Gaps in UK Government Infection Prevention & Control (IPC) Guidance for Care Homes and What Was Known When on Asymptomatic and Pre-symptomatic Transmission of COVID-19

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Acronyms

CQC	Care Quality Commission
DHSC	Department of Health and Social Care
IPC	Infection, prevention and control
NERVTAG	New Emerging Respiratory Viruses Technical Advisory Group (Secretariat is PHE)
NHS	National Health Service
NHSE	National Health and Safety Executive
PHE	Public Health England
WASH	Water, sanitation and hygiene
WHO	World Health Organisation

Important Note on updates of Government IPC related documents:

When the key UK Government IPC related documents have been updated, they are uploaded to the same link as the previous versions. This means that when some of the links in this report is clicked on, the latest version will appear, rather than the version that the comments in this report may be referring to. Hence please check the dates on the front of the report to check.

We have copies of the previous versions of a number of the documents.

1. Summary

1.1 Overview of factors that have affected deaths in UK care homes

A range of decisions undertaken by the UK Government have, in our view, significantly contributed to the high numbers of deaths of residents and staff working in UK care homes. Some may have been made with good intention with the information available at the time, but others we consider as highly concerning and not easy to comprehend, knowing what information was available to the UK Government at the time and knowing that other governments managed to utilise that information in a way that informed their strategies and reduced the numbers of deaths.

The range of factors that have affected the number of people who died in care homes in our view, have included:

Areas that we have focussed on in this report as critical issues, which have not gained as much attention in the media or by the UK Government:

1. A focus only on symptomatic transmission for the initial months
2. Weak, scattered, contradictory and sometimes incorrect infection prevention and control (IPC) guidance
3. IPC guidance that does not recognise the wide variation in different kinds of care home and building set-ups and the challenges related to people living with dementia

Areas that have had more attention in the media and discussed more by the UK Government:

4. Not releasing the data on care home infections and death for some time
5. Pro-active admission of residents into care homes with no test or who are COVID+
6. Care home staff – working across homes, on zero-hours contracts without sick pay, some working in hospitals and care homes and with limited training
7. Government policy on persuading the public to not wear face masks in public places
8. Challenges with accessing PPE and knowing how to put it on and take it off
9. Slow action by the government in still permitting visitors and not locking down
10. Lack of access to regular and fast testing for staff and residents
11. High community transmission – risking transmission through staff and visitors

Fig 1 – provides a visual overview of the range of factors which in our view have led to the many deaths of residents and staff in care home settings. We have focused mainly on the subjects in the yellow boxes in this document. Fig. 2 – provides an overview of what we believe are the consequences of not taking the precautionary principle for IPC related to asymptomatic / pre-symptomatic / pauci-symptomatic transmission and not recognising a-typical symptoms, which are more common for older people.

Fig 1 - Overview of contributing factors to high levels of death of residents and staff in UK care homes

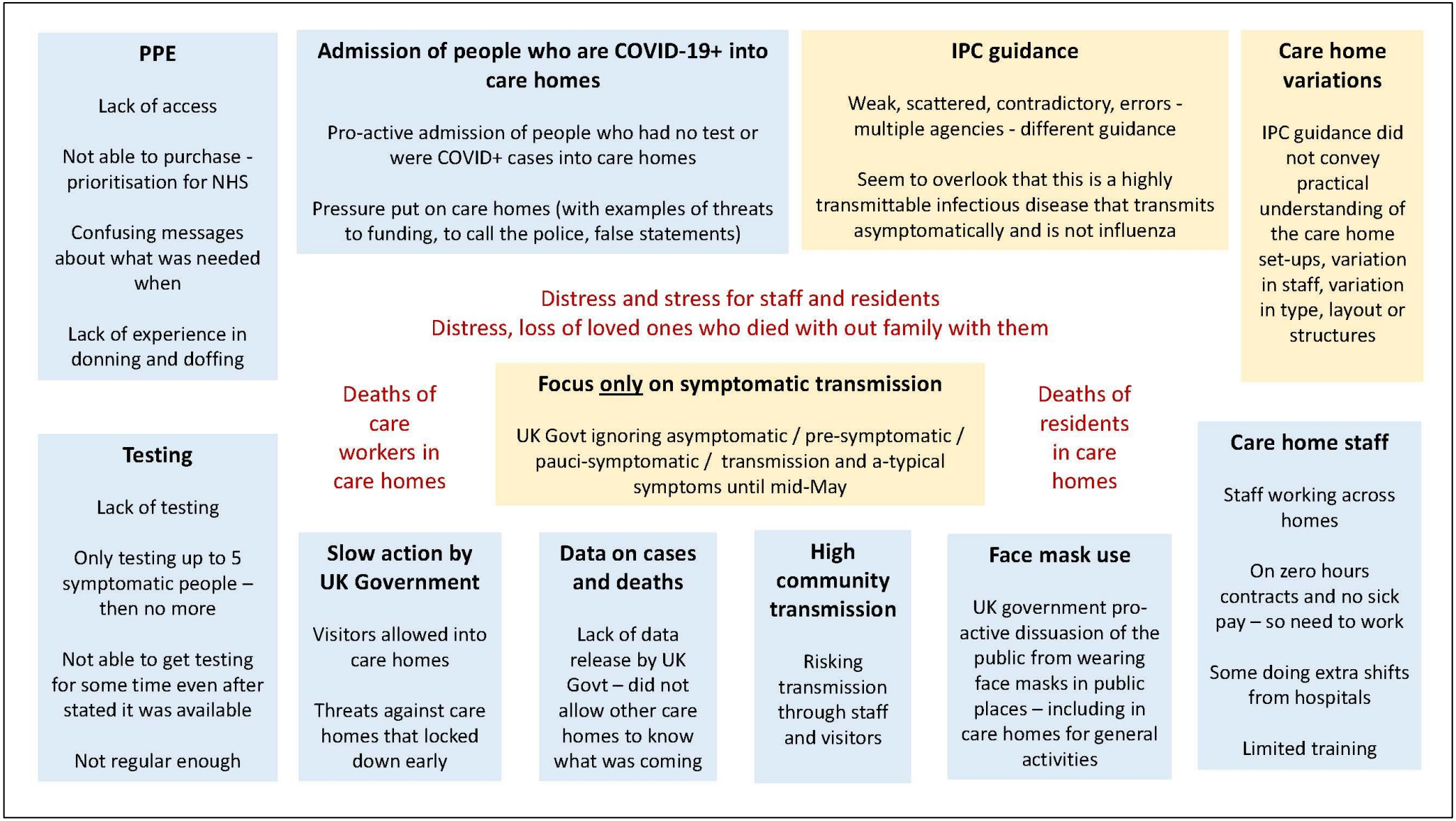
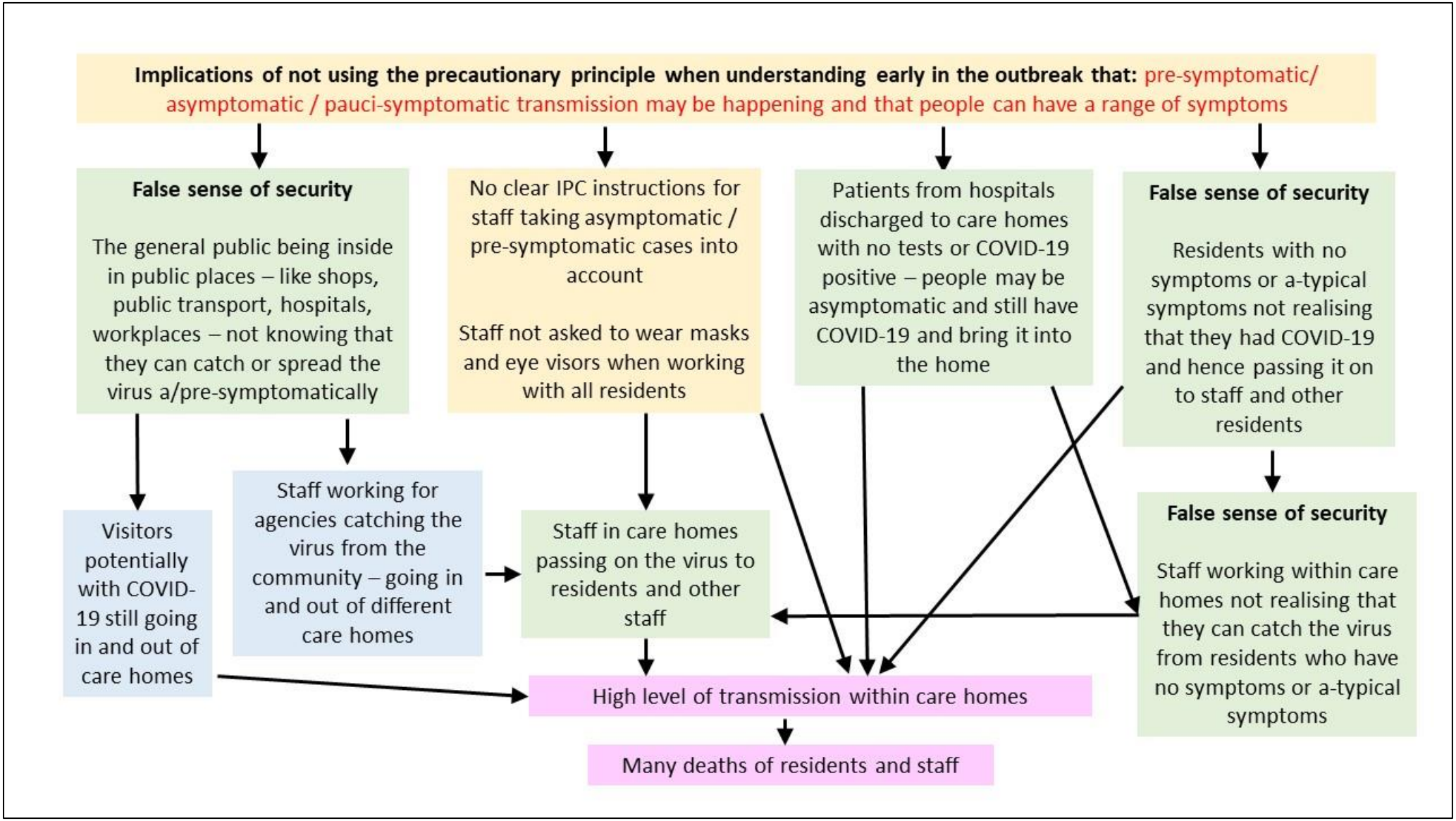


Fig 2 - Implications of not using the precautionary principle for a- and pre-symptomatic transmission



1.2 Conclusions and recommendations

1.2.1 Conclusions – strategic

Conclusion related to the UK Government, including the PHE, and SAGE and NERVTAG focus and strategies for care homes:

1. Care homes have clearly not been a priority for the UK Government or SAGE, who advised the government. Once data was released (in early April to NERVTAG and the 27 April to the public) and it was realised that it will not be able to bring the R rate down until it tackles the infections and deaths in care homes, along with the pressure from the care home networks themselves, the media and the public, more action seemed to happen.

