacts than attending out-patient appointments. We therefore recommend continuing the self-isolation requirement following overnight stays in hospital.*

h. *This advice will be informed by further analysis of the evidence from SAGE on mitigations required in highly vaccinated populations which is expected on 27 May 2021.*

8.37 The submission recognised that the clinical advice needed to be balanced against the benefits of freedoms for care home residents in line with those of wider society. PHE advocated waiting to lift the 14-day isolation requirement until a few weeks later to enable assessment of the level of threat if community infections increased.

8.38 That same day, the *Visits out of care homes* guidance was updated to reflect that private cars and taxis were acceptable to use for such visits [SH/M6/179 - INQ000591478].

8.39 The Government announced that visiting restrictions for care home residents were easing on 14 June 2021.

8.40 On 17 June 2021, the guidance was updated to reflect that care home residents should isolate following a visit only where it includes an overnight stay in hospital or is deemed to be high-risk following an individual risk assessment. Residents were no longer required to isolate on admission into the care home from the community and every resident could nominate an essential care giver [SH/M6/179a - INQ000591517]. The *Visits out of care homes* guidance was updated to reflect those changes [SH/M6/180 – INQ000325336].

8.41 On 21 June 2021, the guidance stated that the Delta variant was the variant of concern [SH/M6/181 - INQ000591512].

8.42 There were further iterations of this guidance to reflect the following changes:

8.42.1 15 July 2021: from 19 July 2021, there would be no restrictions on the number of visitors that an individual care home resident could receive overall or in one day [SH/M6/182 - INQ000591518, dated 16 July]. *Visits out of care homes* had been updated the day prior with these changes [SH/M6/182a – INQ000606881].

8.42.2 3 August 2021: PPE recommendations for residents with learning disabilities, mental health problems, autism, and dementia who may be distressed by the use of face masks should be decided in light of a comprehensive risk assessment [SH/M6/183 - INQ000591519].

8.42.3 16 August 2021: visitors to care homes were no longer required to self-isolate after confirmed close contact with a positive case of COVID-19 so long as they were fully vaccinated [SH/M6/184 - INQ000591520]. These changes were incorporated into *Visits out of care homes* [SH/M6/185 – INQ000591479].

8.42.4 25 November 2021: visiting restrictions due to an outbreak to be in place for 7-8 days following negative testing, and that physical contact should be supported to help the health and wellbeing of residents [SH/M6/186 -

INQ000591497]. Prior to the update, PHE advised that the guidance ought to recognise that, in line with the approaching flu season, those with symptoms of COVID-19 should not visit until at least five days after the onset of symptoms to avoid transmission of the flu [SH/M6/187 - INQ000591460]. PHE also advised on PPE to use whilst providing companionship to residents, and also confirmed that *'visits should continue to occur in allocated visiting rooms or in residents own rooms'* [SH/M6/188 - INQ000591461].

8.42.5 14 December 2021: a reduction in the number of visitors each care home resident could receive to three (not including essential caregivers or preschool age children), required testing or self-isolation following visits out of the care home, and changed testing arrangements for staff and essential caregivers [SH/M6/189 - INQ000591521]. This reflected the rise of the Omicron variant.

8.42.6 30 December 2021: the requirement for LFD testing every second day for 10 days, following visits out of the care home, and that nominated visitors should remain the same wherever possible [SH/M6/190 - INQ000591522].

8.42.7 13 January 2022: the removal of confirmatory PCR tests in the case of a positive lateral flow test in line with national guidance [SH/M6/191 - INQ000591523]. It also noted that the Omicron variant would be treated the same as the Alpha and Delta variants for the purposes of managing outbreaks.

8.42.8 31 January 2022: there were no longer limitations on the number of visitors a resident in a care home could have and there was no requirement to test or isolate after visits (so long as the visits were not deemed to be high risk) [SH/M6/192 - INQ000591533].

8.43 Between February and March 2022, the guidance was amended (on 2 February, 24 February, 15 March and 22 March) to reflect the changing self-isolation requirements, revocation of vaccination as a condition of deployment, and a reduction in the duration of outbreak management in care homes [SH/M6/193 – INQ000591544], [SH/M6/194 – INQ000591545], [SH/M6/195 – INQ000591546], [SH/M6/196 –

INQ000591547].

8.44 Throughout the various iterations of the visiting guidance, it was consistently recognised that providers are best placed to design and develop their own visiting arrangements that consider the needs of residents and the particular characteristics of the care home. It is the providers who are best placed to undertake those risk assessments with specialised support. Guidance on visiting consistently emphasised its importance for those living in care homes. It sought to maintain visiting whilst balancing the inherent vulnerabilities of those living in care homes with the risks of transmission. The timing and extent of the changes made to these pieces of guidance are for the DHSC to address. Similarly, the ability of individual care providers to implement the visiting recommendations would be for the DHSC to address.

Section 9: Vaccination as a Condition of Deployment ("VCOD")

9.1 As the Inquiry will be aware from Module 4, following public consultation, on 16 June 2021, the Government announced that frontline workers in social care and working in CQC regulated care homes in England were to be vaccinated unless medically exempt. This requirement came into effect in November 2021, following amendments made to the Health and Social Care Act 2008 (Regulated Activities) Regulations 2014.

9.2 A policy of mandating the vaccination of healthcare workers is an issue which has been discussed for a long time and is rightly a decision for elected decision makers. It is no surprise that the question arose during the pandemic. In formulating the VCOD policy, DHSC sought input from across government. PHE's input was limited to providing a public health and clinical view on the content of draft ministerial submissions highlighting alternative approaches to mandation that had been used in the UK for many years. PHE also inputted as to whether the policy could be applied to other settings. Similarly, PHE provided comments on the content of a draft public consultation document.

9.3 The Inquiry has asked if PHE/UKHSA carried out or contributed to any assessment of the risks to workers in the ASC sector of the decision to mandate vaccination. When monitoring and modelling the virus or producing guidance, PHE/UKHSA would have considered the position of those working in the ASC. PHE/UKHSA would have, for example, highlighted that workers in the ASC sector were at higher risk because of the risk of repeated exposure to the virus. However, PHE/UKHSA did not and does

not have a remit to carry out workplace risk assessments either generally or in relation to the decision to mandate vaccination for workers in the ASC sector. DHSC colleagues would have had responsibility to undertake an impact assessment as part of the VCOD policy.

9.4 For completeness, PHE undertook a small qualitative study on the barriers and facilitators contributing to vaccine hesitancy in care home employees in North West England. The study, published in May 2022 by the British Medical Journal, concluded that making COVID-19 vaccination a condition of deployment may not result in increased willingness to be vaccinated. Whilst the study was small, and so potentially not representative of the wider sector, its findings were consistent with feedback from the sector and public health teams on the potential challenges of mandating vaccination for those working in the ASC Sector [Exhibit: SH/M6/196a – INQ000606878].

Section 10: End of life care

10.1 PHE/UKHSA neither owned nor contributed to any policy advice on resuscitation topics (for example, those referred to as DNACPRs (Do not attempt cardiopulmonary resuscitation)) nor provided advice to DHSC on any such policy decisions.

Section 11: Surveillance and Data

11.1 Even before the pandemic, PHE had the responsibility to provide the infrastructure for a national surveillance system to detect, understand, and monitor infectious disease threats to health. Surveillance systems are intended to provide estimates of infection occurring in sectors and communities: by their nature they cannot detect 100% of all cases. Regular assessments and evaluations of the systems in place occur to understand how robustly they estimate incidence, prevalence, and outbreaks to inform potential improvements if funding were made available. PHE's surveillance was underpinned by its specialist diagnostic and reference laboratories. How PHE approached infectious disease surveillance is illustrated by the document exhibited here, which outlines the surveillance systems in place for pandemic influenza [SH/M6/197 – INQ000119748].

11.2 PHE set up a number of new, COVID-19 specific surveillance systems during the pandemic. PHE's main aims and objectives for surveillance of COVID-19 in the UK

were set out in its plan for the delay phase of the pandemic. The first version of the plan is dated 15 March 2020 [SH/M6/197a – INQ000606870]. Version 2 is dated 21 March 2020 [SH/M6/197b - INQ000207048]. This was updated on 20 April 2020 [Exhibit: SH/M6/198 – INQ000119597]. The main aims and objectives were to:

1. *inform understanding of the epidemiology and transmission of COVID-19*
2. *evaluate and inform national control measures and current and future diagnostic strategies*
3. *describe and quantify the clinical features of COVID-19 and to monitor the overall health impact of COVID-19 in the UK*
4. *provide timely detection of infections and clusters to enable rapid public health action*
5. *fulfil duties for mandatory internal reporting*
6. *inform national health care planning and support local health & social care response.*

11.3 The surveillance undertaken by PHE during the pandemic was explained in my Module 3 corporate witness statement [INQ000410867] and I set out the relevant paragraphs here:

117. "…As the likelihood of COVID-19 cases being identified in the UK increased, PHE adapted and increased the frequency of reporting of the extant surveillance systems. This included community surveillance initiatives, such as monitoring of respiratory outbreaks in certain settings, internet-based surveillance, and syndromic surveillance of NHS 111 calls reporting respiratory symptoms. PHE also undertook surveillance of primary and secondary care settings, collecting data on rates of respiratory illness. PHE undertook microbiological surveillance via testing of all suspected COVID-19 cases and seroprevalence sampling. Surveillance of excess all-cause mortality statistics on a weekly basis also helped provide a metric to help ascertain case numbers.

118. PHE also set up a number of new, COVID-19 specific surveillance systems during the period from January to March 2020. These included expanded sentinel GP sampling (sampling of selected population samples chosen to represent relevant experience of particular groups) and testing patients with respiratory illness who were in critical care but who did not meet the case

definition for COVID-19 at the time. This was to assess levels of community transmission in the Severe COVID-19 Enhanced Reporting study, which was replaced by the COVID-19 Hospitalisations in England Surveillance System (CHESS) in March 2020. These studies provided data to discern the rate of SARS-Cov-2 infection in the UK and how the virus was spreading and thus developed our understanding of the virus. From late February/early March 2020, in the context of reduced face-to-face contacts between patients and GP practice staff, self-swabbing kits were introduced to the primary care surveillance system with the aim to maintain the levels of data collected.

119. PHE's primary source of detailed epidemiological information on cases during the first few months after the first UK case was identified was through its enhanced surveillance of the first few hundred ("FF100" or "FFX") cases and their contacts. The FF100 is an established enhanced surveillance system designed to investigate the clinical and epidemiological characteristics of at least the first one hundred confirmed cases of an emerging infectious disease and their close contacts. In January 2020, as cases began to appear in the UK, the FF100 enhanced surveillance protocol was commissioned by PHE. The Protocol is exhibited here [Exhibit: SH3/60 - INQ000061497].

11.4 Building on the above, PHE utilised the Second-Generation Surveillance System ('SGSS'), the national laboratory reporting system used in England to capture routine laboratory data on infectious diseases and antimicrobial resistance. This allowed PHE's Epidemiological and Surveillance Cells to initiate active identification and follow up possible cases of re-infection based on positive SARS-CoV-2 samples taken more than 60 days apart in the SGSS.

11.5 Surveillance data produced by PHE fed into government decisions via daily 'SitRep' updates and to NERVTAG and SAGE. From 13 March 2020, PHE produced a weekly summary of the surveillance data, together with insight into the trends, at 2pm each Thursday. This was published online from 23 April 2020 in the form of a report [SH/M6/199 – INQ000120160]. As shown in the exhibited report, this surveillance data came from a variety of sources: community, primary and secondary care, virological, and mortality surveillance. The aim of this reporting was to help plan the national response to the pandemic and assist regional stakeholders in local planning.

11.6 The Inquiry has asked for an explanation of the approach of PHE, and subsequently

UKHSA, to collecting and managing data on deaths caused by or associated with COVID-19 in the ASC sector. It has also asked how data was used to assess the impact of different variants in relation to the risk of hospital admissions and mortality.

11.7 I set out the method for collecting, managing, and publishing data on deaths in my Module 3 corporate witness statement to the Inquiry [INQ000410867], the relevant extract from which is reproduced here:

> *446. The collation and publication of COVID-19 mortality figures were carried out by multiple governmental organisations and arm's-length bodies. At the beginning of the pandemic, NHSE provided data for the public reporting of COVID-19 deaths in England. During this time, PHE and the ONS also collected data on COVID-19 deaths.*
>
> *447. During the period covered by this statement, two sources of data were used on individual deaths from COVID-19 in addition to estimates of excess mortality due to COVID-19 at a population level. The first individual deaths data source was death registrations where COVID-19 was included in the death certificate. This was published by ONS with a reporting lag, due to the time taken to register deaths. The second source of individual deaths data was based on the number of people who died following a positive SARS-CoV-2 test result, where PHE linked SARS-CoV-2 positive tests with deaths reported from a number of sources. The latter was intended as a more rapidly available data source not dependant on data from death certificates. The evolution of this measure is described further below.*
>
> *448. The PHE mortality dataset was developed as management information, and specifically to support mathematical modelling by SPI-M-O, and this was provided to the PHE Joint Modelling Team for onward dissemination to relevant modelling teams represented on SPI-M-O. Some examples of SPI-M-O papers that demonstrate this data in their modelling are exhibited [Exhibit: SH3/420 - INQ000223534] [Exhibit: SH3/421 - INQ000223896].*
>
> *449. In March 2020 Professor Neil Ferguson, who was then a member of SAGE, notified the CMO and Chief Scientific Adviser (CSA) of an inconsistency in deaths data between different sources, namely the PHE deaths dataset and the NHS dataset. [Exhibit: SH3/421a – INQ000223897].*

450. PHE prepared a position paper and options appraisal, with potential options to further support national deaths reporting to ensure information on deaths was as accurate and comprehensive as possible [Exhibit: SH3/422-INQ000223898]. The document was presented to DHSC. The aim was to address publication figures derived using different methodologies. The preferred option was for PHE to provide a data flow intended to include deaths, both inside and outside of hospitals, which would be available to be published seven days a week. On 21 April 2020 DHSC chaired a meeting that agreed that the publicly reported mortality figures should transition to the use of PHE's mortality data series. They noted that this would require ministerial agreement and engagement with the wider health family, ONS, Cabinet Office and the Prime Minister's Office [Exhibit: SH3/423 - INQ000223899].

451. The first publication of PHE mortality figures on the GOV.UK website was on 29 April 2020, for the week 16-22 April [Exhibit: SH3/424 - INQ000223948]. It initially used data from the following sources as detailed in the report on the ONS website published on 31 March 2020 and updated on 28 April 2020 [Exhibit: SH3/425- INQ000223903]:

a. deaths occurring in hospitals, notified to NHSE by NHS trusts;
b. deaths notified to PHE Health Protection Teams (HPT) in people with a confirmed COVID-19 test and recorded in an electronic reporting system;
c. information from the Demographic Batch Service (DBS) generated from NHS records and SGSS on individuals with a laboratory-confirmed COVID-19 test who died in the previous 24 hours.