2. SAGE did not prioritise care homes, with only one third of their meeting minutes even mentioning them and often only a single bullet point. The first time they mentioned care homes was in their #12 meeting on the 3 March and it was not until their #28 meeting on the 23 April when a dedicated action point was identified in relation to care homes (although one action point on setting up a nosocomial transmission task force for hospitals and care homes was included in meeting #21 on 31 March). They only had one meeting where care homes had their own sub-heading, which was in their #35 meeting on the 12 May. It wasn't until the #35 meeting on 12 May that more comprehensive discussions were held; and the #41 meeting on 11 June, when the PHE and the Senior Clinicians group were told to determine additional advice on testing to enable safe return of patients and staff to settings involving vulnerable people (e.g. care homes).

3. A 'Social Care Sub-Group' was noted in a few SAGE minutes, but they are not listed on the SAGE sub-groups webpage and no minutes could be identified from them on-line or in the SAGE meetings excel list of documents (released and not released).

4. The lack of data on infections and deaths in care homes, along with the lack of testing, were significant barriers for awareness raising for all concerned. NERVTAG minutes #13 indicated that they only started discussing data on care homes from 9 April when there were 844 new acute respiratory outbreaks in care homes of which 412 had tested positive for SARS-CoV-2 (whereas in comparison there were only 39 outbreaks in hospitals, with 34 positives). The Government eventually started releasing figures on the significant numbers of outbreaks and deaths in care homes in the Daily briefings on 28 April, by which time many care homes had been infected.

5. The timeline indicates that SAGE, the PHE and NERVTAG, were discussing cases of asymptomatic transmission from the second half of January, but chose to not act on this information. The subject of asymptomatic, pre-symptomatic and pauci-symptomatic transmission, were discussed on a relatively regular basis in both NERVTAG and SAGE meetings, with a number of statements noting that it existed. There seemed to be no sense of urgency in the NERVTAG minutes to determine if asymptomatic / pre-symptomatic / pauci-symptomatic transmission was happening and the group chose to ignore the smaller case study accounts that had been increasing in number. The PHE had even undertaken a specific study on the subject in 6 care homes over Easter weekend, for which the report we do not believe was released; but it was discussed in the NERVTAG minutes of the 24 April. It was not until the second part of May, that the UK Government started to openly discuss the issue of asymptomatic transmission and to start to slowly integrate it as a consideration into some of their strategies, such as for test and trace. So, it is simply not true to state that this issue had not been known about.

6. Considering the major impacts of not integrating asymptomatic transmission (of different kinds) into the overall and care home strategies earlier, it is difficult to understand the government's reluctance to do so. It has clearly impacted on the lives of many people and we consider it negligent to have not taken the precautionary principle, particularly when it was clear that it was happening, even if the scale was not known.

7. NERVTAG only started to talk about the risks from admitting COVID+ patients after 14 days in hospital back into care homes where there are many vulnerable people, on the 28 May (noting that about 5% of people are still infectious after 14 days). It suggested that 'consideration' should be given to 'screening patients' before discharge back to vulnerable settings, which is disturbing at this late point in the timeline considering the significant number of deaths that had already occurred up to this point.

8. Actions specific for care homes were late in the outbreak progression - such as Parliamentary Expert Consultation (19 May), a Social Care Action Plan (15 April), and a specific fund for IPC for care homes (13 May), and the setting up of A National COVID Social Care Task Force (3 June).

9. It was observed that in late May and June Government Ministers started to try and deflect the responsibility for decisions to discharge patients to care homes with no negative tests or as COVID+ patients on to clinicians. For example, the PM on 20 May in the House of Commons; and on 4 June the Transport Minister in the Daily Briefing.

10. NERVTAG #5 meeting on 3 Feb, recommended that due to PPE challenges if someone receiving care in their own home who is supported by a health worker, is COVID positive, that they should then be cared for in hospital. The NERVTAG #14 meeting on 17 April also made a recommendation for hospital patients to be put into step-down accommodation after leaving hospital before returning to residential care. It was noted that the proposal in a 'NHS/DHSC paper released recently' supports the same if self-isolation cannot be achieved in the home. It also noted that the Nightingale hospitals were being considered in some places. But it seems that these recommended options were generally not followed.

11. It is interesting to note that more than once NERVTAG member, expressed concern over how they should communicate with the public on why it wasn't recommended for them to wear face masks but it was recommended for health staff. This indicates that there was not full consensus on the logic for not supporting face masks for public use.

12. The specific lack of attention on care homes in the SAGE meetings, the reticence to consider asymptomatic transmission even though the evidence existed, and the reticence to consider other evidence-based actions (e.g. to require the public and everyone working in enclosed spaces to wear face masks, and to learn from countries who we should have been learning from, such as Hong Kong and Taiwan, who had previously lived with SARS) highlights a number of weaknesses in the Government's decision-making mechanisms. There seems to have been too much focus on advisors who were modellers and on the modelling of each action, and not enough engagement of practitioners and people who work on the ground in the care sector. There seems to have been too much waiting 'for the perfect science', rather than using the evidence that was there and combining this with learning from the ground and with common sense. We believe that the failure to do this, has cost many lives.

1.2.2 Conclusions – IPC guidance

Overall, and especially when deaths in care homes were at their peak, we have established that in relation to the IPC strategies and guidance for care homes:

1. The care home situation in the UK is complex. This makes implementing IPC including isolating patients safely, very challenging. The complexities include factors related to the variation in: types of home and residents; the physical set up of the homes; physical aspects posing challenges for implementing hygiene procedures; residents living with dementia; residents living with physical and sensory disabilities; challenges for visitors, end of life care and the mental and physical impacts of isolation; staff and training issues; and issues related to staff becoming infected.

2. There seems to have been some lack of clarity over who is responsible for IPC guidance in care homes and even in hospitals, with DSHE, PHE, NHS, the National Health and Safety Executive NHSE and others mentioned at different times by different actors.

3. The UK Government's main priority for preventing nosocomial transmission of infections and for IPC guidance seems to have been for hospitals, with the care home context seems to have been an after-thought.

4. The capacity for understanding what good practice in ensuring effective IPC for such an outbreak entails, seems to be quite weak across the PHE, NERVTAG, DSHC and institutes such as the "UK Centre for Evidence Based Medicine", and when it was discussed, it tended to be limited in focus, missing various aspects and late after many people had already died in care homes. This is very concerning.

5. There were however, a range of individual useful strategies proposed in various UK Government documents, including the main IPC document which covers hospital and other contexts, but they were scattered through several documents and hard to access and also had a range of gaps, inconsistencies and some factual errors. There was a 'soup' of guidance.

6. There has been a significant gap in useable and current IPC information that was available for the people working in care homes - that would allow them to know what the key risks of transmission were, and what to practically do to prevent the spread within care homes and to keep their staff and residents safe.

7. Having a symptom-based approach to IPC in the main guidance, meant that staff were not aware of asymptomatic or pre-symptomatic transmission risk, and as such they will probably have been the unwitting spreaders of infection in care homes to their own residents. It would have given them a false sense of security.

8. Even though the risk of a/pre-symptomatic transmission was known from early on by government agencies, we cannot understand why this did not make its way into the guidance for the whole UK response at an earlier stage, as well as in the IPC documents for care homes. We believe that this has been a significant factor in the high number of cases and many deaths of residents and staff in care homes. Recent assertions by politicians that correct IPC procedures were not known because little was known about asymptomatic transmission, is simply not true.

9. On our part, we had been pushing this information through whatever means we could (e.g. MPs, representatives from the House of Lords, British Geriatric Society, through infection control departments of local hospitals, Twitter, etc) – and we now know for certain that our guidance had made it to the top of PHE at some point (not sure exactly when). But they did not engage with us.

10. It has taken until 19 June 2020, for this issue to be mentioned in the main 'Admission and Care of Residents during COVID-19 Incident in a Care Home'; and the same document is also still talking about isolating as you would for influenza, when a higher level of IPC is required for this pandemic. A statement in the main IPC document for COVID-19 relating to asymptomatic spread, also remains factually incorrect in the 19 June 2020 version.

11. The documents ignored the fact that older people often do not get the common symptoms of a cough and fever, but often have other symptoms such as delirium and gastric symptoms, which means that suspected cases were missed.

12. Other issues like a lack of PPE and testing have definitely contributed to infections and deaths in care homes, as has the discharge of positive patients into care homes from hospitals, but all of this would have had less impact if there had been robust IPC strategies in place to identify a/pre-symptomatic transmission routes and how to create barriers to this transmission.

13. For other residential settings such as shelters for people who are homeless, no guidance was produced at all (by mid-May), even though a web page was set up on 25 March.

1.2.3 Recommendations

We recommend that the UK agencies with responsibilities for care homes (i.e. the UK Government / Department of Health and Social Care; NHS, Public Health England/Scotland/Wales, Public Health Agency, the Clinical Commissioning Groups, Care Quality Commission) do the following:

1. Provide strategic and practical guidance for care homes on infection prevention & control that:
    a. Is all in one-place and supported by all agencies together, so as to prevent more confusion. All previous guidance that is used across contexts and scattered online (and is still publicly available) should ideally be superseded, so as to not create continued confusion (or if this is not possible, then improved, but noted as secondary to the new main all-in-one-place guidance).
    b. Is practical with step-by-step actions for each task.
    c. Uses the precautionary principle and is much clearer about what measures are needed to respond to the risk of asymptomatic and pre-symptomatic transmission, which is needed if we are to properly manage environments to prevent transmission of this virus (especially in closed environments where there are groupings of people, especially people who may be vulnerable). Staff and visitor movements are aspects, but there are others including transmission resident-to-resident and resident-to-staff across the home.
    d. Rigorously covers all aspects of IPC and for all tasks in the care homes and which empowers care home managers to be able to establish the transmission risks across the home, such as through zoning, using a concept which is easy for the managers to help their staff visualise what they need to do and where. The managers also need to understand how to provide 'nudges' to remind staff to practice actions such as like hand hygiene, and to develop risk-mitigating plans can be made for all of the practical tasks within the home, such as laundry, meals, personal hygiene, and as the outbreak reduces, communal activities, visits etc.
2. All agencies providing guidance and supporting care homes in different ways to agree on one set of improved all-in-one-place guidance and for their actions and advice to then align with this same guidance to reduce the risks of continued confusion. This includes:
    a. DHSC
    b. PHE and the HPTs
    c. CQC
    d. CCGs
    e. Local authority teams
    f. The Health and Safety Executive
3. In addition to the current support from the NHS teams on IPC, to also set up a practical helpline that care homes can call to get specific technical advice in relation to their building set-ups and resident groups. This may entail repeated calls and discussions or on-site visits to help the specific care homes to be able to develop and refine their IPC plans for their specific context.

2. Background

2.1 Background & experience of authors

The two authors who have prepared this document have worked in a range of roles and at a range of levels, in consultancy, policy and strategic development, research, management, capacity building and implementation. They have particular interest and extensive experience in translating policy to practice and building capacities for effective humanitarian response, including for water, sanitation and hygiene (WASH) and including infection, prevention and control (IPC) in outbreak situations:

- Dr Sarah House - is an Independent Water Sanitation & Hygiene (WASH) Consultant / Public Health Engineer, with over 30 years of experience in more than 25 countries, most of which has been in development, humanitarian and transitional contexts in low or middle-income contexts. She has worked at programme, sub-national, national, regional and global levels and has provided a range of support to federal and national ministries in a number of countries for the development of national strategies and associated guidance and toolkits. Her outbreak IPC experience includes the development of guidance for cholera and outbreak prevention and response related to cholera, Ebola and Lassa Haemorrhagic Fever. In the past she has also worked as a care worker in a residential care home and also lived and worked in a residential community for people who are homeless in the UK.
- Eric Fewster - is an Independent Water & Environmental Manager with 24 years of experience as a water supply and sanitation specialist in the design, implementation and evaluation of water & sanitation projects. A significant proportion of this time has been spent undertaking emergency humanitarian work, which has involved responding to cholera and Ebola outbreaks. He is co-founder of BushProof, an award-winning for-profit water infrastructure business based in Madagascar, which has now become one of the leading companies in the country that is able to deliver quality water solutions, and under which he has run more than 40 international trainings in water & sanitation infrastructure, including for humanitarian personnel and at Masters in Public Health level.

3. Involvement in current pandemic around IPC in care homes

3.1 Background to involvement in IPC in care homes

3.1.1 Background to engagement in UK COVID response

Because of his experience in Ebola and Cholera response, as well as training, Eric was keen to contribute to the UK COVID-19 response. Since mid-March, he had been trying to volunteer through various routes to contribute towards the pandemic response, having realised that this pandemic was going to need all-hands-on-deck, yet they were slow to engage.

By early April, while looking into existing WHO and UK government guidance in preparation for being deployed somewhere, it became apparent that there was not much guidance that was specifically suited for infection prevention and control in the more complicated environment of a care home and certainly nothing that accounted for the risk of asymptomatic or pre-symptomatic infection.

It was also increasingly apparent that care homes in other countries (e.g. Spain, Belgium) were experiencing high mortality rates. He realised that this was of great concern, considering that the people who live in care homes tend to be some of the most vulnerable people in society and are most at risk of severe outcomes in this pandemic.

3.1.2 Development of an IPC strategy for care homes

So in the first 2 weeks of April, he came up with some draft guidance for care homes based on IPC principles that accounted for a/pre-symptomatic infection risk, while trying to be pragmatic around how that would be done in such a small space and considering existing constraints on staff, PPE and the variation in settings.

While Eric had experience in stringent IPC following his experience with Ebola and Cholera, he realised there were many other things that he needed help with, since this was a different setting and a different virus (e.g. medical care of older people, including people living with dementia, and learning from SARS-CoV-1 outbreak), and therefore he engaged other contributors, who then reviewed and commented on / added to the document. Together this group, which expanded as time progressed, provided comments and other contributions to the strategy. They have a mix of experience from medicine/health (doctors and nurses), long-term care/ working with older people, water/sanitation/hygiene, outbreak infection prevention & control (specifically from Ebola, SARS, Cholera, Lassa Haemorrhagic Fever, Tuberculosis and Diphtheria outbreaks) and emergency response. Sarah House was one of those contributors.

The first version of the care homes IPC strategy went online on 18 April, and there have been several iterations of the document since then. The holding page of the document is here: https://www.bushproof.com/care-homes-strategy-for-infection-prevention-control-of-covid-19-based-on-clear-delineation-of-risk-zones/.

3.1.3 Contact with care homes, care home networks and the British Geriatric Society

Eric started making contact with local MPs and Mayors, as well as contacting care homes directly, including when hearing about specific outbreaks in care homes.

He also made contact with a number of Care Home Networks to share the strategy and engage with them to get feedback and to identify what support they needed. The feedback he obtained was then used to improve the strategy.

He also made contact with the British Geriatric Society, who also engaged with him and these discussions also fed into the ongoing revisions to the strategy.

3.1.4 Mapping of the UK Government IPC guidance for care homes

Sarah also carried out a mapping exercise of the current IPC guidance related to care homes across various UK Government documents. See Section 4.1 for more details.

3.1.5 Advocacy and lobbying

We followed the UK Government Daily Briefings every day from the beginning, to identify what progress the government was making and where there were still gaps; and lobbied senior decision-makers, making contact through Twitter, email, phone and online meeting platforms from mid-April, to try and urgently get the UK IPC guidance for care homes improved.

We have written or spoken to a representative of the House of Lords (who replied), several MPs (most of whom did not reply), a number of local authority representatives who have responsibilities for IPC (who replied), one SAGE member who has also presented on the Daily Briefing (who replied), as well as other SAGE and Daily Briefing representatives (but with no reply), multiple media representatives (radio, newspaper and TV) and a range of other people, who it was hoped may be able to influence the Public Health England in particular, but also the Department of Health and Social Care, to improve the UK Government's IPC guidance for care homes.

3.1.6 Development of other resources

On the care homes document holding web page (https://www.bushproof.com/care-homes-strategy-for-infection-prevention-control-of-covid-19-based-on-clear-delineation-of-risk-zones/), there are also other links to materials we have been involved with, including:

- Two webinars outlining the issues with asymptomatic transmission and current guidance (on 23rd April and 25th May)
- A few radio and TV appearances where we talked about the same issues on 21st April and 6th May.
- Links to supporting documentation around the evidence base for asymptomatic transmission, as well as on the mechanisms of transmission via droplet and aerosols and efficacy of face coverings.

3.1.7 Sharing the strategy with low-and middle-income contexts

The group have also shared the strategy with: a number of senior WASH sector actors working in government ministries and development organisations in different countries in Africa; in a residential setting in Asia; and through a couple of electronic email groups that span multiple countries and agencies.

It is also currently being translated into Spanish and Portuguese for use in South America.

3.2 Use of the IPC strategy

Since the document went live, it has been fairly widely circulated and cited, and a number of care homes (that we know about) made their IPC plans accordingly. We continue to receive ad hoc information on where it is being mentioned or used, and a few people in senior positions, who we had not reached out to ourselves, have pro-actively contacted Eric to discuss the strategy. This indicates that it is being circulated and some people in senior positions in the UK responsible for IPC have shown interest in it.

Examples include:

- One example of this engagement with care homes can be heard through this Guardian Interview which includes Anita Astle, CBE, from Wren Hall Nursing Home, in Selston, Nottinghamshire, who faced significant challenges in containing the outbreak using the UK Government's IPC guidance and lost many of their residents to COVID-19 in April 2020 - she mentions Eric Fewster and the strategy from 7.52 mins:
    - The Guardian podcast – "The scandal of Covid-19 in care homes": https://www.theguardian.com/news/audio/2020/may/28/the-scandal-of-covid-19-in-care-homes?CMP=Share_iOSApp_Other
- We have received anecdotal reports that the zoning approach has been used in a number of hospitals and health facilities, including those in Greater Manchester and London. We have also heard indirectly that the zoning approach is now being promoted in the Leicestershire Partnership, NHS Trust (LPT). However, we have not visited these locations to confirm and for the Leicestershire LPT, we do not have direct evidence that this approach has been taken from the strategy we developed.
- Eric has also been contacted by a number of people in senior positions in the NHS and the CQC, in particular to discuss the zoning approach and our views on what is needed to improve the IPC guidance.
- The Geriatric Institute in Mexico also contacted Eric to ask if they could translate the strategy into Spanish, which is being undertaken at present. It has also recently been translated into Portuguese.