452. Initially, at this acute phase of the pandemic response, the natural history of SARS-CoV-2 infection was not yet well-described. For this reason, no cut-off time was included in the definition of a COVID-19 death. This meant that at first, all deaths that occurred after a positive test were counted as a COVID-19 death.

453. Following a commission from the Secretary of State for Health and Social Care, in July 2020 PHE provided answers to a series of questions and a

report detailing evidence for alternative definitions. These included potential time cut-offs at 28 and 60 days after a positive test result, for reporting the number of persons who died following a COVID-19 positive test in England. The report recommended moving to a 60 day cut-off as a trade off of sensitivity and specificity as linked to ONS death reporting [Exhibit: SH3/426 - INQ000223904] and accompanying information [Exhibit: SH3/427 - INQ000223905]. This report was sent to DHSC for approval for publication and approval from DHSC was awaited.

454. *The routine data source for deaths information is death registration data collated by the Office for National Statistics. For COVID-19, this metric is the number of deaths where COVID-19 has been reported as a cause of death on the death certificate indicating clinical judgment has been used to determine if COVID-19 contributed towards a death. Due to delays in the registration of a death, this measure was not published in real time on a daily basis. PHE data was therefore used to meet the need for a real time measure of the number of deaths in persons with laboratory confirmed SARS-CoV-2 infection on a daily basis to rapidly inform the response to the pandemic in England.*

455. *Within the report PHE recommended using a 60-day measure that incorporated cause of death information to count the number of deaths following a COVID-19 positive test to provide a rapid proxy measure for the number of individuals who die from COVID-19. The rationale for this recommendation was that counting the number of people who die within 60 days of a positive COVID-19 test optimises the detection of deaths in a timely manner. This measure also counts deaths where COVID-19 has been reported as a cause of death on the death certificate, where clinical judgment has been used to determine that COVID-19 contributed towards the cause of death.*

456. *In this context, the measure's sensitivity refers to the extent to which the measure captures deaths that have actually died from COVID-19 (i.e.COVID-19 was a cause of death), and these deaths have not been left out of this measure using this definition. The specificity of the measure describes how well the measure captures deaths from COVID-19, i.e whether the people captured within the measure have actually died from the*

disease we are trying to measure (COVID-19).

457. Following this review, the four Chief Medical Officers recommended that the headline data series change to report the numbers of persons who died within 28 days of a positive test across the UK. This change was announced by DHSC on 12 August 2020 [Exhibit:SH3/428- INQ000223906]. This change reduced the reported number of persons who died following a positive test in England by 5,377, or 12.8% of the total at the time. In England, the numbers of persons who died up to 60 days after a positive test were also published as an additional metric from this point onwards. Deaths that occurred after 60 days were also added to this if COVID-19 appeared on the death certificate.

458. During this time, the publication of the numbers of persons who died within 28 days of a positive test developed and more detailed outputs were included in the UK COVID-19 Dashboard and the national flu and COVID-19 surveillance reports, where regular publication of those data continued throughout the period of interest covered by the Public Inquiry (up to 28 June 2022). Prior to the pandemic, the routine flu surveillance report was published weekly during the influenza season (epidemiological weeks 40 to 20 of the subsequent year) and fortnightly during the summer period (epidemiological weeks 20 to 40), to which COVID-19 was added from 8 October 2020. Epidemiological weeks are a standard method for referring to time periods and used to report healthcare statistics and for comparison of data. Prior to this, the national weekly summary of COVID-19 and Flu was published separately [Exhibit: SH3/59 - INQ000120321].

459. By November 2021 it was apparent that some people were being re-infected more than once with COVID-19 and that definitions of cases and deaths did not reflect this. On 15 November 2021 a submission was sent to the Secretary of State for Health and Social Care regarding proposed changes to counting COVID-19 cases to include reinfections of individuals who have already been recorded with a positive episode of COVID -19. [Exhibit: SH3/429 – INQ000348622] This change meant that UKHSA reported episodes of infection in its COVID-19 surveillance from 31 January 2022. A note outlining this change is exhibited here. [Exhibit SH3/430 – INQ000348623].

Severe illness and mortality risk

460. *UKHSA has performed several assessments of the severity of SARS-CoV-2 infection as new variants emerged during the pandemic, specifically including the risk of mortality and hospital admission. As discussed at paragraphs 146 onwards, the outcomes of these analyses were presented in Variant Technical Briefings [Exhibit: SH3/431 - INQ000223917] and published in peer reviewed articles. In summary, after accounting for factors such as sex, age group, deprivation, ethnicity (and after January 2021, vaccination status) these analyses determined in relation to mortality and hospital admissions that:*

    a. *During the 2020/21 winter, Alpha variant cases were associated with an increased risk of hospital admission compared with previously circulating variants [Exhibit: SH3/432 – INQ000348624]; [Exhibit: SH3/433 – INQ000348625];*

    b. *Later in 2021, we observed higher hospital admission or emergency care attendance risk for patients with COVID-19 infected with the Delta variant compared with the Alpha variant. [Exhibit: SH3/M434 – INQ000348626];*

    c. *Between June and November 2021, results indicated that the risk of hospital admission for the Delta variant sub-lineage AY.4.2 was similar compared to cases with other Delta sub-lineages [Exhibit: SH3/435 – INQ000348627]; [Exhibit: SH3/436 – INQ000348628]; [Exhibit: SH3/437 – INQ000262572];*

    d. *The risk of hospital attendance and admission assessed during the 2021/22 Winter was lower for the Omicron variant compared to the Delta variant. Among Omicron sub-lineages, BA.2 was associated with a lower hospital admission risk compared to the BA.1 but there was no significant difference in hospital admission risk between BA.2 and later sub-lineages BA.4 and BA.5 [Exhibit: SH3/438 – INQ000348629].*

461. In relation to the overall mortality rate of the disease, as of 1 March 2020, the PHE SitRep reported that there had been 2,870 deaths among 79,824 COVID-19 patients in mainland China and 109 reported deaths among 7,174 cases reported in the rest of the world. There were no deaths reported in England in the PHE SitRep by that date [Exhibit: SH3/439 – INQ000348630]. The first death of a person with COVID-19 in England was on the 2 March 2020 and was reported on the 3 March 2020. As of the week ending 24 June 2022, there had been 166,593 deaths registered where COVID-19 was mentioned as one of the causes on the death certificate.

Collection and sharing of data before January 2020 in the adult social sector

11.8 The availability of data in respect of the ASC sector was an area of particular weakness at the start of the pandemic. The Inquiry has directed me to Professor Harries' personal witness statement for Module 2 [INQ000273807], which addressed both her role as DCMO and as Chief Executive of UKHSA, that helpfully explained the difficulties with collecting data from the ASC sector:

6.12. ...The model of adult social care provision in the UK for many years has been one of private provider provision commissioned through Local Authorities for the individuals in their communities who need to access care through public sector support or privately contracted by families and individuals. Along with all private businesses, business continuity arrangements were primarily the responsibility of the business and any data access requirements of the commissioning party would normally be brought about through the relevant contractual processes.

6.13. Prior to the pandemic, there was no significant relevant national data system for adult social care to help inform management of an event like a pandemic and little evidence of which I am personally aware that routine contracting processes across the country required providers to report relevant business management, health and/or health protection data or emergency response preparedness to local authority commissioners. Whilst some relevant data was reported separately to the Care Quality Commission ("CQC") to support care home registration, in many circumstances as of the first few months of 2020, pandemic relevant data either did not exist or was not linked in a way so as to be timely or meaningful. There was no extant incentivisation for

private providers to deliver data to local or central government and given that each provider had their own individual data systems, data was collected and stored in a non- standardised way across the social care landscape. It followed that, prior to substantial work, initially from the DHSC policy team and subsequently from a focused task force, data flows from adult social care were often difficult to obtain in a timely manner and of varying quality.

6.14. One of several workstreams of the Social Care Sector COVID-19 Task force setup by the Minister for Social Care under the leadership of Sir David Pearson was to rapidly commission a dashboard to allow detailed understanding of the state of the social care sector and therefore the necessary interventions to manage and improve the response on a daily basis. Sir David or colleagues within the DHSC Social Care team will be best able to provide additional practical detail on its foundation and daily utilisation, which included publication on 18 September 2020 of recommendations on data collation and the use of the Social Care Capacity Tracker, developed earlier in the pandemic, and the dashboard within the Winter Plan.

11.9 The structure of the ASC sector has an impact on the ease with which data can be acquired or shared. Organisationally, the sector is complex, with a wide range of residential and domiciliary care providers registered with the CQC. These are complemented by care provided by personal assistants directly employed by clients or their families, and familial and other unpaid care, as well as a variety of other residential arrangements such as supported living. CQC registered providers are required to notify outbreaks to relevant bodies, such as PHE/UKHSA and local authorities, and the route for doing this varies according to local arrangements for infection prevention and control advice. This is underpinned by the requirements placed on registered providers of all healthcare and ASC in England by the Health and Social Care Act 2008, and its Code of Practice on the prevention and control of infections. Information about cases or outbreaks of concern can also reach UKHSA through other routes, such as the results of laboratory tests being linked to a care home. Providers use a range of digital and paper systems to record the delivery of care, but these are not linked to NHS health records. Whilst NHS GP records sometimes record that an individual resides in a care home, i.e., utilising the NHS coding system, this is not always the case, nor can it be easily used for other purposes. Where cases or outbreaks are identified as related to domiciliary care,

local infection control services will investigate and advise. There is thus no unified system for monitoring or surveillance of specific infections in the ASC sector, pre or post pandemic.

11.10 UKHSA has a digital system (formerly HPZone, superseded by the Case Incident Management System ("CIMS") from 2024) through which information shared with PHE/UKHSA HPTs on outbreaks and incidents is recorded. However, due to the variation in local arrangements mentioned above, there was and is inevitable inconsistency in the details recorded on the system for different parts of the country. PHE/UKHSA HPTs provide advice to ASC providers where this is sought from providers or the local authority. UKHSA HPTs sit within UKHSA's regional teams (previously PHE Centres and Regions), are linked with local authorities, with some teams even being physically co-located with those of the local authority. They provide expert health protection advice to ASC providers as well as supporting the commissioners of ASC services. UKHSA HPTs have responsibility for advising on and supporting the investigation of health protection incidents and lead on UKHSA's regional response to all health protection related incidents. How an individual HPT delivers its functions will depend on the configuration of the local health and care system. For example, UKHSA's HPTs may directly respond to enquiries from ASC providers or may indirectly support a response led by other locally established teams such as local authority HPTs, or local infection prevention and control teams which are provided by various organisations.

11.11 Influenza outbreaks reported in care homes were routinely reported in PHE's weekly influenza report, an example of which can be seen at [SH/M6/202 - INQ000591525]. This report includes hospitalisations for the population as a whole and excess deaths for the population. However no specific data on hospitalisations or deaths in care home populations are reported, as there is no national dataset on care home residents and data is not available for real-time surveillance.

Collection and sharing of data during the COVID-19 pandemic in the ASC sector

11.12 COVID-19 cases in care homes were collated in the PHE/UKHSA EpiCell line list. This counted individual cases with a positive test. Data was linked using a unique property reference number ("UPRN"). This allowed cases to be linked to registered care homes, with a small margin of error. The margin of error mainly arose from incomplete or poorly recorded address information in the testing data, which meant

not all records could be matched successfully. Proximity-based misclassification is also a known limitation of UPRN-based matching, as is the constantly changing nature of care home registrations in England — with homes regularly opening, closing, or changing use. Information on clusters was highlighted to HPTs for follow up. HPZone continued to be used to record notified outbreaks requiring specialist advice. UKHSA also analysed the National Immunisation Management System (NIMS) data which records flu and COVID-19 vaccine coverage at individual level. This information was complemented by NHSE data on the progress of specific COVID-19 vaccine campaigns.

11.13 In addition to the rapid development of routine surveillance systems capable of capturing testing, outbreak and death data in care homes, additional bespoke research studies were quickly initiated. These complemented routine surveillance data covering the whole population. Results from the Easter 6 research study first became available on 15 April 2020. This study improved the understanding of the extent of asymptomatic infection and transmission.

11.14 The VIVALDI longitudinal study of care homes, led by University College London commenced in June 2020. It was commissioned and funded by NHSTT. UKHSA has continued to fund the study. This series of studies has collected qualitative and quantitative data on care homes to better understand working conditions and the spread of infection and immunity in care home populations. Its findings have been used to inform the ongoing policy response, including vaccine recommendations [SH/M6/027 - INQ000106159].

11.15 PHE/UKHSA drew information and insights from the Capacity Tracker, from which DHSC continued to publish statistics [SH/M6/204 - INQ000591526]. It was developed by NHSE and the Better Care Fund to identify care home vacancies in real time. Its potential to be pivoted to wider uses was identified and on 15 April 2020 its use for this purpose was announced ([SH/M6/099 - INQ000498546] section 4.23). It collected a range of data to which UKHSA had access during the pandemic including flu and COVID-19 vaccination among staff, resident vaccination, staffing levels, COVID-19 testing for staff, residents and visitors.

Issues with data from the ASC sector

11.16 Residents in care homes for older adults have a high frequency of hospital admission

for many reasons. A complete understanding of infections and their outcomes for residents is therefore challenging, as it would require collation and analysis of information collected in different ways in different care settings over time. This would require linkage of information on residents at individual level, and timely analysis, of a range of datasets held in a range of organisations spanning NHS, social care and UKHSA. These include existing notifications of outbreaks to HPTs as mentioned above and: hospitalisations, resident deaths within hospital after admission; deaths within a care home (which are required to be reported to CQC), laboratory test results and (where relevant) point of care test results. Provider care records, and GP records could provide further information if linked. Much of this data is not routinely available to national organisations.

Domiciliary care and data collection

11.17 Many people are looked after in their own homes by domiciliary carers (also known as home care). CQC registered care agencies may provide this care, whilst paid care is provided by paid personal assistants employed directly by client or family. Much care is also given by family and other unpaid carers. In 2023/24, 600,000 staff were employed by CQC registered domiciliary care providers [SH/M6/204a-INQ000606890]. An estimated further 123,000 worked as personal assistants, out of an estimated total of 1,585,000 people working in ASC. Data from 2021 indicate 467,430 adults receiving local authority or health service funded social care in England, a total of 107 million hours of care [SH/M6/204b – **INQ000571035**]. Half of local authority spending on social care supports younger adults 18-64, who are around a third of publicly funded care users [SH/M6/204c – INQ000606889]. The 2021 Census found that there are 5.8 million unpaid carers, 59% of them women, and of whom 1.7 million people provide 50 or more hours of care per week [SH/M6/204d – INQ000606894].