The strategy is also referred to in a few guidance and commentary papers:

		Reference
1	An academic commentary on COVID-19 in care homes (p.3)	Gordon, A.L. *et al* (2020) Commentary: COVID in care homes—challenges and dilemmas in healthcare delivery. *Age and Ageing* 2020; p.3. https://academic.oup.com/ageing/advance-article/doi/10.1093/ageing/afaa113/5836695
2	The WHO regional European guidance for long-term care facilities, under Policy Objective 3 (pp.10-11)	WHO (2020) *Strengthening the Health Systems Response to COVID-19. Technical guidance #6: Preventing and managing the COVID-19 pandemic across long-term care services in the WHO European Region (21 May 2020).* pp.10-11. WHO, Geneva, Switzerland. https://www.euro.who.int/en/health-topics/Health-systems/pages/strengthening-the-health-system-response-to-covid-19/technical-guidance-and-check-lists/strengthening-the-health-systems-response-to-covid-19-technical-guidance-6,-21-may-2020
3	The revised British Geriatric Society guidance (p.6)	BGS (2020) *Managing the COVID-19 pandemic in care homes: good practice guide.* Updated 2 June. https://www.bgs.org.uk/sites/default/files/content/attachment/2020-06-02/BGS%20Managing%20the%20COVID-19%20pandemic%20in%20care%20homes%20v3.pdf.
4	The International Long-Term Care Policy Network website	The resource website run by the International Long-Term Care Policy Network (established to share learning internationally related to COVID-19 and long-term care) highlighted the care homes IPC strategy; as well as two subsequent blog posts related to the gaps that we were trying influence the UK Government to respond to. Mid-April - https://ltccovid.org/2020/04/18/resource-care-homes-strategy-for-infection-prevention-control-of-covid-19-based-on-clear-delineation-of-risk-zones/ Early May - https://ltccovid.org/2020/05/15/mapping-of-uk-government-guidance-for-infection-prevention-and-control-ipc-for-covid-19-in-care-homes/ Mid-June - https://ltccovid.org/2020/06/12/asymptomatic-and-pre-symptomatic-transmission-in-uk-care-homes-and-infection-prevention-and-control-ipc-guidance-an-update/ The LTCCovid site sharing the strategy was also noted in the British Medical Journal: https://www.bmj.com/content/bmj/369/bmj.m1858.full.pdf

4. Concerns about government's approach to IPC in the past

4.1 Why care homes are challenging for implementing IPC

Care homes are very challenging to implement IPC for a number of reasons that relate to their wide variation in type, size, layout, age of buildings, staffing and some of the characteristics of the residents who live in the homes. Here we summarise some of the challenges, some of which we were aware of when we started working on the BushProof IPC strategy and others that became apparent though our direct engagement with care home managers and networks.

Because of the complexity of the care home environment, staffing and the residents who tend to live in care homes, it is essential that IPC guidance is:

- Simple, clear and easy to understand and communicate
- Adaptable to different contexts and to the different needs of the residents
- Helps the management visualise the whole home and consider the potential transmission routes for the disease and the possible barriers that can be put in place

Examples of the complexity of the care home set up include:

	Feature of why care homes are challenging for IPC
Variation in types of home and residents	• Homes are varied in type – *for example, they may include residential care homes, nursing homes, sheltered housing, group homes* • Some are managed as a chain of care homes by large companies, and others are owned and managed by individual owners. • Some may support older people and adults or children with disabilities and including people with mental health conditions • It is understood that around 85% of older people in care homes in the UK have dementia
Physical set up of homes	• Sizes of the care homes vary significantly – *from one terraced house buildings to complexes with multiple buildings and hundreds of residents* • Smaller homes are likely to find IPC more difficult – *they may struggle more to zone the home into separate areas to isolate people who are confirmed or suspected of having COVID* • Some buildings have been converted from older buildings, some are newer structures

	• Wide variety of layouts – *which means it will be critical for the care home manager to be able to adapt guidance and consider the transmission risks and possible barriers for their particular layout* • May have long and sometimes narrow corridors or networks of corridors – *restricting what can be placed in the corridors (for example small tables for hand gel) as it may pose a fire hazard* • It may be difficult to identify dedicated spaces where staff can safely donn and doff their PPE as well dispose of the used items and hand-wash • Some residents may share bedrooms – *making isolation difficult* • Older buildings in particular may not have mechanical ventilation – *which is an important aspect for dispersing aerosols within rooms*
Physical aspects posing challenges for implementing hygiene procedures	• Care homes are homes where people live, and are not the same as hospitals where most people tend to go for a short period of time – *this means that there are communal areas for companionship, activities, entertainment and meals* • Care home rooms are the person's home and tend to have all of their personal possessions around the room including pictures on walls, trinkets and other items – *which makes it difficult to move residents between rooms for purposes of isolation, unless you have an empty room they can stay in temporarily.* • Communal areas – *mean that people are together in groups with movement of staff and residents* • May have carpets and a range of soft furnishings which are difficult to clean and may need vacuuming - *which may cause risks with aerosols and means that you are not able to simply mop and disinfect floors* • Not all bedrooms may have a sink - *making it difficult for hand-washing whilst providing care* • Not all bedrooms have their own toilet and shower – *making it more difficult to isolate residents and contain infections away from communal toilet/ shower facilities and areas*

Residents living with dementia	• Residents who have dementia and are mobile – may 'walk with purpose', where they like to walk around the building or out of the home – *this can result in the following challenges:*
	  ○ *It is difficult to isolate them in their rooms (in the UK care homes do not lock people in their rooms)*
	  ○ *It can be difficult to stop them walking into the rooms of other residents*
	  ○ *They may approach and want to touch or hug the care-workers*

	○ *It may be difficult for them to wear masks* • Some people who have dementia can also get quite disturbed and upset or angry quite quickly – *they may need calming down with touch from the carer such as putting their arm around the person* • They may not understand the rules of behaviour during the outbreak to reduce the risk of transmission and the staff wearing masks and other protective equipment may be distressing for them
Residents living with physical and sensory difficulties	• Staff often have to provide intimate care for residents who are less mobile, including changing clothes and incontinence pads – *posing risks from closeness and handling of soiled items* • Staff may have to handle residents when lifting them from laying to seated position, turning them over, moving them from bed to commode or toilet and for other purposes – *posing risks from closeness and risk having PPE pulled off them* • Residents who have difficulty hearing or seeing may need the staff to come close to their faces / ears – *so as to be able to see or hear them properly* • Older people who cannot hear well may rely to some degree on lip reading – *which then is constrained when staff wear masks*
Visitors, end of life care and impacts of isolation	• As many people living in care homes may be in the final years of their lives, having company and visitors is likely to be particularly important – *so restricting visitors can be particularly distressing and have a negative impact on the mental health of both the residents and the family members* • It can be difficult to know how to allow visitors to have contact with their relatives or friends – *without the risks of transmission to the residents in the home* • Older residents need to keep moving to prevent muscle loss – *so isolating them in their rooms for long periods of time can have significant implications on their general health and can lead to physical deterioration*
Staff and training	• Smaller homes will have less staff – both care staff and cleaning and other support staff – *and hence will be difficult to cohort staff to only work in confirmed (red), suspected (amber), or other (green) areas* • There may be a high turnover of staff and use of agency staff to fill gaps - *including when staff have to themselves self-isolate* • Hence it will be very difficult to train staff who come in new each day in all of the IPC procedures for that particular home with that particular layout - *particularly where the IPC procedures are not clear*

	and hence care managers are having to adapt and develop their own, as has been the case with this outbreak • Most staff do not have a nursing background – *and hence many will not have had IPC training prior to working in a care home environment* • Some staff may not have a high level of education and some may only have basic reading skills, and others may not be strong in English as it may be their second or third language – *meaning that any IPC guidance instructions must be easy to understand and remember through verbal training* • There will be a need for repeat training for all staff – *to prevent standards slipping over time and also to respond to the turnover of staff*
Staff becoming infected	• Staff are often on low-paid contracts or salaries and more likely to use public transport – *putting them more at risk of contracting COVID-19 from other commuters* • Staff may be on zero hours contracts which means they do not get paid when they do not work - *which may lead them to hiding minor symptoms if they are not well* • Agency staff often work across homes *– so can pass the infections from one home to another, particularly if they are asymptomatic and do not know they are COVID+* • Nursing staff working for agencies may be doing additional shifts outside of their regular hospital-based work *– hence risking bringing in infections from the hospital environment*

4.2 Mapping of the UK Government IPC guidance for care homes

4.2.1 Mapping exercise

On 15 May, we put out information on mapping of current UK government guidance – this was posted on the website of the International Long-Term Care Policy Network:

Post with background information: https://ltccovid.org/2020/05/15/mapping-of-uk-government-guidance-for-infection-prevention-and-control-ipc-for-covid-19-in-care-homes/

Direct link to the mapping document: https://www.bushproof.com/wp-content/uploads/2020/05/Mapping-Govt-IPC-strategies-for-COVID-19-in-care-homes.pdf

We undertook this mapping exercise in order to more fully understand what government IPC guidance existed across all public documentation, compared to what we were proposing.

At the time, the reasons for wanting to do this were:

1. Because we were finding it difficult to keep flicking through various UK Government documents to find specific points - which was time-consuming and confusing;
2. To be able to clearly know what differences there were, in order to be able to state the rationale around what we were proposing where it was different; and
3. Also, to double check that we were not missing anything important, including good practice that the government may have issued.

This was because there was an imminent plan at the time to start up a technical helpline for care home managers (an idea which didn't work out in the end).

Before this mapping exercise, we already knew there were issues with current guidance, especially around it not taking account of asymptomatic or pre-symptomatic transmission (this was one of the main reasons to create the care homes guidance document in the first place, and these issues were highlighted during the webinar on 23rd April).

4.2.2 Why acknowledgement of a-/ pre-/ pauci-symptomatic transmission is important

We had first been alerted to the issue of asymptomatic transmission and capacities for isolation in this blog post, which related it to the strategies in the UK Government document on the Admission and Care in care homes (2 April), highlighting alternative good practices from other countries:

Comas-Herrera, A (8 April 2020) **"Briefing Note: Current UK guidance on admission and care of residents during COVID-19 is based on symptomatic cases, ignoring early international evidence and lessons from other countries".** LTC Responses to COVID-19, International Long-Term Care Policy Network. (https://ltccovid.org/2020/04/09/briefing-note-current-uk-guidance-on-admission-and-care-of-residents-during-covid-19-is-based-on-symptomatic-cases-ignoring-early-international-evidence-and-lessons-from-other-countries/).

For a visual and explanations of why asymptomatic and pre-symptomatic transmission is so important to the safety of residents and staff in care homes – see:

- **Section 19 of the BushProof care home IPC strategy** (pp 30-35) – which has visuals and explanations of the transmission routes and barriers to stop the transmission routes.
- **Fig 2** – showing the implications of not integrating asymptomatic and pre-symptomatic transmission in the IPC strategies for care homes and the whole response.

This article in the New York Times by Kirkpatrick, D. on 27 June 2020, also highlights the issue well, and also the implications of the scientists, governments and WHO ignoring the importance of this issue for months, (https://www.nytimes.com/2020/06/27/world/europe/coronavirus-spread-asymptomatic.html#click=https://t.co/EsRkNGOK0i)

"Dr. Rothe and her colleagues were among the first to warn the world. But even as evidence accumulated from other scientists, leading health officials expressed unwavering confidence that symptomless spreading was not important".

"Interviews with doctors and public health officials in more than a dozen countries show that for two crucial months — and in the face of mounting genetic evidence — Western health officials and political leaders played down or denied the risk of symptomless spreading. Leading health agencies including the World Health Organization and the European Center for Disease Prevention and Control provided contradictory and sometimes misleading advice. A crucial public health discussion devolved into a semantic debate over what to call infected people without clear symptoms".

"The two-month delay was a product of faulty scientific assumptions, academic rivalries and, perhaps most important, a reluctance to accept that containing the virus would take drastic measures. The resistance to emerging evidence was one part of the world's sluggish response to the virus".

"It is impossible to calculate the human toll of that delay, but models suggest that earlier, aggressive action might have saved tens of thousands of lives. Countries like Singapore and Australia, which used testing and contact-tracing and moved swiftly to quarantine seemingly healthy travellers, fared far better than those that did not".

4.2.3 What mapping of the UK government's IPC guidance for care homes told us

What the mapping exercise helped us realise, was the extent of discrepancy across documentation, and the sheer volume (a 'soup') of unclear and contradictory guidance that was not helping people make decisions on the ground (confirmed by anecdotal evidence from talking with care home managers, who also said that our shorter one-stop document was very useful).

When we undertook the main mapping exercise (uploaded 14 May 2020), the key IPC related documents, or documents where occasional IPC elements were mentioned, included the following. For overview comments on each refer to **Annex 1.**

	Core document	Date
A	Department of Health & Social Care / PHE / CQC / NHS - 'Admission and Care of Residents during Covid-19 Incident in a Care Home' guidance	2 April 2020
B	PHE Guidance for working safely in care homes	17 April updated 27 April
C	UK Gov – PHE, NHS, PHS, PHA, PHW, HPS - COVID-19: infection prevention and control (IPC) guidance	24 April updated 27 April
D	Table 2 - PHE guidance on PPE in community care settings Table 4 - Additional considerations, in addition to standard infection and prevention control precautions	8 April 2020 9 April 2020
E	Donning and doffing guidance	8 April
F	DH&SC - COVID-19: Our Action Plan for Adult Social Care	15 April 2020 (v1)
G	Gov.UK – Management of shortages in PPE	3 May 2020
H	HM Government – Our plan to rebuild: The UK Government's COVID-19 recovery strategy	May 2020 CP 239 (11 May)

What we found during this mapping exercise was:

1. While there was a range of individual useful strategic actions being proposed to contribute to IPC in care homes and other residential settings, these were scattered through several documents and hence hard to access.

2. There was a lack of a one-stop document with clear practical guidance for care homes and other residential settings to be able to implement on the ground (and the reason for our own guidance).

3. There were also various gaps as well as inconsistencies and, in a few cases, inaccuracies in facts.

Examples:

Issue	Examples
The lack of recognition of the critical role that asymptomatic and pre-symptomatic transmission had in the	The main IPC document of the Public Health England, NHS, Public Health Scotland, Public Health Agency, Public Health Wales, Health Protection Scotland (**COVID-19: infection prevention and control (IPC) guidance**, 24 April, updated 27 April, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/886668/COVID-19_Infection_prevention_and_control_guidance_complete.pdf) This had statements that were factually incorrect and should have been known by this point, since several studies had come out of other

spread of COVID-19 in care homes and the resultant deaths.	countries (e.g. USA, Singapore, Germany) from care homes and residential contexts, that had identified the issue of pre- and asymptomatic transmission – see **Section 4.4** and **Annex 2** - for a timeline of when the evidence was available. Basing their guidance and procedures on this factually incorrect principle, risked giving people a false sense of security and risked lives. In the Section 3.1 on 'Routes of Transmission', p.11 - notes: *"Infection control advice is based on the reasonable assumption that the transmission characteristics of COVID-19 are similar to those of the 2003 SARS-CoV outbreak";* *"The incubation period is from 1 to 14 days (median 5 days). Assessment of the clinical and epidemiological characteristics of COVID-19 cases suggests that, similar to SARS, most patients will not be infectious until the onset of symptoms. In most cases, individuals are usually considered infectious while they have symptoms; how infectious individuals are, depends on the severity of their symptoms and stage of their illness".* But it is not true that COVID-19 has the same transmission characteristics as the 2003 SARS virus, as more transmission is happening with COVID-19 prior to having symptoms, or without symptoms, or with mild symptoms, which was not as prominent with SARS-CoV-1.
The lack of recognition of the critical role that asymptomatic and pre-symptomatic transmission had in the spread of COVID-19 in care homes and the resultant deaths.	The document from the Department of Health & Social Care / PHE / CQC / NHS on (**Admission and Care of Residents during Covid-19 Incident in a Care Home guidance**, 2nd April, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878099/Admission_and_Care_of_Residents_during_COVID-19_Incident_in_a_Care_Home.pdf) Annex D - This said that if someone was discharged from hospital with no symptoms of COVID-19, then care home staff should provide *"care as normal"*, yet for those who tested positive but were no longer showing symptoms and had not yet completed their 14-day isolation, then they should remain in room for the rest of the 14 days and staff should wear PPE. This implied that 'care as normal' was therefore done without PPE. Annex B - also stated few symptoms as indicting infection, and defined an infectious case as: *"anyone with the above symptoms is an infectious case for a period of 7 days from the onset of symptoms."* This was referring to the symptoms of fever and cough.

4. There seemed to be no overall coherence to the IPC guidance for care homes and residential settings, and they did not provide an overarching concept to help care home management in thinking about the routes for transmission and how to block them, or how to ensure nudges for effective handwashing and changes of PPE. The IPC guidance seemed to focus on standard hospital and health care-based IPC procedures, rather than IPC that was tailored for a SARS-type virus (e.g. around risk zoning and gloves-on hand hygiene which had been demonstrated to be very effective for SARS-CoV-1 in 2003, and therefore with this SARS-CoV-2 which was more transmissible, these principles should have been even more applicable).

5. An effort was made by the PHE to prepare a document for care homes (called COVID-19: How to work safely in care homes, 17 April updated on the 27 April) – this was helpful, simple and practical, but focussed mainly on PPE and skimped over any other aspect of IPC. In fact, the main heading on the inside page was only related to PPE.

6. There continued to be a focus on defining a suspected case, as being when someone has the standard symptoms of a new cough and high temperature, despite WHO guidance that a range of symptoms were possible and also evidence coming from care homes that showed that neither of these being the most common symptoms for older people.

7. For other similar settings, there was no guidance at all. For example, the government webpage for guidance for homeless shelters had still not had any guidance uploaded (by 15th May) since the page was set up on the 25 March 2020 (https://www.gov.uk/government/publications/covid-19-guidance-on-services-for-people-experiencing-rough-sleeping/covid-19-guidance-for-hostel-or-day-centre-providers-of-services-for-people-experiencing-rough-sleeping).

4.2.4 What UK Govt, SAGE and NERVTAG minutes told us about capacities for IPC

There seem to be gaps in capacity for understanding what effective IPC should entail across the PHE, NERVTAG, DSHE and institutes such as the "UK Centre for Evidence Based Medicine". This is concerning and in our view has clearly contributed to the many deaths of residents and care workers in care homes, through the resulting scattered, uncoherent and weak IPC guidance for care homes.

For example:

1. Before mid-June when a fund was announced to support IPC in care homes, the subject everyone seemed to focus on in the media and in the Daily Briefings, was PPE and testing, as though this was all that was needed to prevent infections.

2. It is still not fully convincing that people understand that IPC is more than just PPE, including staff at Public Health England and representatives in NERVTAG - considering the focus of the PHE document 'Working safely in care homes' is mainly about PPE; and a comment made in response to PHE testing of outbreaks in care homes in London over Easter weekend in the NERVTAG minutes #15, was *"Even with the use of full PPE, there was still a high rate of infection once a case has been reported"*.

3. In addition, in various documents, when IPC 'good practice' was noted, it was often late in the day and weak or incomplete. For example, in the letter from the Minister for Health and Social Care to various actors responsible for care homes on 14 May, she shared *'evidence on good practices to be effective to reduce infections in care homes',* by the "UK Centre for Evidence Based Medicine". But these were weak with just a few bullet points.
4. Likewise, in the NERVTAG #16 minutes on 1 May, NERVTAG discussed what approaches should be employed in closed settings, such as care homes, with vulnerable residents. All they came up with was that nursing homes needed more stringent measures, the possibility of cohorting staff and residents, that COVID positive asymptomatic staff *"should not provide care or have contact with susceptible vulnerable individuals",* and intense surveillance of staff and residents. Considering that this discussion was in May, after so many people had already died in care homes, this group are considered by the UK Government to be the nation's specialists in viruses, and the list of recommended actions is so short, is concerning.

4.2.5 Care home managers / representatives noting problems with IPC guidance

The following table identifies a few examples where care home managers or their representatives have highlighted problems with: the IPC guidance, not knowing about asymptomatic / pre-symptomatic spread, the challenges it brought for them, and what they needed going forward.