11.18 Whilst rapid progress was made with outbreak surveillance for COVID-19, this is intrinsically much more difficult for domiciliary care. Dedicated surveillance systems in domiciliary care would be very challenging to implement and there would be significant privacy considerations in relation to clients living in their own homes. Outbreaks of infection linked to the provision of domiciliary care do occasionally emerge where specific pathogens cause clusters of infections related in time and place but are hard to detect and remain under-reported. In the light of evidence on the vulnerability of care home staff to infection alongside the evidence gap in

domiciliary care, PHE/UKHSA undertook a specific prevalence survey to understand vulnerability of domiciliary care workers to COVID-19 [SH/M6/205 - INQ000591472]. The survey was carried out in June 2020 and involved 62 CQC registered providers in England, across 5 regions. The key findings and recommendations from the survey were:

11.18.1 The prevalence of COVID-19 among active domiciliary care workers was in line with the general population at the time and not a higher prevalence as observed in studies of frontline healthcare workers and care home staff observed earlier in the epidemic;

11.18.2 Regular testing for the domiciliary care workforce was not recommended unless recommended by local risk assessments or in response to local outbreaks. Symptomatic staff should continue to access priority testing via the pillar 2 testing service;

11.18.3 Domiciliary care providers should continue to ensure that staff were appropriately supported to follow current guidance, namely staff developing symptoms compatible with COVID-19 should self-isolate for 7 days and staff identified as contacts of confirmed cases should promptly self-isolate for 14 days;

11.18.4 Domiciliary care providers should continue to ensure that staff have appropriate PPE and training on its use, following national guidance;

11.18.5 A seroprevalence study should be commissioned to investigate the proportion of domiciliary workers infected with COVID-19 over the duration of the pandemic to ascertain if this was different from that observed in the general population and to identify risk factors for COVID-19 infection within the workforce.

Limitations in data sharing, data linkage and data lags

11.19 As highlighted by the Inquiry, Professor Harries' Module 2 statement [INQ000273807] addressed the pre-existing challenges in the system with regards to data:

6.15. ...Data acquisition and sharing between different organisations was essential

to interpret the totality of the data available across the health, social care, wider social and business systems, and to translate these data into action. Very few extant data linkage systems were available, particularly across organisational and sectoral boundaries, and bespoke systems needed to be built urgently to 'tie' together relevant streams.

6.18. It followed that early in the pandemic, there was a proliferation of separate data summaries from different organisations as above, shared in different formats, rather than as data sets that could easily be analysed alongside one another. Other problems which caused delays to data acquisition included:

1. *a lack of understanding about exactly what data sat where across multiple organisations;*
2. *a lack of routine relationships across some organisations;*
3. *a dearth of formal agreements and data governance processes at the outset of the pandemic; and*
4. *the need for appropriate platforms and sufficient data engineering capacity.*

11.20 Professor Harries continued:

6.19. Much of the work in improving the flows of data was undertaken by the JBC. To my mind, this demonstrates well the JBC's strengths in data collation, analysis and data science. However, interpretation of this data required further expert clinical or socio- demographic knowledge from PHE or academic partners, with further scrutiny and provision of scientific advice undertaken by SAGE. As part of its activity, JBC set up a dedicated team responsible for data acquisition which mapped what data sat where and formed relationships with organisations to systematically agree access to data and overcome barriers where existing routes were absent or non-viable.

6.20. Over time, our understanding of the data available and management of the relationships across organisations, assisted by relevant formal agreements where necessary, improved substantially. Nevertheless, this process was labour and time intensive, and the attendant data lags lengthened the time

to optimal understanding and use, especially in the early stages of the pandemic.

Limitations in data linkage

6.21. It was possible to use individual data sources to understand the epidemiological progress of the pandemic. However, the interpretation of epidemiological variation and the quality of response through focussed community or cohort specific interventions was enhanced through data linkage. Linkage of data, rather than simply the ability to share across organisations and systems, allows for deep interrogation of data sets in order to understand specific features.

6.22. At the outset of the pandemic, wide data linkage platforms and data sharing agreements were less common. Data linkage requires line list data to be available as well as a secure research environment where multiple data sets can be linked. This relies upon adequate digital infrastructure and support. Data linkage can be enhanced through pseudo-identifiers allowing for wider dissemination and greater academic engagement. At the start of the pandemic, many of these systems for enabling data linkage were either absent or inadequate.

6.23. The process of data linkage was however a complex one. For example, linking data on clinical outcomes to past infection required an individual to have been tested on more than one occasion and to have provided identical details on each so as to allow those two tests to be linked.

6.24. Linkage across some data sets became possible in 2020, but the process of bringing all the necessary data sets together (including vaccination data) was not achieved until late in 2021. When these logistical difficulties were overcome, data linkage enabled a number of important analyses to be undertaken, e.g. on vaccine effectiveness and hospital admissions by variant and vaccination status. As the pandemic developed, the ability to link core data to disease outcomes, vaccination status, past infection and COVID-19 variant became essential to facilitate our understanding of the pandemic and its evolution. This was particularly important as we came to try to understand how natural or vaccine derived immunity was influencing the pandemic with a view to relaxing the NPIs necessary to keep control of

the disease.

Data lags

6.25. Data lags imposed limitations on our analysis throughout the pandemic. Some of these were unavoidable, for example the natural lag between a patient being infected and requiring hospitalisation. Others were a consequence of operational processes or performance. Data on diagnoses were reported at the point of discharge rather than at the time a diagnosis was made, whilst the speed at which testing data was returned largely improved over time as the testing infrastructure matured and processes were refined. Decision makers therefore had access to more contemporaneous data from testing sources, and by extension better epidemiological data at their disposal, by autumn 2020 compared to the spring.

6.26. The precise nature and extent of data lags, and how they varied by individual data streams, are covered in detail in the tables which form part of Chapter 4 of the Technical Report.

The availability of deprivation and ethnicity data with information relating to underlying health conditions

11.21 PHE/UKHSA did not directly monitor the demographic or socioeconomic composition of the ASC workforce or resident/client population. It relied on information on the demographic composition of the workforce on publications from Skills for Care which publishes a wide range of relevant information at national, regional and local level.

11.22 The DHSC Capacity Tracker (described above) now provides information on the size of the resident and staff population of different care homes but lacks information on the underlying health status of the residents, beyond the overall registration type(s) of the care home e.g., learning disability, older adults, dementia.

11.23 Research studies including the VIVALDI and Easter 6 studies are a key source of complementary information. Mortality from COVID-19 rises with increasing age, and the extreme vulnerability to COVID-19 of residents in care homes for older adults

through age is attested, for example, by this study which reports the median age at 85 [SH/M6/206 – INQ000328593]. The Office for National Statistics ('ONS') also provides estimates of care home resident population with some self-reported health data [SH/M6/207 - INQ000591528].

11.24 No organisation collects health data on their staff routinely; some sectors may have occupational health services that is confidential health information. There is no legal basis to collect this data. Therefore, there is no data collection or collation on underlying health conditions of staff in the ASC sector. Whilst the VIVALDI and Easter 6 studies give some limited information they were not designed for this purpose.

Excess deaths within ASC settings

11.25 Excess deaths are defined by the ONS as the number of deaths above the five-year average. ONS is the definitive source of national data on excess deaths and of the UK population estimates on the basis on which they are calculated and includes excess deaths in care homes based on what is known about the population resident in care homes. [SH/M6/208 - INQ000591529]. PHE's model of excess deaths in care homes estimated 20,457 deaths, and 2.3 times as many deaths as expected between 20 March and 7 May 2020.

11.26 Excess deaths in the broader care sector including domiciliary care and workforce are a less well-defined question. The reasons for our limited understanding of the population receiving domiciliary care are noted elsewhere, as is the lack of data on the age and health status of the ASC workforce.

11.27 As I explained in my Module 3 corporate witness statement [INQ000410867]:

> *471. [...] More generally, PHE, and subsequently OHID, produced excess mortality reports from all causes from July 2020 to improve understanding of the impact of COVID-19 on the wider population [Exhibit: SH3/445 – INQ000348636].*
>
> *472. PHE also contributed to a publication on the 17 August 2022, related to the impact of vaccination on hospital outcomes. [Exhibit: SH3/446 – INQ000348637]. The publication provides estimates of the fatality risk of*

those hospitalised between March 2020 and September 2021. The publication provided estimation of trends in mortality by month of admission and vaccination status among those hospitalised with COVID-19 in England between March 2020 to September 2021, controlling for demographic factors and hospital load.

473. *Among 259,727 hospitalised COVID-19 cases, 51,948 (20.0%) experienced mortality in hospital. Hospitalised fatality risk ranged from 40.3% (95% confidence interval 39.4–41.3%) in March 2020 to 8.1% (7.2–9.0%) in June 2021. Older individuals and those with multiple co-morbidities were more likely to die or else experienced longer stays prior to discharge. Compared to unvaccinated people, the hazard of hospitalised mortality was 0.71 (0.67–0.77) with a first vaccine dose, and 0.56 (0.52–0.61) with a second vaccine dose. Compared to hospital load at 0–20% of the busiest week, the hazard of hospitalised mortality during periods of peak load (90–100%), was 1.23 (1.12–1.34).*

Data held by PHE/UKHSA within the relevant period

11.28 The mortality data held by PHE/UKHSA versus the data it used are described in paragraphs 446-448 of my Module 3 corporate witness statement (quoted at paragraph 11.7 above). Due to the time taken to register a death with the local authority after a death certificate is issued, notifications to the Office of National Statistics (ONS) have a variable delay and cover all lead and contributory causes of death. In addition to trying to understand the significant direct harmful impact of COVID-19, the PHE dataset was developed as management information, including all deaths in a variety of settings linked to a recent COVID-19 test, to ensure that information was available to ministers to inform decision making as rapidly as possible. As noted in paragraph 451 of my Module 3 corporate witness statement (quoted at paragraph 11.7 above) this evolved into a nationally published mortality dataset recognising the value of timely information complementing the fuller analyses that would follow through the ONS dataset.

11.29 CQC requires notification of all deaths occurring during the provision of care, and by definition this includes all residents dying within a care home. These notifications were shared with PHE and provided the basis for developing rapid management reports by PHE on deaths in care homes, which began on 11 April 2020. An example

of these outputs can be seen in slides 14-19 of the presentation entitled, *"Deep Dive on Covid-19 incidents in care homes in England"*. This provided timely data on deaths where they occurred within the care home. By contrast, the ONS reported additionally on deaths of someone usually resident in a care home where these occurred in hospital, based on death certification. These will have been missed in the more rapid CQC to PHE dataset. Section 2 of this ONS report explains this point [SH/M6/209 - INQ000591532].

11.30 PHE/UKHSA did not hold or directly receive any data that could be used to assess mortality in care workers. ONS reported on this using occupational data provided at death certification, described at [SH/M6/210 - INQ000591531]. In April 2020, the Easter 6/London Care Homes study (refer to paragraph 3.31 above) demonstrated high rates of asymptomatic infection in staff of care homes for older adults, in homes both with and without current outbreaks. Strikingly, genomic analysis showed multiple strains of the virus, indicating multiple introductions of virus, along with linked staff-staff and staff-resident clusters. At a time of severe restrictions on visiting, this indicated exposure of staff outside the workplace as a source of asymptomatic introductions of virus. The study demonstrated that it was not possible to know whether an individual staff member had acquired infection at work or not, outside highly specialised studies.

Section 12: Impact of COVID-19

Summary of data trends and SAGE

12.1 The SAGE Social Care Working Group did not deliver routine analyses of trends regarding the number of deaths, cases, outbreaks, and other relevant data across all four nations. Rather it reviewed data on a regular basis from the four nations to inform its advice and would seek specific information as needed to investigate particular areas of concern or opportunity, including comparing across the four nations using different data sets and modelling.

How the COVID-19 pandemic impacted pre-existing health inequalities in the ASC sector

12.2 The Easter 6/London Care Homes study demonstrated strikingly high rates of asymptomatic infection in staff and residents of care homes for older adults early in the pandemic. Here, frequent multiple small clusters occurred, with likely

transmission between staff as well as between staff and residents. This emphasised the highly networked nature of these settings where regular close contact with residents is essential. Importantly, in care homes, and to a lesser extent in domiciliary care, close contact with other staff is often necessary in the course of personal care where two people are required. For example, in using a hoist to move a resident or client. Both residents and staff in care homes experienced unequal impacts of the pandemic, intensified by the parallel effects of other inequalities including racial and ethnic, and of deprivation.

12.3 In the 2021 Census, 82% of all care home residents lived in care homes for older adults, where 56% of residents were 85 or older [SH/M6/207 - INQ000591528]. Older age is the most powerful factor that increases the likelihood of death from COVID-19, with people over 80 at a 70-fold higher risk compared to adults under 40. This population is compounded by the frailty and comorbidities for which residents require care. ONS provided regular reports on excess mortality which demonstrated that there were 20,268 excess deaths between 20 March 2020 and 21 January 2022. Their report states "*Total deaths were 43.9% higher than the five-year average for the first wave (26,035 excess deaths), 3.1% lower for the second wave (3,200 deaths below average) and 3.3% lower for the third wave (2,567 deaths below average)*" [SH/M6/210a – INQ000606897].

12.4 People receiving care who were identified as having a learning disability also appeared to experience higher rates of death than the general population in the early phase of the pandemic. In the five-week period leading up to 5 June 2020, the CQC received 386 notifications of deaths of people receiving care and recorded to have a learning disability that may have been attributable to COVID-19 - an increase of 2.3 times that recorded in the same period the previous year. This information relates mainly to people living in residential care settings, where COVID-19 accounted for more than half of the deaths of people with a learning disability during the early peak, although rates within residential care settings were noted to be lower than in the community for those registered with a learning disability. Overall data to ascertain with certainty the true impact on those with learning disabilities, particularly in the early phase of the pandemic, is lacking and where available is not robust. However triangulating data from a range of sources and recognising the dissociation of critical confounders (for example learning disabilities associated with underlying health conditions), PHE separately estimated 988 deaths of people with a learning disability over this period from all causes - a 2.4-fold increase. Beyond CQC registered

residential settings, the extent to which people with a learning disability receive care from registered, informal, family, or other sources of care is unclear [SH/M6/211 - INQ000101220].

12.5 People providing caring personal services were estimated to have a 1.8 times relative increase in deaths during the period 21 March to 8 May 2020 compared with the average for the same period in the years 2014 and 2018. 74% of these deaths had COVID-19 recorded as a cause [SH/M6/212 - INQ000101218]. However, this report was not able to distinguish between care home staff and carers providing domiciliary care, who were found in a PHE survey to have similar rates of infection as the wider population [SH/M6/205 – INQ000591472]. It is therefore possible that the increased early higher mortality is largely concentrated in care home staff.

12.6 Intersecting with these specific health equity aspects of social care is the wider landscape of varying vulnerability across the population by ethnicity, co-morbidity and deprivation [SH/M6/213 - INQ000101221], including the employment conditions of work, which is often insecure without guaranteed hours, and without employer sick pay. As noted in the VIVALDI 1 and Easter 6/London Care Homes study, staff often undertook work in other settings, and doing so correlated with higher rates of infection both in the members of staff and in residents of the care home.