Examples include:

Who	What was said
Parliamentary consultation by Health and Social Care Committee on care homes	Parliamentary consultation by Health and Social Care Committee on care homes on 19 May: https://parliamentlive.tv/Event/Index/5fbbebb5-b2e1-4339-aaeb-f4a53aec56de - particularly the session which included: • Expert witnesses for this particular section of the consultation included: Vic Rayner, The Exec Director, National Care Forum; Professor Martin Green, Chief Exec of Care England; and James Bullion – President of the Association of Directors of Social Services • At 11:06 hr - are responses by the above group to a question by a Parliamentarian – about challenges with the use of agency staff, on the need for training and the muddled and multiple guidance that still needs to be sorted out and consider the specifics of COVID-19 transmission.

Rajan and McKee (2020) 'Learning from the Impacts of COVID-19 on Care Homes: A Pilot Survey', International Long-Term Care Policy Network	Survey conducted between 15 May to 1 June - Responses were received from 35 care home directors and 42 care home managers, of whom 34% had reported an outbreak of COVID-19; a similar proportion to the national average at the time. (https://ltccovid.org/wp-content/uploads/2020/06/Learning-from-the-Impact-of-COVID-on-care-homes-in-England_a-pilot-study_Srajan_.pdf) Infection control: • *"Care home managers and directors reported that they rarely were unable to provide the PPE they required but faced immense challenges dealing with a chaotic supply chain and dramatically inflated costs. 30% also reported that it was not always possible to isolate residents, while 45% were at times unable to isolate residents who walked with purpose. Many described frustrations with frequently changing guidance, with that from different sources often conflicting and impossible to implement. Tests for residents and staff were often inaccessible, processes poorly coordinated, and results delayed. At the time of the survey only 40% of care homes had been able to access testing for asymptomatic residents".* • ***"The ask:** Care homes called for a well-resourced supply chain of PPE; joined up, timely, and coherent guidance that is feasible to implement in long-term care settings, access to regular and efficient testing for all staff and residents and accurate clinical information on hospital discharges".* • *"Another finding that is, arguably, unsurprising is the struggle that managers faced with changing and often unclear guidance and in persuading their staff that advice from the government was credible. This points to a wider concern that has been voiced about the COVID-19 response in the UK, where trust in government advice is now the lowest in Europe. Rebuilding trust will be difficult but will be absolutely essential if policies are to be adhered to".* • *"Public Health England guidance published on April 2nd, emphasised that the care sector played a vital role in accepting patients from hospitals as part of the national effort and that negative tests were unnecessary for transfers from hospitals. Care homes were reassured that all symptomatic residents could be safely cared for in a care home if they were suitably isolated. Rather unsurprisingly, care homes told us it was not always possible to isolate these residents, particularly those who walked with purpose. We now know that 40% of nosocomial outbreaks in hospital were occurring in psychiatric and dementia wards. Given the threat at the time that hospitals might be overwhelmed, these wards were most likely to discharge to long term care settings, where they could potentially seed transmission. These findings suggest an urgent need for care homes to access alternative settings where residents can be quarantined if necessary".*

BBC Coronavirus Update – 24 May 2020	https://www.bbc.co.uk/iplayer/episode/m000jwct/bbc-news-special-coronavirus-daily-update-24052020 There was a specific focus on care homes at 16.17 hr - before the Daily Briefing (which was 26.42 mins on the slider time): • They provided a timeline with what happened. • Vic Rainer, who heads a network of not-for-profit care organisations, said there were some blanket letters from GPs to some care homes saying that if their residents had a heart problem they would not be resuscitated, an ambulance would not come etc. Some care homes decided to not give the letter to their residents. • There was also a letter sent from the Council Association of Directors of Social Services (ADASS) to the Government on 11 April to Government saying that the: PPE distribution had been 'shambolic'; that the guidance was contradictory; and that social care was an 'afterthought'. • A care manager was asked to see the statements by Matt Hancock on how they had done so well – and she said she was very angry hearing this – as they felt very much on their own – they were trying to learn using google – and managed the situation themselves - and they still feel they are on their own.
Guardian podcast: "The scandal of Covid-19 in care homes" – May 28th	https://www.theguardian.com/news/audio/2020/may/28/the-scandal-of-covid-19-in-care-homes?CMP=Share_iOSApp_Other • 7.52 mins - Care Home Manger, Anita Astle, explains the concerns she had over the IPC guidance from the UK Government and what happened to the residents in her home and how she instead started using the BushProof strategy.
BBC podcast: "Coronavirus: The care home catastrophe" – File on 4 – May 19th	https://www.bbc.co.uk/sounds/play/m000j81c • 18.25 mins – Representative of the care sector says more should have been done nationally to capture the learning and make it available to the care sector, so it could be put in practice. • Following this there was an example on Mon 6 April – where a care worker was with a resident they had already been caring for, for several days, when the manager said *"you had probably better wear PPE with that patient".* It reports that they had PPE in the office, but she was not told to wear it for several days – the care worker subsequently died. • This also indicates a lack of clarity on requirements and training related to IPC.

BBC Newsnight with reporter Katie Razzell, June 3rd: "Explained: How coronavirus spread through Britain's care homes"	https://www.youtube.com/watch?v=bS-6_phuWFQ: • "Careworkers unknowingly spread COVID" – a discussion on what happened within MHA, the biggest charity supported care home network in the UK. • 10.20 mins - Sam Monaghan the MHA CEO said – I think it's very difficult not to have seen how for this to come into our homes is from the staff bringing it into our homes, who did not have symptoms or before the symptoms started… I look back and struggle to understand why we didn't adopt a strategy being used in other places in the world of testing, tracking and tracing – and we seemed to fly in the face of that without any real rationale or reason – *"I can only convey to you the immense frustration at local level and at a national level trying to agitate to get what you knew was going to enable you to better manage infection control in our homes"* • 23'50" mins - they state MHA results from recent testing: 675 residents test positive (=13% of total), of which 44.6% were asymptomatic - 426 staff members tested positive (=7% of total), 42.3% were asymptomatic • A care worker said: *"I think we've massively been let down by the government, they have not put things into place for people care homes"*

4.2.6 Previous NHS guidance for influenza

It was also interesting when looking at the different guidance that some of the NHS and PHE guidance for the management of influenza in care homes, was in fact better quality and more practical than the current guidance provided for the COVID-19 outbreak.

Had this guidance been utilised and adapted to consider the additional features of transmission for the SARS-CoV-2 virus, it would probably have resulted in more practical and usable guidance.

Examples:

Document	Comment
NHS Heart of England NHS Foundation Trust – "Isolation Policy" – March 2010	https://hgs.uhb.nhs.uk/wp-content/uploads/Isolation-Policy.pdf This document is a good example of a simple, clear and practical all-in-one place guidance document, which includes tabulated cards indicating required actions and rationale for the actions.

PHE – "Infection Prevention and Control; An Outbreak Information Pack for Care Homes – The "Care Home Pack" - Sept 2017	https://www.england.nhs.uk/south/wp-content/uploads/sites/6/2019/10/phe-sw-care-home-pack-oct19.pdf This document has some simple, clearly laid out 'Action cards' – the one called **"Action Card: Respiratory Illness; Integrated care pathway (Checklist) for Acute Respiratory Infections in care homes (including flu-like illnesses)"** – is on pages 29 – 46 It includes a tabulated checklist of initial actions and supporting information on transmission dynamics. It even provides some guidance on isolating residents into separate areas of the home (which is effectively part of zoning) and cohorting staff.

4.3 Evidence of gaps in IPC guidance for hospitals

It has been interesting that we have received occasional reports that a number of hospitals have liked and have been using the BushProof strategy and in particular the zoning approach.

Through analysing the UK Government SAGE and NERVTAG related meeting minutes and reports (which were released sometime after they were produced), we came across a few interesting documents, which highlighted the nosocomial transmission in hospitals. This also indicated gaps with respect to the existence of, or adherence to, appropriate IPC procedures.

One report by NHS England and NHS Improvement, on: **"Nosocomial Transmission of Coronavirus: Research and management"** – on 31 March - noted to be by Professor Stephen Powis, indicated the following:

- They had anecdotal evidence of possible hospital infections from the increasing staff absence rates.
- It is noted that *"We understand that those hospitals attempting to separate areas between COVID-19 and non-COVID patients are, in general, not maintaining the separation as the virus is transmitted between areas".*
- In the section about further interventions to explore, it talks about universal mask use for all patients, but notes that the *"Mask availability, storage and distribution, limit this option".*
- Other possible further interventions noted include those related to: increased PPE use; testing asymptomatic ED patients; increase testing capacity to be able to test all patients; sending all COVID-positive staff home to self-isolate, including those that are asymptomatic; and further enhanced decontamination. But there is no mention of improving the IPC procedures or more work on making sure that zoning, cohorting of staff and cleaning regimes are standardised.

A presentation that was made by NHS England and NHS Improvement on the **"Hospital Onset Covid-19: IPC evidence from recent survey and next steps"** from the 16 April, reporting on date from the 9 April 2020: (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/892034/S0140_Hospital_Onset_Covid-19_-_IPC_evidence_from_recent_survey_and_next_steps.pdf).

Findings of the Hospital Trust study – 9 April:

	Presentation contents / findings
Scale of survey	• It was sent to 82 Acute Trusts; 1 Acute mental health and community Trust; 46 Mental health and / or community Trusts; 6 Private hospitals; and 14 Specialist organisations. • 149 responses were received, with COVID-positive results indicated in 46 Trusts.
Findings	• The survey documented that there was variation between Trusts in implementation of the latest IPC guidelines. • Only 38 Trusts at that stage were segregating suspected cases at the front door. • Most acute trusts had dedicated clinical teams working with either COVID or non-COVID patients but not all, and not many mental Health Trusts, increasing the risk of cross-infection. • Few Trusts had dedicated wider workforce teams, such as cleaning staff. • There was no single guideline outlining the ideal approach to cleaning.
Key areas for action	*"Evaluation of the data indicates the following key areas for action:* 1. *Update national IPC policy in line with new evidence:* a. *Support Trusts furthest behind in implementing effective IPC practice* b. *Focus on effective segregation of patients through red/green COVID and non-COVID management (from front door: isolation and dedicated workforce)* c. *Support Trusts to understand the potential transmission routes between staff and patients* d. *Ensure the use of surgical masks for patients with Covid-19 at all times (unless other procedures make this impractical)* 2. *Investigate potential for designated COVID and non-COVID hospitals, where operationally possible, as rates plateau and stabilise to enable a return to elective treatment".*

Responsible bodies	The report mentioned that the National Health and Safety Executive and Improvement (NHSE&I) colleagues would update existing IPC policies and disseminate to regions and Trusts. But the main IPC document for the COVID response was not authored by the NHSE. So, this was slightly confusing.

It was suggesting the need for separation of suspected cases, some zoning to red/green, the use of masks for patients at all time, and supporting trusts to understand the transmission routes.

It should be noted that the main UK Government Covid-19 IPC document was first published on the 24 April 2020, two weeks after this survey was undertaken.

4.4 Progress or otherwise in considering a/pre-symptomatic spread

4.4.1 Revisiting UK Government IPC guidance on a/pre-symptomatic spread

On 25th May - we posted an update to the mapping exercise, that specifically went into more detail around the main inconsistency around the lack of recognition of the critical role that asymptomatic and pre-symptomatic transmission had in the spread of COVID-19 in care homes and the resultant deaths (https://ltccovid.org/2020/06/12/asymptomatic-and-pre-symptomatic-transmission-in-uk-care-homes-and-infection-prevention-and-control-ipc-guidance-an-update/).

In summary:

- We highlighted that a range of studies had been available from January 2020 onwards, from a cruise ship, from individual households and from care homes and residential contexts, that had identified the issue of pre- and asymptomatic presence and viability of the virus and its transmission, in other countries, including in care home settings. A document we put together as an evidence base for these studies can be found here: https://www.bushproof.com/wp-content/uploads/2020/06/Evidence-of-a-or-pre-symptomatic-spread-090620.pdf. For example, studies in the USA indicated in a skilled nursing facility that 57% of all positive cases in residential settings were asymptomatic or pre-symptomatic, and in one homeless facility 87% of positive cases were asymptomatic. A range of other cases studies from China and Singapore, have identified specific cases where the transmission has been from an asymptomatic or pre-symptomatic person; and analysis of larger data sets has estimated that between 6.4 – 12% of positive cases had come from asymptomatic or pre-symptomatic transmission. The ONS data in the UK is even stated in the media on 5 June 2020 as indicating that 70% of the COVID positive cases in the community in the UK have been found to be asymptomatic.
- We looked at the increasing numbers of bodies globally who were recognising the importance of the risk of asymptomatic and pre-symptomatic transmission. See **Section 4.5**.

- We then looked again at how asymptomatic and pre-symptomatic transmission had been considered in the UK and its IPC guidance for care homes at the time of posting this (25 May).

4.4.2 Timeline for evidence on asymptomatic / pre-symptomatic spread and UK guidance

Following the initial reports from China and Germany and the initial discussions by Scientists on the possibility of asymptomatic and pre-symptomatic spread near the end of January, **Annex 2** documents the timeline for a selection of the growing evidence that this was an important feature of the transmission and control for the SARS-CoV-2 outbreak.

A summary timeline for the UK discussions on a-/pre-symptomatic transmission is given below (see Annex 2 for full details):

Date	Source	Action or statement
13 Jan	NERVTAG #1	• Current reports describe no evidence of 'significant' human-to-human transmission. Still 3 flights a week from Wuhan.
21 Jan	NERVTAG #2	• Human-to-human transmission now reported. Direct flights from Wuhan stopped 5 days before. • Limited capacity to test highlighted and hence expectation that they would have to focus only on hospital cases. • Stated there is no evidence to support use of face masks by the general public and may add to fear and anxiety. • Discussion on whether they could work on the assumption that asymptomatic people are likely to be less infectious than symptomatic and highly symptomatic are likely to be more infectious than mildly symptomatic. NERVTAG members did not unanimously agree with either, because of the way they had seen other viruses behave; but the predominant view was that infection from asymptomatic individuals, if existing at all, would be less than for symptomatic people.
28 Jan	SAGE #2 + PHE	• Report by PHE Virology Cell, looked at case reports from China and Germany of asymptomatic transmission, but did not feel the results gave

		adequate evidence to conclude. (see also New York Times Article on the German case in **Section 4.2.2**) • SAGE urges caution in comparing WN-CoV with SARS and MERS: the transmission dynamics are different.
3 Feb	NERVTAG #5	• Face masks not recommended for well people living with symptomatic people, or for well people interacting with well members of the public in work contexts or otherwise. *"The evidence for FRSM use in the general public is near nil".* • Members commented that they do not have a full understanding of the modes of transmission and they are making assumptions based on other pathogens.
4 Feb	SAGE #4	• Notes that *"Asymptomatic transmission from mildly symptomatic individuals is likely".* • But still does not feel there is enough evidence to conclude that this is happening on a significant scale.
7 Feb	NERVTAG #6	• Discusses pragmatic response for first responders in the community. As it was difficult for a first responders to know or identify if someone was suspected or carrying the virus, they should focus on contact with symptomatic people only. • It is noted that the major risk for respiratory illnesses is through formites and touch of contaminated surfaces and not inhalation.
11 Feb	SAGE #6 + NRSA	• Pandemic planning document assumes that some transmission will be asymptomatic.
17 Feb	SAGE + PHE	• PHE internal / SAGE review on asymptomatic transmission by the PHE virology cell. Acknowledges case studies, but indicates not enough evidence.
21 Feb	NERVTAG #7	• Reference made to a field briefing by the National Institute for Infectious Diseases in Japan that was held on the 19 Feb on the Diamond Princess Cruise Ship outbreak. • PHE risk assessment to the UK population is moderate. NERVTAG agreed. Only one member, John Edmunds from the LSHTM, added later that he felt it should be rated high.

		• John Edmunds also notes after the meeting that the evidence suggests that 40% of virologically confirmed cases are asymptomatic.
6 March	NERVTAG #8	• Members concerned as to how they would able to explain that NERVTAG are saying that facemasks are not acceptable for the public but were acceptable for health staff? • Another acknowledgement that the PHE will not have capacity to test in the community as the numbers increase. • Notes that a WHO report highlighted that infectiousness seems to be just before or just after symptom onset, which is consistent with the Chinese data and other respiratory infections. • There are around 35 people who have been told to self-isolate who are asymptomatic.
20 March	NERVTAG #10	• Notes plenty of information on asymptomatic people testing positive for SARS-CoV-2, but little information regarding transmission. *"There are sporadic reports, but the data are not convincing".*
3 April	NERVTAG #12	• Various tests in hospital air, has led to some examples where the virus is found in the air, but at low levels. • Notes that there is an inference that the viral load is building before the onset of symptoms, suggesting an individual could be infectious while asymptomatic. • Agreed there was data of pre-symptomatic transmission.
9 April	NERVTAG #13	• WHO reportedly changed its stance on face masks in public. US have introduced a 'soft advisory' on wearing face masks when out of the house. • SAGE asked NERVTAG on advice about wearing face masks in public. A SAGE sub-committee reviewed the situation for specific occupational groups. • Increasing modelling papers suggesting widespread use of face masks in the community had some effect and more data becoming available on people who may be infectious prior to developing symptoms.

17 April	NERVTAG #14	• Chair noted that although evidence was increasing, it was still sparse. Noted some emerging reports and agreed to produce a discussion paper for next meeting.
24 April	NERVTAG #15	• NERVTAG agreed that pre-symptomatic transmission does occur. • Discusses study in a military barracks and PHE study in care homes on Easter weekend – and finding large numbers of asymptomatic cases in each
1 May	NERVTAG #16	• A working group was convened to review and summarise available information on the asymptomatic issue. PHE to provide data from snapshot testing of hospital staff. • Studies from Vietnam and Germany appear to show asymptomatic transmission. • It was agreed that individuals with no symptoms could be infectious. • NERVTAG asked to consider the potential for asymptomatic transmission from test-positive individuals, with specific consideration for closed environments, such as care homes. They concluded they can be infectious.
14 May	HM Govt. / CARE	• HM Government / CARE letter on support for care homes, published on the 14 May. • Action: In this it was noted that asymptomatic transmission had been a big issue, and advised some action points around staff movement.
16 May	Scottish Govt.	• The Scottish Government published interim guidance on testing which acknowledges the risks from pre- and asymptomatic transmission in care homes. • The report notes that this was published after NERVTAG: *"declined to provide definitive recommendations on how asymptomatic test positive cases should be managed"*, and that: *"This guidance has therefore been developed using a consensus-based model and is being published as 'interim' guidance, to be updated in light of new evidence and lessons learned by care professionals and local HPTs from practical experience"*.

18 May	UK Govt. – Daily Briefing	• Government announced that loss of taste and smell to be added to the list of symptoms – but no mention of asymptomatic / pre-symptomatic etc
18 May	UK Govt. Science and Technology Committee	• UK Government Science and Technology Committee writes to the PM, saying that it's strategies on how to deal with asymptomatic transmission of COVID-19 are not clear and that they must explicitly set out the government's approach to manage the asymptomatic form of the disease.
23 May	UK Govt – multiple agencies	• Admin and discharge and care of residents in care homes document still not updated since 2 April and still does not consider asymptomatic spread. • WHO Europe updated its Long-Term Care guidance and referred to the zoning and approach and the BushProof strategy.
28 May	NERVTAG	• First of three NERVTAG papers over the next few weeks that confirmed the existence of asymptomatic and pre-symptomatic transmission. • Also highlights that some people (approximately 5%) who have had COVID-19 and have completed 14 days can still be infectious, and notes that this means there are implications for the return to work or discharge into settings with vulnerable people. • It says *"consideration should be given to screening patients before discharge back to vulnerable settings". [note: this is very late in the day to be making this suggestion and then not even saying it is essential]*
18 June	UK Govt – multiple agencies	• UK Govt's main IPC document has small update, but still is not clear on how the virus transmits and when the peak loads and keeps the statement that it is a reasonable assumption that SARS-CoV-2 transmits like SARS-CoV-1 and that most transmission is after the onset of symptoms. This is still incorrect.
19 June	UK Govt – multiple agencies	• UK Govt's document on Admission and Care in care homes, is updated from the 2 April version. • Has a number of improvements, particularly in its acknowledgement of asymptomatic transmission. • But it is still implying that IPC in care homes and particularly procedures for isolation are the same as

		for influenza, which is not the case, as the SARS-CoV-2 virus is more transmittable and requires a higher level of IPC.