12.7 Professor Harries' statement from Module 2 [INQ000251906] notes:

> *608. Infectious disease epidemics and pandemics usually expose and exacerbate existing disparities in society, such as those associated with deprivation, ethnicity, sex, age and sexuality. The COVID-19 pandemic had some predictable (e.g. the striking impact on the older age) and some less predictable disparities in health outcomes (e.g. the risk of severe disease for people living with obesity). Disparities arising from the infection and the subsequent policy response will not always be immediately apparent and will instead emerge as the pandemic unfolds, and this was true for COVID-19.*
>
> *609. PHE was aware of this from the outset of the pandemic. PHE used tools such as the Public Sector Equality Duty (PSED) checklist and the Health Inequalities Assessment (EQA) checklist to consider the impact of guidance on at-risk and other vulnerable groups and develop mitigations but the policy*

decisions relating to these mitigations were led by DHSC. I have included examples of a PHE PSED checklist [Exhibit: JH2/495-INQ000223612] and a Health Inequalities Assessment Checklist from 26 June 2020 [Exhibit: JH2/496-INQ000223613] undertaken in the development of the 16 June 2020 version of the 'Stay at Home guidance' that came into effect on 12 March 2020 and was updated throughout the pandemic). A summary of COVID-19 Guidance Health Inequalities and PSED Assessments undertaken for guidance developed during the pandemic are listed in [Exhibit: JH2/497-INQ000223614].

610. As the epidemic progressed across the UK, PHE, and once established NHSTT/JBC and UKHSA's understanding of disparities related to SARS-CoV-2 exposure and COVID-19 outcomes rapidly evolved. The evidence was generated from epidemiological studies, surveillance from routine data, research programmes and community engagement. It evolved to better capture the necessary data over the course of the pandemic and examples are provided.

611. Early case reports and epidemiological studies on outbreaks provided some important early signals about potential disparities. Chapter 2 of the Technical report on the COVID-19 pandemic in the UK outlines some of these studies. As early as January 2020 reports from China indicated that COVID-19 led to worse outcomes among older patients and men. Over the next two to three months additional data emerged, primarily from China and Italy, suggesting that people with certain underlying health conditions and immunosuppression were at increased risk of disease and death. Early data from China also suggested low skilled workers were at increased risk of progression to severe disease.

Disparities in Risks and Outcomes for COVID-19 report rationale and findings

12.8 As I explained in my Module 3 corporate witness statement to the Inquiry [INQ000410867]:

434. As provided in the Module 1 statement Section 1 paragraphs 70 and 71, S1c of the NHS Act 2006 (as amended by the Health and Social Care Act 2012) imposed a duty as to reducing health inequalities, stating that in

exercising functions in relation to the health service, the Secretary of State (for Health and Social Care) must have regard to the need to reduce inequalities between the people of England with respect to the benefits that they can obtain from the health service. PHE had a supporting role as did all arm's length bodies sponsored by DHSC. The Health Inequalities functions worked across the whole agency while being overseen in the Directorate of Health Improvement. The Equality Act 2010, which applies to public bodies that carry out public functions, includes related but different legal duties.

435. *On 1 December 2022, DHSC published a technical report on some of the scientific, public health and clinical aspects of the COVID-19 pandemic in the four nations of the UK. As noted in Chapter 2 of the Technical Report, [Exhibit: SH3/416– INQ000348619] evidence from previous pandemics indicated that it was important to understand differences in the risk of becoming infected, disease severity and outcomes between groups. Alongside this it was also important to understand the differential impact among population groups of interventions introduced to try and control disease spread.*

436. *On 4 June 2020, PHE published its report, "COVID-19 – review of disparities in risks and outcomes" [Exhibit: SH3/417 – INQ000348620. HAW01824371 It was available for participants to read at SAGE 40 on 4 June but was not considered or discussed at that meeting. PHE published an updated version of the report in August that year. [Exhibit: SH3/413 - INQ000101218].*

437. *The report [Exhibit: SH3/413 - INQ000101218] was an early descriptive review of surveillance data on disparities in the risk and outcomes from COVID-19. It presented findings based on surveillance data available to PHE at the time of its publication in June 2020, including through linkage between health data sets. The review looked at different factors including age and sex, where people live, deprivation, ethnicity, people's occupation and care home residence.*

438. *The report confirmed that the impact of COVID-19 replicated existing health inequalities and, in some cases, increased them. As set out in UKHSA's Corporate Statement for Module 1 at paragraphs 607-608, the review confirmed that the impact of COVID-19 replicated existing health inequalities*

and, in some cases, increased them. These results improved our understanding of the pandemic and formulating the future public health response to it.

439. *The review also stated that "The largest disparity found was by age. Among people already diagnosed with COVID-19, people who were 80 or older were seventy times more likely to die than those under 40. Risk of dying among those diagnosed with COVID-19 was also higher in males than females; higher in those living in the more deprived areas than those living in the least deprived; and higher in those in Black, Asian and Minority Ethnic (BAME) groups than in White ethnic groups. These inequalities largely replicate existing inequalities in mortality rates in previous years, except for BAME groups, as mortality was previously higher in White ethnic groups. These analyses take into account age, sex, deprivation, region and ethnicity, but they do not take into account the existence of comorbidities, which are strongly associated with the risk of death from COVID-19 and are likely to explain some of the differences".*

440. *Following the report being published in June 2020 the Prime Minister and Secretary of State for Health and Social Care asked the Minister for Equalities with support from the Cabinet office Race Disparity Unit to lead cross government work to address the report's findings. Under the terms of reference for this work, the Minister for Equalities was tasked with submitting quarterly progress reports to the Prime Minister.*

441. *The rationale for this was set out in the final report on progress to address COVID-19 health inequalities published in December 2021 by the Equality Hub and Race Disparity Unit which included to "look at why COVID-19 was having a disproportionate impact on ethnic minority groups and to consider how the government response to this could be improved," adding that "at that time we knew that ethnic minorities were more likely to be infected and to die from COVID-19, but we did not know why" [Exhibit: SH3/418 - INQ000223703].*

Section 13: Looking to the Future - UKHSA's work to support the ASC Sector

13.1 As explained at paragraph 2.16 of this statement, PHE/UKHSA's role in respect of COVID-19 and ASC can be summarised as: (i) conducting scientific and clinical research into the disease; (ii) collating data on notified infection outbreaks in care homes; (iii) producing guidance on IPC measures to help prevent and manage outbreaks of COVID-19 in care homes; (iv) supporting the production of guidance owned by other departments by contributing public health advice; and (v) providing support for care settings and care sector stakeholders via PHE/UKHSA's HPTs. UKHSA continues to perform these specific functions in respect of ASC albeit directed not only to COVID-19 but to a range of pathogens.

13.2 Before turning to the work that UKHSA is undertaking to deliver on its remit as outlined above, there are certain features of the ASC sector which are important to keep in mind.

The structure of the ASC Sector

13.3 The Inquiry will receive evidence of the long-standing challenges faced by those accessing ASC, working within the sector and providing support to it, and which continue. A great debt is owed to all those who continued to provide care within the sector during the pandemic, often in circumstances of huge anxiety both for themselves and their families. The complex structure of the sector has been mentioned earlier, and it is right to note that the system was under significant pressure even before the pandemic. The following features of ASC provision in England remain and are of note.

13.4 First, the breadth of settings in which ASC services and support are provided means that a range of individuals and care arrangements are captured under a single umbrella. There is wide variation in the type of care arrangements in place for example in terms of the physical size of a setting and of the nature of the care being provided. Many receive domiciliary care in their own home. It is also important to recognise the diversity of those who access ASC. It is a broad population which includes not only those defined as elderly but also for example those with learning disabilities or young adults supported to live in a small home.

13.5 Second, unlike the NHS, the ASC sector is not within a single management framework. Private companies of different size, regulated by the CQC, are substantial providers of ASC whether commissioned by a public body or on a private basis. There is also non-regulated paid care. A significant amount of the care provided across the sector comes from unpaid carers including family members. Historically therefore, there has been limited oversight of the sector by central Government, with local government having a closer role, for example as commissioners of care for their local residents.

13.6 Third, the sector is characterised by a significant turnover of staff and high vacancy rates. The work can be demanding and arduous and sometimes insufficiently appreciated. There is frequently reliance on temporary and/or agency staff. ASC staff work in more than one setting.

13.7 Fourth, many recipients of ASC are inherently vulnerable due to their age and/or comorbidities. The average age of a nursing home resident is approximately 85 years in circumstances where it is known that increasing age is both a major determinant of the risk of death generally, and from COVID-19 in particular. Studies have shown that residents in care homes for older adults have a higher mortality than adults of the same age living independently, reflecting the frailty which leads them to require care. Elderly individuals are, by virtue of immunosenescence, at higher risk of severe outcomes from infections. By their very nature therefore, care home residents are highly vulnerable to the effects of any respiratory infection.

13.8 Residents of care homes, particularly those for older adults, are also relatively highly exposed from a transmission perspective. ASC settings are highly networked environments. Adults living or working for prolonged periods alongside many others will be at greater risk of transmission of an infection, especially those spread through the contact, oral or respiratory routes.

13.9 Those in receipt of ASC are likely to have comparatively high levels of close contact with others, as compared to people of a similar age living independently. Care home residents may require several episodes of hands-on care a day provided by multiple staff members. It is known that residents with dementia are more susceptible to acquiring some infections and that patterns of person-to-person contact may be a contributing factor.

13.10 Finally, demographic changes mean that the demand on the sector is rising each year, and this is expected to continue. That change in demand is occurring at a time when the resources of local government are under pressure and the cost of care is increasing.

UKHSA's role within the network supporting the ASC Sector

13.11 UKHSA fulfils its public health obligations towards the ASC sector as a component of a wider system. DHSC is the government department with lead responsibility for strategic oversight of the ASC sector. That encompasses policy, funding and reform of the system. DHSC works alongside MHCLG in respect of the commissioning of publicly funded ASC. Local authorities have a key and long-established role. The remit of the CQC, as the independent regulator, encompasses monitoring and inspecting providers of social care. That includes inspecting how well staff and residents in settings are protected by IPC and whether the care provided is culturally competent.

13.12 UKHSA does not have responsibility for the broader challenges faced by the ASC sector such as resources or how services should be structured or commissioned. Those are, rightly, matters for elected decision makers. The Agency's role is operational – the provision of public health advice deployed through the production of guidance or by HPTs offering direct support. The former, as discussed more fully below, is either achieved through contributing to guidance issued by a government department or badged as a UKHSA product.

13.13 As to the latter, the role of UKHSA HPTs has already been discussed elsewhere in this statement. By way of brief outline, there are nine regional UKHSA HPTs which together cover the whole of England. Each led by a public health trained deputy director, their function includes the provision of specialist public health protection advice and operational support to, for example, community IPC teams in the NHS or local authorities as well as to ASC providers. They operate a 24/7 acute response function providing advice on health protection related incidents (including outbreaks of disease). Working with local partners, UKHSA HPTs investigate and manage such incidents. They act as a front door to the wider services and support within UKHSA. HPTs are also a source of more general support able to direct local partners to relevant information. They lead at a local level on the implementation of national

programmes (such as the national action plan on TB). They have an important role in surveillance and epidemiology.

Learning from the pandemic

13.14 The Inquiry has asked for examples of where the care sector's response to the pandemic went well. UKHSA would highlight three such examples.

13.15 First, the April 2020 Easter 6 Study, discussed in detail at paragraphs 3.31 to 3.37 of this statement was delivered at pace by PHE, providing new and UK relevant evidence for decision makers on the extent of asymptomatic carriage and patterns of transmission within care homes through genomic analysis. The capability within PHE to rapidly stand up and deliver results which could inform operational delivery was illustrative of the strength in scientific expertise offered by PHE and which UKHSA has striven to retain and nurture.

13.16 Second, there were very high levels of uptake of the initial COVID-19 vaccine, rolled out rapidly once vaccination commenced. Prioritisation of residents in care homes and of all care home staff for the vaccine (alongside NHS staff) not only provided a tangible benefit insofar as individuals were directly protected from the disease but was a recognition of the risks faced by the sector. Early vaccination of care home residents was a vital step given the difficulties in protecting residents from ingress via staff during periods of high community transmission. It is difficult to envisage that those accessing ASC will not be among those most at risk in a future pandemic. Ensuring effective prioritisation and delivery of vaccines will always be important.

13.17 Third, whilst it has always been appreciated that there are differences between healthcare settings and ASC settings (hence the pre-pandemic existence of separate guidance for outbreaks), the pandemic highlighted the need to recognise the distinction more clearly during times of emergency so to best support both sectors. As the pandemic progressed, all government departments and bodies, including PHE/UKHSA, found improved ways of communicating with the sector. Simple measures such as avoiding healthcare terminology (see paragraph 4.24 above) contributed to making communications more appropriate to the variety of ASC settings, rather than being founded in the norms and practices of hospital environments. This has helped inform how all organisations, including UKHSA,

communicate with the ASC sector going forward.

13.18 UKHSA, like its predecessor organisations, has sought to identify lessons from the pandemic across the range of work that the Agency undertakes. That has been done through for example workshops, surveys and internal reviews. UKHSA's scientific, technical and public health work cannot always be neatly separated into modules. Since becoming operational and as the demands of responding to the pandemic eased, UKHSA has taken a holistic approach when fulfilling its remit and looking forward. The Inquiry will be aware from the published evidence already provided by UKHSA in earlier modules that the Agency's work on pandemic preparedness has a strong focus on using available resources to develop pathogen agnostic systems capable of being scaled up. I do not repeat that detail here, but it includes for example using horizon scanning to identify potential future threats, the development of a priority pathogens tool, working with industry and academia to identify the most promising priority vaccines candidates and sustaining a high-quality scientific estate. These are all initiatives which benefit the ASC sector as well as other parts of society. Rather, and with a view to the future, I set out below how UKHSA has sought to implement lessons from the pandemic to support the ASC sector as effectively as possible. UKHSA must provide that support using a budget equivalent to 3% of its original pandemic budget or, as it has been pointed out previously, akin to the budget of a moderately sized district hospital for the services and sectors it is required to deliver and support respectively.

A dedicated ASC Team

13.19 In April 2022 and building on resources first made available by PHE in March 2020, UKHSA established a dedicated ASC Team. Operating as part of UKHSA's Health HEIH Division, the Team is headed by the National UKHSA Lead for Adult Social Care and staffed with a Public Health Consultant and Nurse Consultant, together with administrative and data analysis support. Its establishment embeds the provision of science, research, evidence and advice on public health threats to the ASC sector as a permanent function within the Agency in a way which was absent prior to the pandemic. The ASC Team's role includes translating scientific evidence for use in guidance, and to work with regional HPTs to identify trends arising from incidents and outbreaks in ASC. The Team works with other agencies and bodies across the ASC sector. It commissions insights, reviews and feasibility assessments to develop the evidence base for effective support to ASC (such as the qualitative study published

in July 2024 on the impact of extreme cold weather on domiciliary care provision).

Strengthening strategic oversight from the centre and inter-agency working

13.20 It has been recognised that, at least in the initial stages of the pandemic, the reliance on a locally led response to the impact of COVID-19 on the ASC sector was insufficient and that a more national approach, led by DHSC, was necessary. That recognition has led to a deeper appreciation of the needs of the sector and the differences between it and other areas of healthcare provision.

13.21 DHSC is the lead government department for pandemic preparedness and chairs the Pandemic Preparedness Portfolio Strategy and Delivery Boards. UKHSA provides scientific and technical advice to those boards to inform their strategic planning. That planning includes supporting the ASC sector in responding to infectious diseases with pandemic potential.

13.22 One of the most important lessons therefore has been the need to facilitate better inter-agency working and links between local and national structures. For its part, UKHSA's ASC Team now hosts monthly Management of Care Home Hazards Outbreaks ('MOCHHO') meetings, the purpose of which includes: (i) bringing together external stakeholders such as DHSC, NHSE, CQC and local government to discuss the production and sharing of expert health protection advice; (ii) providing a forum for discussion for policymakers and those contributing to guidance relating to the prevention, detection and response to hazards impacting care homes and populations in ASC; (iii) sharing data on emerging trends in health protection in care homes; (iv) identifying any gaps in or issues with data so these can be addressed; and (v) facilitating effective inter-agency working.

13.23 The UKHSA ASC Team attends DHSC's Operational Resilience Forum which offers a regular opportunity to discuss resilience and operational issues with ASC providers. Through its annual symposium and the ASC sessions at the UKHSA conference, the Team brings together colleagues in the NHS, DHSC and CQC as well as providers and representatives of provider organisations such as the National Care Forum. These events provide an opportunity to hear from providers, academics and public health professionals. The Team also presents the output of research undertaken by UKHSA (examples include a recent enhanced surveillance study of Respiratory Syncytial Virus outbreaks in care homes for older adults in England during the

2024/2025 winter season; and a 2024 qualitative study on whether domiciliary carers may contribute to the spread of antimicrobial resistance in England).

13.24 Further, building on the experience of the pandemic, the respective organisational roles of DHSC, NHSE and UKHSA in relation to the development of IPC guidance in England, including in relation to the ASC sector, are now set out in a written agreement [SH/M6/002 - INQ000421847]. That agreement provides that DHSC's ASC IPC Team will produce and publish operational IPC guidance and supporting resources for use by the social care sector and support the CQC as the regulator of social care activity, including IPC. In July 2024, DHSC commissioned UKHSA to produce a bespoke IPC resource for the ASC sector. That project, which is ongoing, will collate and update the range of guidance aimed at ASC into an integrated resource that is easy to use and developed with support from the sector. UKHSA's IPC Team is leading on this project supported by the ASC Team and a wider working group which includes ASC stakeholders. It is expected that DHSC will publish the resource in December 2025.

The expertise of HPTs

13.25 While central strategic oversight, particularly in relation to policy priorities, is important, the complex nature of the ASC sector emphasises the need to sustain local networks and expertise. UKHSA's HPTs perform an essential role in terms of the support the Agency provides to the sector. It requires close collaboration not only with other regional HPTs and central teams within UKHSA but also with local partners, especially local authorities and the NHS who commission publicly funded ASC activity. UKHSA HPTs have long established relationships with Directors of Public Health. They are trained and prepared to manage health protection incidents and in so doing may need to work with local authorities to undertake surveillance or manage an outbreak. Important to the need for wide information sharing, UKHSA HPTs participate in a range of partnership bodies including Health Protection Committees/Boards that report to Local Authority Health and Wellbeing Boards, Local Resilience Forums, Local Health Resilience Partnerships and NHS IPC Committees.

Developing Guidance

13.26 The pandemic has reinforced the need, when developing guidance, to take account

of the very different circumstances of the ASC sector as compared to the healthcare sector. While in both, the aim should be to treat those receiving care with dignity and to support autonomy, social care seeks to support individuals who need help with daily living due to age, disability, illness or vulnerability so they can live as independently as possible and enjoy a good quality of life. It focuses on personal well-being not medical treatment. In comparison, in healthcare (and especially hospitals) the focus is on medical treatment, frequently either for acute conditions or the provision of complex treatment for chronic conditions with the aim of prolonging life. Social care takes place in peoples' homes, care homes or community settings. Wherever it occurs, it is invariably being delivered in the community, and usually in the environment where the recipient lives. By contrast hospitals are dedicated clinical environments with specialist staff and equipment for diagnosis and treatment to cure, improve or stabilise a new or underlying condition.

13.27 Further, national guidance needs to have regard the different risk environments to which it might apply. It was recognised early in the pandemic that guidance needed to be tailored to different ASC settings, such as care homes, domiciliary care, and unpaid carers. This allowed its content to better address the needs of individual settings and enabled the language and tone of ASC guidance to be more appropriate and responsive to the needs of the sector, including the provision of easy reads, illustrated guides, and posters. This approach is continued. National guidance cannot cater for every possible variation of ASC setting but it does need to be flexible enough to be applicable and adaptable to the range of settings in which ASC is delivered.

13.28 In general, DHSC publishes guidance for the ASC sector, to which UKHSA contributes scientific and clinical advice. That is appropriate as the considerations, such as operational feasibility, which feed into guidance go beyond the purely scientific or clinical. In providing that input, the work of UKHSA's ASC Team benefits from discussions, with colleagues in HPTs, DHSC, CQC, as well as the sector itself.

13.29 There are circumstances, where the guidance is primarily scientific and is intended for the professional community rather than the sector generally (for example, health protection practitioners, local IPC teams and others advising externally on an outbreak), when DHSC and UKHSA may agree that it is published by UKHSA. In such instances, the guidance will identify the intended audience. Examples of guidance published by UKHSA since the pandemic include:

13.29.1 Guidance on the management of acute respiratory outbreaks in care homes – this was updated on 24 July 2024 and intended for health protection practitioners and IPC professionals based in the NHS and local authorities [SH/M6/232 – **INQ000611195].**

13.29.2 Guidance on the management of scabies in care homes and in closed settings – this was updated on 23 April 2025 and intended for HPTs, other community teams and managers of communal residential settings [SH/M6/233 – **INQ000611194].**

13.29.3 Principles for managing cases of suspected high consequence infectious diseases in ASC - published on 28 May 2025, these are aimed at ASC providers, managers and staff [SH/M6/234 – **INQ000611196].**

13.30 UKHSA's guidance on supporting safe visiting in care homes, published on 15 April 2024, is illustrative of an approach which seeks to develop purposive guidance informed by discussion with relevant stakeholders. The guidance followed on from a DHSC consultation on the issue and discussion with CQC. It gives operational support to the CQC requirement, in place from 6 April 2024, that visits must be facilitated [SH/M6/235 – **INQ000611193].**

Utilising data – the ASC Dashboard

13.31 The challenges of obtaining accurate data in relation to the ASC sector, in greater part a function of its fragmented structure, have been discussed in section 11 of this statement. During the pandemic, rapid developments in data capabilities allowed PHE/UKHSA to better understand the transmission and impact of COVID-19 in the ASC sector. This intelligence was complemented by evidence from bespoke research studies (see paragraphs 11.12 to 11.15). However, as at the start of the pandemic, it remains the case that there was a lack of reliable and comprehensive population and health data at a national level on those living and working in ASC.

13.32 Real time outbreak data is required to detect the emergence of an outbreak in an ASC setting, and to understand both its transmission dynamics and health impacts. Being able to separate that data by denominator such as the population size of a setting or the type of provision enables the risk of spread of an infectious disease to be better understood. That allows for more tailored and proportionate advice about control measures and more effective interventions.

13.33 UKHSA's objective therefore is to integrate the data sources to which it has access so as to maximise their utility to give as close to real time data as possible; and to develop key data linkages that can be pivoted to provide scalable real-time data for an emerging threat.

13.34 UKHSA's ASC Dashboard is an England-wide resource which aims to capture the occurrence of and trends in infectious disease outbreaks in care homes based on reporting from HPTs using the CIMS. Unlike the predecessor system, CIMS allows data to be stratified by care home descriptor (size, CQC registration type and location). That is replicated on the dashboard. Information from the dashboard is shared at the MOCHHO meetings so that partner agencies can understand the current epidemiological picture. It is also included in the ASC Team's Care Home Resource Pack, updated monthly and circulated within UKHSA, produced to inform for example the revision of guidance as appropriate.

13.35 Currently, work is ongoing to deepen the information available on the ASC Dashboard by linking it to other data sources already available to UKHSA: SGSS (laboratory data), hospital episode statistics, ONS mortality data and CQC incident reports. Subject to appropriate governance being put in place, the dashboard could also be linked to the DHSC capacity tracker which will allow self-reported information about outbreaks in care settings to be correlated with the data on workforce and occupancy held on that tracker.

Recommendations

13.36 Having regard to the scope of this Module, UKHSA invites the Chair to consider the following when making operational recommendations in relation to ASC.

13.37 First, there is a need to improve the evidence base on the impact of different interventions on the ASC sector. Reference has already been made in this statement to the Technical Report on the COVID-19 Pandemic in the UK, published by OCMO on 1 December 2022. UKHSA personnel contributed to many of the report's chapters, including Chapter 8 (Care Homes). That chapter noted the need for high-quality studies quantifying the balance of benefit and harm of different non-pharmaceutical interventions in care home settings. Research is needed into the composition of the ASC workforce and their exposure to infectious disease by virtue

of their roles, pre-existing health and social circumstances, status and outcomes.

13.38 UKHSA is not a research funder. As well as bidding for funds for its own research, the Agency does use its budget to support research studies delivered by the Agency and to commission projects that support the evaluation of novel surveillance methodologies and other tools. So, to address gaps in understanding, and working with UCL, NHSE and other partners including The Outstanding Society, UKHSA has funded the Vivaldi Social Care Study. This 12-month pilot study is monitoring infections (including COVID, norovirus and gastroenteritis) in a sample of 650 care homes for older adults in England (out of a total of approximately 15,000). The study links individual level resident data by NHS number with a range of health data including hospital admissions and mortality rates.

13.39 Second, and linked to the need for better evidence, is the challenge of integrating data sources so that they can be more easily ulitised on a routine basis. The structure of the ASC sector brings challenges. Many ASC settings, which are private businesses, collect and retain data in different ways. There is also unregulated provision. Improving the data infrastructure in the sector should be done with the aim of limiting the burden on those working in it, clarity of understanding about how the data will be used and why it is necessary to do. As ever, it is important for those whose data is being shared to understand the benefit that comes from such a step. That raises questions of policy and governance which DHSC are best able to address.

13.40 Any improvement may need to be incremental and focused on regulated entities. It needs to adopt a multi-pathogen approach. The ASC Dashboard does not give detailed information on the demographic or health profile of the resident or working populations of different settings. The UK health data infrastructure is however developing rapidly, and there is now a range of population health data sources that use NHS data. There remains a gap in our understanding of the health status and demographics of the population living and also working in care homes, a group particularly vulnerable to the health impacts of a future pandemic, and for whom understanding the effectiveness of interventions such as vaccinations will be of great importance. A strategic national approach to integrating such care home data sources would have immense benefits in a future pandemic, while providing wider opportunities to improve health and social care delivery.

13.41 Third, in the way it operates internally in relation to ASC, UKHSA seeks to join the national (DHSC and UKHSA ASC teams) with the UKHSA regional teams and local authorities to make for better information sharing within and between organisations. It is important to retain the lessons of the pandemic and sustain closer working partnerships between central and local government, operational agencies with specific remits, ASC providers and those who speak on behalf of those who depend on ASC and who provide that care.

13.42 Finally, the Inquiry will be aware that the Casey Commission into ASC, chaired by Baroness Casey of Blackstock, has begun its work recently. The Commission is tasked with making recommendations for the improvement and reform of ASC including the implementation of a National Care Service. That does provide an opportunity for the sector to be reformed with the need for pandemic preparedness to be given primary and substantive consideration.

Statement of Truth

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Signed: Personal Data

Dated: 9/6/2025

Annex A: Modes of transmission

Early 2020	*At the outset of the pandemic PHE used knowledge of other genetically similar viruses to identify likely routes of transmission. As a respiratory virus SARS-CoV-2 carried the potential for transmission via respiratory routes such as droplets and aerosols, direct physical contact, and indirect contact through contaminated surfaces or fomites. While there was a high degree of uncertainty about the exact mode of transmission, knowledge from genetically similar viruses and other respiratory infections with similar Ro [~2, that was reported from China] pointed to droplet transmission as the predominant route. For example, measles which has documented aerosol transmission was a Ro of 15-20. However, the predominant route does not exclude other routes as potential modes but provides a focus to consider priority infection prevention and control measures. Early pandemic research into public activities which preceded the onset of other acute respiratory infections, sought to understand their relative importance for transmission and suggested a role of both respiratory and indirect routes of transmission and the impact of social distancing measures [Exhibit: SH3/66 - INQ000410869]. Systematic reviews prior to the pandemic showed that regular handwashing can reduce incidence of respiratory infections, implying a possible role for direct contact and/or fomite-based transmission [Exhibit: SH3/67 - INQ000348259].*
28 January 2020	*PHE drafted a paper titled "are asymptomatic people with 2019nCoV infectious?" which assessed the current evidence for asymptomatic transmission of 2019nCoV (subsequently known as SARS-CoV-2) and compared this to what was understood of viral shedding and asymptomatic transmission in the closest known genetically related virus, SARS-CoV in humans. This paper was submitted to SAGE and discussed at the SAGE meeting on 4 February detailed below. [Exhibit: SH3/68 - INQ000074909]. The paper sought to consider what proportion of transmission might come from asymptomatic individuals. The importance of potential asymptomatic infection was considered using the analogy with other respiratory viruses (influenza) and the conceptual framework of the mathematical relationship between disease control and proportion of asymptomatic infection.* *However, while individuals could have asymptomatic infection, the likelihood of asymptomatic individuals transmitting infection to others was assessed as low. This is demonstrated in the paper by the inclusion of the analogy of respiratory viruses, which outlines the relationship between control of virus transmission, the amount*

	of asymptomatic transmission and the summary of early case reports for SARS-CoV-2. The paper concluded, "the currently available data is not adequate to provide evidence for major asymptomatic/subclinical transmission of 2019nCoV. Detailed epidemiological information from more cases and contacts is needed to determine whether transmission can occur from asymptomatic individuals or during the incubation period on a significant scale." The paper argued that it would be reasonable to assume that the early stages of illness may have lower viral load. It also noted that the current available data was not adequate to provide evidence for major asymptomatic or sub-clinical transmission.
3 February 2020	*PHE presented a paper to NERVTAG [Exhibit: SH3/69 - INQ000119615 summarising the scientific literature regarding the survival of coronaviruses in the air and on surfaces. PHE used available data from both SARS and MERS to extrapolate for COVID-19. It concluded "the infection risk from the virus in the environment will decline with increasing time of exposure and PHE has estimated that at 48 hours the amount of virus within the environment would be significantly reduced to the point of acceptable risk from environmental and fomite transmission. After 5 days, PHE has judged that the risk would be almost negligible or absent and therefore decontamination would not necessarily be required, and general cleaning procedures would be acceptable." [Exhibit SH3/70 - INQ000348261].*
3 February 2020	*PHE contributed to a SPI-M-O paper, 'Consensus view on the impact of possible interventions to delay the spread of a UK outbreak of 2019-nCov-3'. [Exhibit: SH3/71 - INQ000213043] on 4 and 13 February 2020 the paper was discussed at SAGE. At this stage, whilst some airborne viral transmission could be predicted, the relative importance of asymptomatic to symptomatic transmission, or of respiratory to touch modes of transmission, could not be assessed with precision so early in the pandemic. On the best available evidence and expert opinion, the paper concluded that a combination of voluntary home isolation of those with respiratory symptoms and school closures would likely have an impact in reducing the spread of the virus, although this would depend on timing of these interventions.*
4 February 2020	*The PHE paper on asymptomatic transmission [Exhibit: SH3/68 - INQ000074909] exhibited above in the entry for 28 January 2020) was discussed at SAGE. It was concluded in the minutes that "asymptomatic transmission cannot be ruled out and transmission from mildly symptomatic individuals is likely". [Exhibit: SH3/72 INQ000051925.*

24 February 2020	*A paper by the PHE NIS[20] presented to SAGE a series of scenarios and proposals for contain and delay, had the underlying assumption: "Asymptomatic infection is now well documented, but there is very limited evidence of transmission from asymptomatic cases. It is assumed that the substantial majority of transmission is from symptomatic individuals with SARS- CoV-2" [Exhibit: SH3/73 - INQ000325224]. This statement was based on case studies and evidence shared from national organisations, pre-prints and the WHO. This paper considered risks to healthcare workers and outlined ways to contain outbreaks or to slow the spread of the virus. Throughout this period PHE continued to update the paper "are asymptomatic people with SARS-CoV-2 infectious?" to reflect the latest evidence. [Exhibit: SH3/74- INQ000348264]. On 24 February a revised draft was produced [Exhibit: SH3/74 - INQ000348264] which noted, "the presentation of a large proportion of COVID-19 cases is of mild illness and minimal symptomatology" but that "asymptomatic infections with SARS-CoV-2 have also been reported" in case reports and anecdotal records. The paper continued, "the currently available data remains inadequate to provide evidence for major pre- symptomatic / asymptomatic transmission of SARS-CoV-2. Major uncertainties remain in assessing the influence of pre-symptomatic transmission on the overall transmission dynamics of the pandemic." It reiterated that detailed epidemiological information from more cases and contacts was needed, and the report would be updated as more evidence became available. On this basis, PHE contacted individuals in contact with a case from 2 days prior to symptom onset to the date the contact tracing occurred, to provide them with information on isolating and symptoms and contacted them daily to assess for symptoms.*
28 February 2020	*The WHO-China Joint Mission published its report on COVID-19 which used findings from studies, outbreak analyses, and published literature to make recommendations for both China and the international community [Exhibit: SH3/76 - INQ000218368]. The report concluded that SARS-CoV-2 was likely to be primarily transmitted through respiratory droplets during close unprotected contact, and by fomites. The report stated there was not sufficient evidence to suggest that SARS-CoV-2 was airborne, but that it was possible that aerosol generating procedures ("AGPs") in healthcare could cause transmission in this way.*

[20] [National Infection Service]

3 March 2020	*A PHE team visited the Royal Free Hospital HCID and sampled the air around COVID-19 patients. Between 3 March 2020 and 12 May 2020, the study team visited eight hospitals (three on more than one occasion) and undertook environmental sampling in areas where patients infected with SARS-CoV-2 were receiving care. These included 11 negative pressure isolation rooms, 11 neutral pressure side rooms, six Intensive Care Unit (ICU/high-dependency unit (HOU) open cohorts and 12 non-ICU cohort bays. Results of the early investigations were verbally reported by PHE to NERVTAG on 27 March. The main points reported were: 80 surface and 28 air samples were taken; 7.5% positive from environmental swabs from surfaces and all air samples were negative. It was noted that CT values were high, suggesting low levels of virus [Exhibit: SH3/77 - INQ000348266]. In this study, SARS-CoV-2 RNA was detected in 4 (7.3%) of 55 air samples collected using a Coriolisμ air sampler. Virus isolation was performed on all positive surface samples where there was a PCR positive test with a cycle threshold (Ct) value of less than 34 [a similar cut off is used for isolates from humans due to laboratory assessment of the assays]. No cytopathic effects or decrease in Ct values across the course of three serial passages were observed, suggesting that the samples did not contain infectious virus. The paper concluded, "effective cleaning can reduce the risk of fomite (contact) transmission, but some surface types may facilitate the survival, persistence and/or dispersal of SARS-CoV-2" and "the presence of low or undetectable concentrations of viral RNA in the air supports current guidance on the use of specific PPE for aerosol-generating and non-aerosol- generating procedures". The early evidence from this study formed part of the evidence to use PPE [which included fluid resistant surgical face masks for general use and FFP3 for aerosol generating procedures and in areas considered higher risk of virus aerosolisation] more widely in health and care settings that was published on 2 April 2020. All results were shared with hospitals and SAGE-EMG through 2020 and the complete study was published as a preprint and in the Journal of Hospital Infection.*
10 March 2020	*SAGE discussed a paper to which PHE data professionals contributed, drawing on early clinical evidence, which suggested that the clinical course of COVID-19 infection in younger children was milder than adults, and noting reports of asymptomatic infection in children, which was consistent with the emerging evidence. [Exhibit: SH3/78 - INQ000119702].*

20 March 2020	*NERVTAG noted that, whilst there was data for people testing positive for SARS-CoV-2 without symptoms, there was very little information regarding transmission, and the data from reported cases of asymptomatic transmission was not sufficient to provide conclusive evidence at that time [Exhibit: SH3/79 - INQ000119619].*
27 March 2020	*The US Centre for Disease Control and Prevention ("CDC"), published an early release of a very significant study on outbreaks in care homes in Washington [Exhibit: SH3/80 - INQ000348269]. This was the first reference to evidence of asymptomatic and pre-symptomatic transmission of the virus. The study concluded, "although these findings do not quantify the relative contributions of asymptomatic or pre symptomatic residents to SARS-CoV-2 transmission in facility A, they suggest that these residents have the potential for substantial viral shedding." The final version of the study was published on 3 April 2020.*
29 March 2020	*The WHO published a briefing on modes of transmission which also concluded COVID-19 was primarily transmitted through respiratory droplets and contact routes, and that airborne transmission was possible through AGPs but not reported [Exhibit: SH3/81 - INQ000300534].*
1 April 2020	*PHE updated its paper on evidence of asymptomatic transmission, now titled "are asymptomatic people with COVID-19 infectious?" [Exhibit: SH3/82-INQ000348271]. It found that "overall, available evidence to date", including the CDC study in care homes, "suggests the possibility that some asymptomatic/presymptomatic transmission is occurring. However, whether this is occurring on a significant scale and how it contributes to the overall transmission dynamics of the pandemic, remains uncertain." It added, "detailed epidemiological and virological studies from cases and contacts, which combine viral genomic analysis and serological data would provide the best evidence that transmission can occur from asymptomatic individuals or during the incubation period."*
2 April 2020	*WHO said that there were "few reports of laboratory-confirmed cases who are truly asymptomatic, and to date, there has been no documented asymptomatic transmission". WHO reported the presence of pre-symptomatic spread in a small number of case reports and studies [Exhibit: SH3/83 - INQ000074894].*
3 April 2020	*NERVTAG discussed emergence of evidence around airborne transmission [Exhibit: SH3/84 - INQ000220209] and it was agreed further analysis of data would be undertaken.*
8 April 2020	*A briefing note was published by London School of Economics and Political Science (LSE), citing the pre-print of the Wei et al (2020) study below, on pre-*

	symptomatic transmission and the CDC papers discussed above [Exhibit: SH3/85 - INQ000325331]. This referenced the growing asymptomatic transmission evidence base.
10 April 2020	*A further study was published by the CDC, by Wei et al, 2020 (published as an early release on 1 April). The study reviewed data from seven epidemiological clusters in Singapore and explored the issue of pre symptomatic transmission. The study concluded that, in combination with evidence from other studies, there was a "likelihood that viral shedding can occur in the absence of symptoms and before symptom onset", providing further weight to the evidence base [Exhibit: SH3/86 - INQ000325253]; [Exhibit: SH3/87 - INQ000348274].*
9-13 April 2020	*PHE identified testing capacity at Colindale Laboratory in London to allocate tests to a care homes study, referred to as the "Easter 6 Study". This was a PCR testing and whole genome sequencing study in 6 care homes. This study was the first to undertake this type of genomic sequencing study, which went significantly further than the research published by the CDC, studying both care settings with known outbreaks, those with no known cases and performing whole genomic sequencing. The purpose was to understand better the transmission of the virus in care homes and inform urgent public health interventions.* *As part of these studies PHE assessed SARS-CoV-2 positivity in residents and staff in six London care homes reporting suspected COVID-19 outbreaks during April 2020 and followed them daily for two weeks. [Exhibit: SH3/88 - INQ000089681]. The resulting data found that 44.9% of the residents and staff tested had COVID-19 but were asymptomatic. It was the largest international dataset and strongest evidence to date showing that it was likely that the virus was being transmitted asymptomatically and that staff played a key role as a vector of asymptomatic transmission.* *The available data was analysed and preliminary findings shared with the UK SCG and DHSC as soon as these were available, in the week commencing 13 April 2020. [Exhibit: SH3/89 - INQ000348275] email, [Exhibit: SH3/90 - INQ000348281 and SH3/90 A & B INQ000089658 and INQ000089659] email [Exhibit: SH3/91 - INQ000348284] and [SH3/91A INQ000325267], email [Exhibit: SH3/92 - INQ000120155], report [Exhibit: SH3/93 - INQ000348289], related timeline.* *Similar studies seeking to explore asymptomatic infection were also underway during this period, with further studies conducted in a military barracks (440 individuals) - see entry below for April 2020 for further information relating to this study, as well as screening of 5000 individuals across 11 hospitals [Exhibit:*

	SH3/93a - INQ000398927] [Exhibit: SH3/93b - INQ000398933] [Exhibit: SH3/93c - INQ000398935]. These findings are discussed in the entry for 12 May 2020 on this table [Exhibit: SH3/103 - INQ000348150] and captured in the attached exhibit [Exhibit: SH3/93d - INQ000398929].
13 April 2020	*The paper [Exhibit: SH3/94 - INQ000213186] SPI-M-O stated that "... other scientific information is critical for greater accuracy to be possible... Without large-scale population level serology surveys, it is impossible to improve current estimates of the proportion of the UK who have been infected, and those that are immune. This is urgently required as it is a key source of uncertainty for current modelling".*
14 April 2020	*The Environment and Modelling Group (EMG) which included individual experts from PHE, provided a paper to SAGE summarising evidence about the dispersal and environmental spread of pathogens relevant to COVID-19. The paper noted there was limited conclusive evidence as to where transmission takes place, but a study from China had suggested the majority takes place indoors [Exhibit: SH3/95 - INQ000189678]. The paper identified the potential for aerosol transmission but noted the evidence was not yet clear. The EMG was established to bring together a range of scientific experts to monitor best available evidence on transmission routes, in particular the growing evidence for the significant role of aerosol transmission. [Exhibit: SH3/96 - INQ000181693].*
April 2020	*PHE undertook a cross sectional investigation of a COVID-19 outbreak at a London Army Barracks early in the pandemic. The key finding was that high rates of asymptomatic SARS-CoV-2 infection were identified. They concluded that "Public Health control measures can mitigate spread but virus reintroduction from asymptomatic individuals remains a risk. Most seropositive individuals had neutralising antibodies and infectious virus was not recovered from anyone with neutralising antibodies." This outbreak setting emphasised the transmission potential in closed settings. [Exhibit: SH3/97 - INQ000348291].*
24 April 2020	*Interim results and analysis from the enhanced care home outbreak study, the Easter 6 study and the Barracks study (referenced above), were presented at NERVTAG and further analysis presented to SAGE on 12 May 2020 [Exhibit: SH3/98 - INQ000120161]; [Exhibit: SH3/99 - INQ000061543]. NERVTAG noted the evidence of the presence of virus was found in individuals without symptoms. NERVTAG concluded that there remained uncertainty around the level of transmissibility of asymptomatic cases and around cases that were truly asymptomatic as distinct from pre-symptomatic or mildly symptomatic. However,*

	scientific advisors recommended that steps should nonetheless be taken to protect vulnerable individuals in care settings from asymptomatic transmission. *This new evidence was an important milestone in our understanding of SARS-CoV and, in respect of the social care sector, this highlighted that staff and residents could be asymptomatic and potentially transmit infection. The evidence from emerging international and national studies was presented to Government and informed understanding on risk in care settings and updated policy recommendations in April 2020. These outbreak settings, taken together, emphasised the transmission potential in closed settings.*
30 April 2020	*PHE produced an options paper for NERVTAG on the management of asymptomatic residents and staff in care homes. Email [Exhibit: SH3/101 - INQ000348145 and SH3/101A, B & C - INQ000348146, INQ000348147 and INQ000089693]. The preliminary findings having been previously shared with UK-SCG and DHSC, as set out in the 9-13 April 2020 entry above. This followed a proposal from DHSC to rollout regular screening of all residents and staff in care homes, regardless of symptoms. It noted "early investigation has shown one third of staff and patients who test positive for SARS-CoV-2 are asymptomatic at the time of screening. Their infectiousness and role in transmission is unclear and such individuals are being followed to identify the percentage that are pre-symptomatic, pauci-symptomatic, or asymptomatic." It asked, "based on their knowledge of asymptomatic infection, pre-symptomatic and post-symptomatic detection of SARS-CoV2, does NERVTAG consider that there is a risk of transmission from asymptomatic individuals identified on PCR testing, through screening approaches as described in this paper?" This paper was discussed at the NERVTAG meeting on 1 May 2020, where it was agreed "PCR-positive asymptomatic individuals may be infectious; but the level of infectiousness compared to symptomatic individuals is uncertain" [Exhibit: SH3/102 - INQ000220211] and that PCR-positive staff should not provide care or have contact with susceptible vulnerable individuals.*
12 May 2020	*PHE produced a paper for NERVTAG comparing studies of asymptomatic healthcare worker (HCW) testing in order to ascertain rates of COVID-19 in healthcare workers and patients [Exhibit: SH3/103 - INQ000348150]; and related email [Exhibit: SH3/104 - INQ000348151]. The paper provided a comparison table of HCW surveillance studies for NERVTAG based on known studies being recruited into. Seven studies were available. This included PHE's study, published rapidly in June 2020 [Exhibit: SH3/205 - INQ000348228]. (The other studies at the time of the PHE paper being drafted (20 April 2020) had preliminary or*

	unpublished results on the proportion of asymptomatic (2% PHE (from 207 staff), 2% SAFER (from 147 staff), 3% Cambridge (from 1,032 staff), 16% Hospital for Neurodisability (from 12 staff), 21% Royal Devon & Exeter (from 120 staff), 1.5% Barts (from 396 staff)). Several studies (including the PHE study) included detailed exposure history on past symptoms (not just current symptoms) allowing for an estimation of those who may test positive from a recovered past illness. Those who tested positive and were asymptomatic but had previous compatible symptoms included 80% from the PHE study and 73% from the Barts study. In summary this suggested that asymptomatic test positivity of healthcare workers was possible, with most large studies coalescing from preliminary data around the 2% rate in April 2020, and that approximately three quarters of this could be explained by residual PCR positivity from past infection. *In February 2021, the COVID-19 Rapid Evidence Service (RES) received a commission via the Face Coverings Policy Group to review the evidence on long-distance (>2 metres) airborne transmission of SARS-CoV-2 in indoor community (non-healthcare) settings. Preliminary results of this review were presented to the UK IPC cell on the 10 November 2021, and the final rapid review (with searches updated in January 2022) was published in the BMJ [Exhibit: SH3/124 - INQ000348164].* *Of the 22 reports included in this rapid review, 2 reported on the outbreak at the Skagit Country choir practice (the initial report in MMWR by Hamner et al May 2020, [Exhibit: SH3/104a - INQ000347505], and a paper by Miller et al September 2020 [Exhibit: SH3/104b - INQ000408917]). PHE assessed this outbreak investigation as being of low methodological quality (using the Quality Criteria Checklist) and concluded that, as other transmission routes (including close contact and/or transmission outside this event) were only assessed through interviews, they could not be fully ruled out. However, PHE noted that the high secondary attack rate suggested that long distance airborne transmission might have occurred for at least some of the cases.* *To note that the 'low' quality rating of this study was due to risk of bias in exposure assessment and outcome assessment. However, this does not mean that this was not a sound documentation of a super-spreader event, particularly given the time when it was done, just that the assessment of the likelihood of long-distance airborne transmission was at risk of bias (which is in line with other assessments of the Skagit Country outbreak, such as the one by Axon et al). [Exhibit: SH3/104c - INQ000408918]. Studies that were considered at low risk of bias on these two*

	aspects had typically also used Closed Circuit Television evidence to rule out other transmission routes and had conducted genomic sequencing. The Respiratory Evidence Panel (REP) work included an assessment of whether COVID-19 was airborne. Paragraph 334 of this statement refers to this.
21 May 2020	*A paper on the results of a PHE surface survival study of SARS-CoV-2 on FFP3 mask was sent to SAGE. The paper investigated the viability over time of SARS-CoV-2 dried onto a range of materials, and compared viability of the virus to RNA copies recovered and whether virus viability was concentration dependent. The study stated "This study shows the impact of material type on the viability of SARS-CoV-2 on surfaces. It demonstrates that the decay rate of viable SARS-CoV-2 is independent of starting concentration. However, RNA shows high stability on surfaces over extended periods but this does not necessarily correlate with viable virus that may result in transmission.* *This has implications for interpretation of surface sampling results using RT-PCR to determine the possibility of viable virus from a surface, where RT-PCR is not an appropriate technique to determine viable virus. Unless sampled immediately after contamination, it is difficult to align RNA copy numbers to quantity of viable virus on a surface".* *These studies, funded by the MRC, continued through 2020 with the results of the survival studies being provided to SAGE EMG and relevant government departments, published as preprints, and published in the scientific literature [Exhibit: SH3/105 - INQ000348153].*
4 June 2020	*The EMG provided a paper to SAGE on transmission of COVID-19 and mitigating measures [Exhibit: SH3/106 - INQ000192101]. It found "transmission of SARS-CoV-2 is most strongly associated with close and prolonged contact in indoor environments. The highest risks of transmission are in crowded spaces over extended periods", and that this suggested "close-range direct person-to-person transmission (droplets) and indirect contact transmission (via surfaces and objects) are the most important routes of transmission." It noted "there is weak evidence that aerosol transmission may play a role under some conditions such as in poorly ventilated crowded environments." It also noted "selection of prevention and mitigation measures should consider all the potential transmission routes and need to be bespoke to a setting and the activities carried out".*
14 June 2020	*A study was initiated at the request of Cabinet Office by PHE to study the impact of facemasks on the dispersion of respiratory pathogens in an environmental chamber at PHE Porton Down laboratory using healthy volunteers and respiratory*

	bacteria as an indicator of dispersion. [Exhibit: SH3/107 - INQ000069823] With a very small sample size (10 healthy volunteers) the findings showed that "homemade facemasks" were as effective as surgical masks at reducing dissemination of respiratory particles (source control) and both significantly reduced the dissemination of aerosol particles and droplets. The study also highlighted the large differences between aerosol dissemination within a population. A report of the study was sent to Cabinet Office on the 19 of June and shared with SAGE EMG on the 24 June. The results of the study were also shared with Health and Safety Executive and Defence Science and Technology Laboratory modellers and used in SAGE- EMG outputs and later published in the scientific literature. [Exhibit: SH3/108 - INQ000192082].
3 July 2020	*The "Vivaldi 1: COVID-19" care homes study found that 5,455 out of 6,747 residents who took part in the Whole Care Home Testing Programme (of all 9,081 homes tested via pillar 2[21] between 11 May-7 June) and tested positive for COVID-19 were asymptomatic. [Exhibit: SH3/109 - INQ000106159].*
9 July 2020	*The WHO published a report acknowledging asymptomatic transmission, but its conclusion was still that the scale of asymptomatic transmission remained unknown [Exhibit: SH3/110 - INQ000070042].*
9 July 2020	*Based on a further review of the existing evidence, the WHO published a scientific brief which continued to recommend that direct or close contact with infected people via droplet remained the most likely principal route of transmission, and uncertainty remained about the fomite route [Exhibit: SH3/110 - INQ000070042]. It noted that airborne transmission could occur as a result of AGPs and that WHO, together with the scientific community, continued to actively discuss and evaluate whether SARS-CoV-2 may also spread through aerosols in the absence of aerosol generating procedures, particularly in indoor settings with poor ventilation. The brief found that there was no consistent evidence of this.*
23 July 2020	*NERVTAG and the EMG provided a paper to SAGE on the role of aerosol transmission in COVID-19 [Exhibit: SH3/112 - INQ000070870]. It noted "the possibility of aerosol transmission of SARS-CoV-2 [...] has recently been formally acknowledged by WHO and hence interest in airborne transmission has increase [...]. This paper reviews current knowledge on aerosol transmission mechanisms and mitigations to ensure that recommendations are still appropriate." It noted aerosol transmission "is most likely to happen at close range (within 2m) though*

[21] There were 5 testing pillars announced in the pandemic. Pillar 2 describes the mass-swab testing [COVID-19 PCR testing] for critical key workers in the NHS, social care, and other sectors.

	there is a small amount of evidence that this could happen in an indoor environment more than 2m from an infected person. There is currently no evidence for long range aerosol transmission."
13 August 2020	*PHE and the EMG provided a paper to SAGE on aerosol and droplet generation from singing, wind instruments and performance activities [Exhibit: SH3/113 - INQ000075020]. Following well-documented international outbreaks associated with choirs and performances, the paper considered the potential for droplet and aerosol transmission. It concluded, "aerosol generation is identified as likely posing an important risk" and made recommendations for further research and analysis.*
	PHE presented a paper on susceptibility and transmission risk in children to NERVTAG. [Exhibit: SH3/114- INQ000348155]. The paper was a systematic review and meta-analysis, which primarily focussed on susceptibility and transmission in children and young people up to the age of 19. The paper concluded that there was 'preliminary evidence that children and young people have lower susceptibility to SARS-CoV-2, with 43% lower odds of being an infected contact'. *At the meeting, NERVTAG discussed this paper alongside a general discussion on transmission in children [Exhibit: SH3/115 - INQ000239476] Members 'noted that children are less likely to be hospitalised, need intensive care admission or die from COVID-19 compared to adults and, particularly, older adults'. They also noted that 'seroprevalence rates in children mirrored the longitudinal picture seen in adults.' Members noted that preliminary data from surveillance of schools showed 'similar seropositivity rates amongst staff and students' and that the 'evidence suggests children are almost as likely to be infected as adults, but most will be asymptomatic or have mild disease'.* *Members also noted that 'the transmission risk to and from children is significant in household settings' and that 'evidence from schools and other educational settings indicates low risk of transmission in children of nursery or primary school age'.*
26 November 2020	*Paper prepared by the PHE Transmission Group, (which became part of the EMG), "Factors contributing to risk of SARS-CoV2 transmission in various settings", [Exhibit: SH3/116 - INQ000224425 was considered at SAGE.* *Whilst this paper did not look at health and social care settings it did look at transmission and viral dynamics, finding that there were three major factors that influenced the risk of transmission; the contact pattern, environmental factors such*

	as ventilation and socioeconomic inequalities.
28 November 2020	*PHE funded a study published in the Journal of Hospital Infection which took place between 3 March 2020 and 12 May 2020 and investigated how SARS- CoV-2 could be spread within the hospital setting, to better understand how to protect staff and to implement effective control measures to prevent the spread of the disease in hospital settings [Exhibit: SH3/77 - INQ000348266].* *The presence of SARS-CoV-2 in the air and on environmental surfaces around hospitalised patients, with and without respiratory symptoms, was investigated. Environmental sampling was undertaken and analysed within eight hospitals in England during the first wave of the COVID-19 disease outbreak.* *SARS-CoV-2 RNA was detected on 30 (8.9%) of 336 environmental surfaces (though only 5, 1.5% of surfaces had a Virus detectable at the CT<34 threshold). Concomitant bacterial counts were low, suggesting that the cleaning performed by nursing and domestic staff across all eight hospitals was effective. SARS-CoV-2 RNA was detected in four of 55 air samples taken <1 m from four different patients. In all cases the concentration of viral RNA was low and below the CT 34 threshold. Viral culture studies to detect the presence of viable (infectious) virus were undertaken and no infectious virus was isolated in any of the samples with CT less than 34.* *The study concluded that effective cleaning could reduce the risk of fomite (contact) transmission, but some surface types may facilitate the survival, persistence and/or dispersal of SARS-CoV-2. In addition, it found the presence of low or undetectable concentrations of viral RNA in the air supports current guidance that specific but distinct PPE was required for aerosol-generating and non-aerosol generating procedures.*
February 2021	*PHE carried out a series of studies on the comparative surfaces survival of Variants of Concern (VoCs) through 2021, which was funded through the National Core Study Transmission and the Environment. Results were passed on to SAGE EMG and rapidly published [Exhibit: SH3/117 - INQ000348158].*
11 February 2021	*EMG produced a paper which explored the current evidence base regarding the risks of COVID-19 infection and mortality by occupation. The key findings included: Age is the highest risk factor associated with death from COVID-19; and transmission risk is a complex combination of environmental and human factors that are associated with the likelihood of infection. There is a clear interplay*

	between occupational risk of SARS-CoV-2 transmission and socioeconomic inequities, which reflects the amplifying effects between the working environment, crowded housing, job insecurity and poverty. [Exhibit: SH3/119- INQ000192159].
March 2021	*A small study was carried out to assess the effectiveness of three types of transparent face covering in minimizing/preventing the dispersal of respiratory droplets and aerosol. Effectiveness was compared to that of a face shield and a disposable (IIR) surgical mask. The study involved 10 healthy volunteers and was carried out using respiratory bacteria as markers for respiratory secretions. In comparison to wearing no face covering, transparent face coverings (and surgical masks) were effective in reducing dispersal. Face shields were not effective. Research findings were shared with DHSC as per the attached email [Exhibit: SH3/120 - INQ000348160] [Exhibit: SH3/121 - INQ000348161].*
21 February 2022	*UKHSA contributed to research published in the Indoor Air Journal which investigated the ability to model the dispersion of pathogens in exhaled breath to help describe the transmission of the SARS-CoV-2 virus and other respiratory pathogens. [Exhibit SH3/122 - INQ000192082]. A Computational Fluid Dynamics model of droplet and aerosol emission during exhalations was developed and, for the first time, compared directly with experimental data for the dispersion of respiratory and oral bacteria from ten subjects coughing, speaking, and singing in a small unventilated room. The simulations and experiments both showed greater deposition of bacteria within 1 m of the subject, and the potential for a substantial number of bacteria to remain airborne, with no clear difference in airborne concentration of small bioaerosols (<10 μm diameter) between 1 and 2 m. The agreement between the model and the experimental data for bacterial deposition directly in front of the subjects was encouraging, given the uncertainties in model input parameters and the inherent variability within and between subjects. The research found "The ability to predict airborne microbial dispersion and deposition gives confidence in the ability to model the consequences of an exhalation and hence the airborne transmission of respiratory pathogens such as SARS-CoV-2".*
19 March 2022	*UKHSA contributed to a study published in the Viruses Journal which aimed to understand more about the impact of nebulisation on the viability of SARS- CoV-2. [Exhibit: SH3/123 - INQ000348163]. In this study, a range of nebulisers with differing methods of aerosol generation were evaluated to determine SARS-CoV-2 viability following aerosolization, to help inform animal aerosol challenge models and infection prevention and control policies.*

29 June 2022	*UKHSA contributed to research published in the British Medical Journal (BMJ) which sought to evaluate the potential for long distance airborne transmission of SARS-CoV-2 in indoor community settings and to investigate factors that might influence transmission looking at studies published between July 2020 to 19 January 2022. [Exhibit: SH3/124 - INQ000348164]. The research found evidence suggesting that long distance airborne transmission of SARS-CoV-2 might occur in indoor settings such as restaurants, workplaces, and venues for choirs, and identified factors such as insufficient air replacement that probably contributed to transmission. The results highlighted the need for mitigation measures in indoor settings, particularly the use of adequate ventilation.*

Annex B: Infectiousness of the disease

6 March 2020	*PHE presented a paper at the NERVTAG meeting "Evidence base for respiratory viral shedding in COVID-19 cases - time to remain in self-isolation" [Exhibit: SH3/125 - INQ000119471]; [Exhibit: SH3/126 - INQ000229192] and the committee reviewed the evidence available at that time. In summary:* *a. PHE reviewed the viral shedding time for the first 16 patients and found the mean shedding time to be 11.6 days (by PCR); A review of the available scientific literature showed that on average it takes up to day 14 or 15 from date of onset of symptoms to when the PCR test becomes negative;* *b. It was suggested that at around 12 to 15 days after the date of onset there is reduction in viral load, acquisition of immunity and therefore likely to be a reduction of infectiousness associated with the reduction in viral load and reduced shedding;* *c. The aim during the 'delay' phase was to limit transmission, accepting that there will be some people that do go outside of self-isolation whilst still shedding. Modelling showed that isolation for 7 days gave similar effect to isolating for 14 days in terms of disease transmission.* *The NERVTAG recommendation was that the length of time in self-isolation should be between 7 and 14 days after illness onset with the NERVTAG preference towards the longer end of the range. Special consideration for longer periods of isolation was needed for those in immunocompromised groups and those on steroids, as the data suggested that those groups had more viral shedding.*
27 April 2020	*An analysis of secondary attack rates (SAR) in children was presented to SPI-M-O [Exhibit: SH3/61 - INQ000061503]. This initial analysis of the FF100 household extract provided evidence to suggest that infected children aged 18 or younger were as capable of transmitting SARS-CoV-2 as were adults. This was informed from the strong association with becoming a household secondary case if there was a primary or co-primary case within the household younger than 19. In this situation, the odds of becoming a secondary case were 6.3 times greater (95% CI 1.1 to 36.0) than in those households where the minimum age of the primary or co-primary cases was in the range 19-64. In contrast, those at risk of becoming a secondary case that were aged 18 or younger had a reduced odds of having a clinical infection. Compared to those*

	aged 19-34, there was a reduction of 80% in their odds of becoming a secondary case. These findings suggested that children may be more effective transmitters of SARS-CoV-2 than adults, however, they were less likely to succumb to a clinical COVID-19 infection.
30 April 2020	*PHE wrote a paper titled "Virus detection and infectivity of SARS-CoV-2 Virus detection and infectivity of SARS-CoV-2" [Exhibit: SH3/127 - INQ000089693]. The paper pointed to data to suggest that cases demonstrate the ability to culture virus up to day 9 post illness onset and that the peak of viral shedding is around the time of symptom onset and that presymptomatic individuals are a source of infectious virus.*
30 April 2020	*PHE produced an options paper for NERVTAG on the management of asymptomatic residents and staff in care homes. More details are in the corresponding entry in the Transmission table above. The key findings were: "A high prevalence of SARS-CoV-2 positivity was found in care homes residents and staff, half of whom were asymptomatic and potential reservoirs for on- going transmission. A third of symptomatic SARS-CoV-2 residents died within 14 days. Symptom-based screening alone is not sufficient for outbreak control". The Exhibit paper [Exhibit: SH3/88 - INQ000089681] also exhibited for the entry 9-13 April 2020 in the Transmissions table provides information.*
18 May 2020	*PHE was asked to review information on the duration of infectiousness and prolonged detection of SARS-CoV-2 virus for people infected with COVID-19, exhibited here: Email [Exhibit: SH3/129 - INQ000348166], attached documents: [Exhibit: SH3/128 - INQ000120169], [Exhibit SH3/101B & SH3/101C] attachments [INQ000348147] and [INQ000089693]. It conducted a review of the available literature and produced a paper that looked at prolonged detection of the virus by molecular methods in May 2020, to inform guidance on how to manage such individuals. This was sent, via the Incident Director, for consideration by the Senior Clinician Group (SCG) on 18 May 2020. The review concluded that the duration of isolation of asymptomatic SARS-CoV-2 PCR positive cases should be as long as for symptomatic COVID-19 cases (at the time from 7 days from illness onset), and that confirmed symptomatic COVID-19 cases and asymptomatic SARS-CoV-2 PCR positive cases should be excluded from subsequent 'group testing' activities for at least 4 weeks (and a maximum of 6 weeks) from illness onset date. The recommendation was that the current PHE guidance (7 days isolation) was appropriate for the delay phase of the pandemic, as, when there*

	is widespread community transmission, it is acceptable that some people may remain infectious when they end isolation, as they constitute a small proportion of all infectious people.
May 2020	*In May 2020 the VIVALDI 1 study was commissioned by NHSTT and undertaken by Office for National Statistics (ONS) and University College London (UCL) to understand the risk factors which were contributing to outbreaks of infections in care homes across the whole of England. A report on VIVALDI 1 was published on 3 July 2020. The exhibit referenced in the entry for 3 July 2020 in the Transmissions table above provides information.* *The VIVALDI 2 study was launched in June 2020, in a more representative sample of over 100 care homes and built upon VIVALDI 1 to investigate rates of infection and immunity, risk factors for transmission, risk of reinfection and vaccine effectiveness in residential long-term care facilities. This study was commissioned by NHSTT and undertaken by UCL researchers and supported by the University of Birmingham. NHSTT also provided management and oversight of the studies. The initial results of VIVALDI 2 were shared by UCL with NHSTT and fed into the policy decisions made in relation to care homes, including the movement of agency staff and the regular repeat testing of all staff as well as all residents in residential care homes of all sizes. The VIVALDI 2 report was published on 6 May 2021 [Exhibit: SH3/130 - INQ000220174].* *UKHSA has continued to fund the VIVALDI study, which has advanced to study the reinfection rates, vaccine and booster efficacy against evolving variants, and continues to monitor effectiveness, acceptability and feasibility of regularly staff testing, to protect care home residents from severe outcomes in future [Exhibit: SH3/131 - INQ000223935].*
4 June 2020	*The following paper [Exhibit: SH3/133 - INQ000120523], produced by the Nosocomial Modelling Group, noted that based on preliminary data, "Since May 1st, as the number of cases in hospital has decreased, the percentage that are nosocomial and nosocomially-linked has increased markedly with the former estimated to be approximately 80% on 1st June". These findings formed part of a wider paper [Exhibit: SH3/131a - INQ000408919], which was presented to SPI-M-O on 3 June 2020, and were included in the following SPI-M-O consensus statement [Exhibit: SH3/132 - INQ000253876] [Exhibit: SH3/131b - INQ000408920], which was presented to the Healthcare Onset COVID-19 Infection Sub-Group of SAGE on 4 June 2020 [Exhibit: SH3/131c - INQ000408921], and shared with core national and regional NHS colleagues*

	and IPC leads, as well as with the Incident Director. These findings highlighted the importance of nosocomial acquisitions to infections in hospital, and the importance of hospital settings to the epidemic overall. Presentation of this evidence led to commissions to conduct model-based evaluations of nosocomial infection control, including patient and HCW testing in hospital settings, as well as IPC strategies.
11 June 2020	*PHE contributed to a SAGE paper submitted by NERVTAG (viral dynamics of infectiousness) [Exhibit: SH3/134 - INQ000120524] [Exhibit: SH3/135 - INQ000120527]. The paper found:* a. *Viable virus has been recovered from pre-symptomatic patients, supporting the hypothesis that patients are infectious in the pre-symptomatic phase;* b. *Viral RNA dynamics (measured by Reverse Transcription - Polymerase Chain Reaction (RT-PCR)) confirm a peak in viral load around the pre-symptomatic/symptomatic transition time point, followed by a gradual decline in viral load, with RT-PCR detection extending until day 43 in some individuals;* c. *Beyond 14 days most, but not all, infected people shed virus at amounts lower than can be cultured suggesting they are no longer infectious;* d. *Viral culture data indicating likely infectiousness is limited but suggests most people are not infectious 12 days after symptoms onset;* e. *Antibody responses are seen as early as day 10-14 in most individuals and might either coincide or even account for reduced infectivity;* f. *There remains a lack of epidemiological transmission data, and a lack of data about shedding of infectious virus, in patients beyond day 7 post symptoms and in asymptomatic individuals to confirm true risk of infectivity to other individuals.*
	SAGE discussed the paper and concluded "overall this evidence indicates that the current advice to isolate for seven days in case of mild infection, or seven days after symptoms have ended for more severe cases remains sound."
17 June 2020	*The full FF100 analysis on transmission dynamics was shared with IMT. This was subsequently published by MedRXiv on 22 August 2020 [Exhibit: SH3/136 - INQ000061505].* *The main findings were: an overall household SAR of 37% (95% CI 31-43%) with a mean serial interval of 4.67 days; an RO of 1.85 and a household reproduction number of 2.33; lower SARs rates in larger households and SARs*

	were highest when the primary case was a child. A mean incubation period of around 4.8 days was estimated, with a range of 2 to 11 days.
24 June 2020	*The SPI-M-O: Consensus Statement on COVID-19, considered at SAGE on 25 June 2020, [Exhibit: SH3/137 - INQ000253879] stated that "Modelled estimates of incidence are generally higher than those from the ONS swabbing surveys. The reason for this is not yet clear. It is likely to be partly explained by the fact that the ONS survey does not include care homes or hospitals, where infection rates are higher than the general population".*
17 July 2020	*Interim analysis, from the Household Contact study (HoCo) was presented to the PHE IMT Business meeting on 17 July 2020 and subsequently to NERVTAG on 31 July 2020. The HoCo study was based on the WHO outline protocol for a COVID-19 household transmission study. The initial protocol was submitted to the PHE IMT on 5 February 2020, verbal approval for funding of the study was given on 19 February 2020, and written approval was received from the DCMO Van Tam on 6 March 2020.The letter confirming this is exhibited here [Exhibit: SH3/138 - INQ000348171].* *The final publication is available here: [Exhibit: SH3/139 - INQ000223873]. Key findings were a SAR among contacts of symptomatic index cases of 33% (95% confidence intervals [CI] 25-40); lower from primary cases without respiratory symptoms, 6% (CI 0-14) vs 37% (CI 29-45), p = 0.030. The SAR from index cases <11 years was 25% (CI 12-38). SARs ranged from 16% (4-28) in contacts <11 years old to 36% (CI 28-45) in contacts aged 19-54 years (p = 0.119).*
24 August 2020	*A paper was published by the Royal Society which reported the work of the PHE/University of Cambridge modelling group. By re-purposing the transmission model, originally developed for influenza, the modellers were able to anticipate and understand the impact of lockdown and provide sequential updates of the dynamics of the pandemic by estimating the basic and effective reproduction numbers. Estimates on 10 May 2020 showed the reproduction number had fallen from 2.6 to 0.61 and that lockdown had reduced transmission by 75%. The paper is exhibited here [Exhibit: SH3/140 - INQ000348172].*
August 2020	*PHE scientists contributed to a paper published in Eurosurveillance [Exhibit: SH3/141 - INQ000348173] - "Duration of infectiousness and correlation with RT-PCR cycle threshold for infectiousness and correlation with RT-PCR values in cases of COVID-19, England, January to May 2020." The review concluded, from analysis of 324 samples, that SARS-CoV-2 viral load in the upper respiratory tract peaks around symptom onset, and infectious virus persists for*

	10 days in mild-to-moderate coronavirus disease. The probability of culturing the virus declined to 6% 10 days after onset and was similar in asymptomatic and symptomatic persons. Asymptomatic persons represented a source of transmissible virus. *As this evidence evolved, this review was updated with a proposal presented again to the SCG in September 2020 to consider increasing the re-testing exemption period for people who tested positive from 42 days (6 weeks) to 90 days (3 months). SCG endorsed this recommendation for translation into guidance pending four nations approval on timing of isolation for confirmed COVID-19 patients in healthcare settings.*
4 Sept 2020	*PHE contributed to a NERVTAG discussion on an update paper, requested by SAGE, on Immunity to SARS-CoV-2. [Exhibit: SH3/142 INQ000120434] - The key points were:* *A case study of reinfection in an individual from Hong Kong led to the conclusion that reinfection is possible, but the frequency and the implications for disease transmission are uncertain. One study from Iceland found no decline in antibody concentrations after 4 months. National seroprevalence studies in the UK were being carried out using the Euroimmun assay. Internal observational data was that the N antibody test, the Nucleocapsid protein of SARS-CoV-2, based on the Abbott assay showed a decline more easily than other N-based assays. Other studies, such as the one from Kings found waning of IgG; results can depend on how the antigens for the tests are made. The observation was that the longer the time is from diagnosis the lower the antibody level.*
12 January 2021	*PHE published a paper (Wiley online library) which recognised that knowledge gaps remained regarding SARS-CoV- 2 transmission on flights. A retrospective cohort study was conducted to estimate risk of acquiring symptomatic SARS- CoV- 2 on aircraft. They concluded that the risk of symptomatic COVID-19 due to transmission on short to medium haul flights was low and recommended that prioritising contact-tracing of close contacts and co-travellers where resources are limited, and that further research on risk on aircraft is encouraged to inform contact tracing and infection control efforts. [Exhibit: SH3/143 - INQ000348175].*
5 March 2021	*PHE updated NERVTAG on work undertaken on the re-infection of people with prior exposure in outbreaks of B.1.1.7 in London Care Homes which experienced outbreaks prior to the emergence of B.1.1.7.[Exhibit: SH3/144 -*

	INQ000120439] The original study was published in Eurosurveillance. [Exhibit: SH3/145- INQ000348177]. The conclusions were that: Field studies indicate similar levels of protection against B.1.1.7 infections compared to 2020 viruses. One confounder is the increased time from the original infection. Outbreaks in Care Homes are due to both old and new viruses. Boosting of antibody may represent a protective response against re-infection. Similar antibody titres to B.1.1.7 and older viruses, with a close correlation in antibody titres between the two viruses.
October 2021	*UKHSA contributed to research published in November 2021 in The Lancet Respiratory Medicine Journal which aimed to increase an understanding of the infectiousness of SARS-CoV-2 to inform guidance on infection control and to help shape future policies [Exhibit: SH3/146 - INQ000348178]. The study, carried out between September 2020 and March 2021, found that less than a quarter of COVID-19 cases shed infectious virus before symptom onset; under a 5-day self-isolation period from symptom onset, two-thirds of cases released into the community would still be infectious, but with reduced infectious viral shedding. The research supported a role for LFDs to safely accelerate de-isolation but not for early diagnosis, unless used daily.*
22 November 2021	*UKHSA contributed to research published in The Infection Control & Hospital Epidemiology Journal, Volume 23, Issue 11, to understand the transmission dynamics of SARS-CoV-2 in a hospital outbreak to inform infection control actions [Exhibit: SH3/147 - INQ000348179]. The findings indicated that respiratory exposure anywhere within a 4-bed bay was a risk, whereas non respiratory exposure required bed distance :S:2.5 m. Standard infection control measures required beds to be >2 m apart. The findings suggested that this may be insufficient to stop SARS-CoV-2 transmission*
14 January 2022	*UKHSA presented to NERVTAG on work between UKHSA and the Assessment of Transmission of COVID-19 in Contacts study team to try to improve the evidence based on the relationship between lateral flow device (LFD) positivity and prediction of infectiousness. [Exhibit: SH3/148 - INQ000348180].* *The following conclusions were presented; firstly, false negative LFDs occur prior to peak viral load. Secondly, LFDs become negative at the same time as culture; this supports guidance on testing to release from isolation and highlights the importance of having negative LFDs on 2 consecutive days before isolation ends. Thirdly, a positive LFD is better overall than PCR at predicting culture positivity.*

	These findings are consistent with modelling data on risk of infectiousness which was used to develop current guidance on isolation.