Key observations from this timeline on asymptomatic / pre-symptomatic / pauci-symptomatic transmission were:

- SAGE and NERVTAG and the PHE knew about the early cases of asymptomatic transmission (in China and Germany) from the **end of January** and this issue was mentioned on a number of occasions over time. On some occasions different kinds of asymptomatic transmission were acknowledged to be happening (such as in the SAGE meeting on the **4 Feb** (#4). But it was not until **28 April** that NERVTAG seems to be clearly agreeing that it does occur. This has lost the UK 2-3 months of critical time, allowing the virus to spread easily in the community and in care homes.
- The first strategic action to pro-actively integrate considerations related to asymptomatic cases, seems to have been the Scottish Government on the **16 May**, when they went ahead and made their own decisions through a consensus approach with the care home managers and the HPT teams, related to the testing of staff with no symptoms. They did this because they noted this was published after NERVTAG: "*declined to provide definitive recommendations on how asymptomatic test positive cases should be managed*" (p.7). They said that: "*This guidance has therefore been developed using a consensus-based model and is being published as 'interim' guidance, to be updated in light of new evidence and lessons learned by care professionals and local HPTs from practical experience*". What was very positive about this step and approach, was that the Scottish Government seemed to have listened to the evidence that had been coming from the ground, from the people working face-to-face with this pandemic in the Scottish care homes and the HPT supporting the people working in the Scottish care homes and had triangulated this evidence with the documented academic evidence. All are important forms of evidence.
- On the **18 May** the UK Government Science and Technology Committee wrote to the Prime Minister identifying the lack of attention on asymptomatic transmission as being a major gap in the UK Government's strategies and had recommended that the government needed to explicitly set out its strategies to managing asymptomatic transmission.
- But the main UK Government IPC guidance document (**COVID-19: infection prevention and control (IPC) guidance**), same as mentioned earlier, but now updated on **18 June** - Is still not clear enough on the importance of asymptomatic or pre-symptomatic transmission and continued to provide the same contradictory or inaccurate statements. For example (p.11): *"Infection control advice is based on the reasonable assumption that the transmission characteristics of COVID-19 are similar to those of the 2003 SARS-CoV outbreak"*; and "*The incubation period is from 1 to 14 days (median 5 days). Assessment of the clinical and epidemiological characteristics of COVID-19 cases suggests that, similar to SARS, most patients will not be infectious until the onset of symptoms".*
- Recent assertions by politicians that the inadequate government guidance was due to lack of knowledge about asymptomatic transmission, is untrue. Matt Hancock stated

on 7th July (https://www.youtube.com/watch?v=L36tpY-J6_I&feature=emb_logo): *"Because asymptomatic transmission was not known about, the correct procedures were therefore not known, & we've been constantly learning about this virus from the start, & improving procedures all the way through."*

4.4.3 Opinions of scientific community experts in January 2020 on asymptomatic spread

During the preparation of this witness statement, we came across some information about what the scientific community were discussing on the issue of asymptomatic transmission around the time that PHE was doing their own research for the report to SAGE following the meeting on 28 January. A review of this can be found here: https://www.sciencemediacentre.org/expert-reaction-to-news-reports-that-the-china-coronavirus-may-spread-before-symptoms-show/.

In addition a quote from an expert in China who was involved in the research that first identified the potential for the asymptomatic transmission, can also be found here: https://www.statnews.com/2020/01/24/coronavirus-infections-no-symptoms-lancet-studies/

A selection of the quotes can also be found in Annex 3.

It is clear that at that time:

- No-one was sure about what was happening as evidence was still coming in, although a/pre-symptomatic transmission was suspected.
- Some called it worrying but unsurprising, while others called it surprising.
- Several scientists were warning however, that it could be an issue and if so, that it needed to be resolved quickly.
- At this stage, no one was sure about how transmission was occurring, but they were clear that clarity was needed because of the challenges for controlling infection if it was the case.

The question for us, is not why the UK government did not know the answer at the end of January (since evidence was being collected and scientists were reviewing evidence), but rather why it took so long for UK government agencies to change guidance in accordance with what was increasingly clear evidence for a/pre-symptomatic transmission not long after this date?

4.5 Analysis of the focus on care homes from Jan – June 2020

This section looks specifically at how well SAGE, NERVTAG and the UK Government have focussed on care homes specifically since January to June.

4.5.1 Timeline - focus on care homes by SAGE and NERVTAG

Summary of the timeline dates and dates of SAGE and NERVTAG comments on Care Homes:

Date	# SAGE or NERVTAG meeting	Key action / comment
3 Feb	NERVTAG #5	• Discussed what PPE is available to health care workers *[not specifically care workers],* who go into people's residential homes, and recommended that if someone who received care at home tests COVID+, that they should be taken into hospital as the community based care workers do not have adequate PPE, particularly respirators. • Also had an action to check that social care workers are included in the revised Pandemic Influenza guidance for IPC, 2019 – which they were.
21 Feb	NERVTAG #7	• Notes a rapid deterioration of older people has been seen in China.
3 March	SAGE #12	SAGE – 1st mention of care homes: • Mentions that older people increase the death rates and demand for hospital beds and that social distancing will be more difficult in care homes.
10 March	SAGE #14	SAGE – 2nd mention of care homes: • Mentions social distancing for different older people and that special policy considerations should be given to care homes and various types of retirement homes.
31 March	SAGE #21	SAGE – 3rd mention of care homes: • Action: Set up a nosocomial infection sub-group that is also meant to include discussions on risks in care homes. • Specifically focussing on the needs of the NHS.

9 April	NERVTAG #13	• First meeting where data was discussed on care homes – when there were 412 homes that had new acute respiratory outbreaks that had tested positive for COVID-19 (versus 34 in hospital settings) • Raised the issue of staff working between homes and also the issue of discharge of hospital patients to care homes. • NERVTAG said to raise concern with DHSC about the number of outbreaks in care homes.
14 April	SAGE #25	SAGE – 4th mention of care homes: • Care homes flagged as a concern; focussed on lack of data.
17 April	NERVTAG #14	• Discusses high number of outbreaks in care homes and noted that it was understood that testing was done in care homes in London the week before. • Suggestion made that there should be a step-down stage of intermediate care when leaving hospital before returning to care homes. There was also some discussion that some of the Nightingale hospitals may be repurposed for this purpose. • Note made that the PHE IPC guidance for care homes was currently being updated, focussing on transmission within a home [*assuming this is the 'Working safely in care homes, PPE document'?*] • Discussion on who is responsible for IPC – stating that the DSHC is responsible for policy on this. • A question as to whether there is a specific task force for the strategy for care homes – was answered that the work with this is with the NHS IPC cell, with support from the PHE.
23 April	SAGE #28	SAGE – 5th mention of care homes: • Mentions there has been a small proportion of deaths in care homes. • Action: DFID CSA identified to lead a working group on the testing strategy for care homes and reducing the spread.
30 April	SAGE #30	SAGE – 6th mention of care homes: • Notes significant transmission in care homes but that it is plateauing.

		• Notes that understanding the situation is more challenging but notes that key limiting factors are lacking *"metadata and materials to sequence".* But no mention of IPC, no mention of speaking to care homes to understand the problem or arranging to get the samples.
1 May	NERVTAG #16	• NERVTAG was asked to consider the potential for asymptomatic transmission from test-positive individuals, with specific consideration for closed environments, such as care homes and concluded that PCR-positive asymptomatic individuals may be infectious; but the level of infectiousness compared to symptomatic individuals is uncertain. • NERVTAG discussed what approaches should be employed in closed settings, such as care homes, with vulnerable residents. They state that nursing homes needed more stringent measures, that the possibility of cohorting staff and residents should be considered, that COVID positive asymptomatic staff *"should not provide care or have contact with susceptible vulnerable individuals",* and there was a need for intense surveillance of staff and residents.
5 May	SAGE #33	SAGE – 7th mention of care homes: • More discussion on the importance of care home infections on the R number and that focus should be on reducing transmission and getting better data and understanding environmental factors affecting the spread.
7 May	SAGE #34	SAGE – 8th mention of care homes: • Notes the importance of addressing the epidemic in care home sector and reiterated their advice of the need to test care workers. • Gave advice that PPE is only required as defence in very high transmission risk situations. *[note: consider here what this means for preventing asymptomatic spread].*
12 May	SAGE #35	SAGE – 9th mention of care homes: • Most comprehensive discussions in care homes of all minutes – first time that the following was discussed: ○ Only time the care home sector has its own heading!

		○ First time it was discussed about preventing transmission specifically within the home. ○ IPC ○ 'Care Homes Sub-group' *[but no minutes located]* • Actions: It also covered other elements and had 3 actions on data including that the DHSC is to draw on IPC guidance from hospital environments to inform care home guidance by 14 May.
14 May	SAGE #36	SAGE – 10th mention of care homes: • Mentions care homes remain a concern, but noted that there is less data from these.
28 May	SAGE #39	SAGE – 11th mention of care homes: • SAGE strongly advised to limit transmission in different homeless shelters, prisons and migrant centres, must be pro-active rather than waiting for an outbreak, and that these institutions should not be treated in the same was as care homes *[note: not clear what that means – that they should be treated with more importance?]*
28 May	NERVTAG	• Talks about the risks of admitting people from hospital after 14 days to places where there are vulnerable people, because around 5% may still have symptoms.
4 June	SAGE #40	SAGE – 12th mention of care homes: • Action: Care Homes Sub-Group is asked to discuss the implication of wearing of face masks in care homes.
11 June	SAGE #41	SAGE – 13th mention of care homes: • Action: For the first time mentions about testing to enable safe return of patients into care homes: *"Action: PHE (with senior clinicians' group, as appropriate) to determine additional advice on testing to enable safe return of patients and staff to settings involving vulnerable people (e.g. care homes)".*

For more details of the above and more quotations and links – see **Annex 2**.

Summary of observations on focus on care homes in the SAGE minutes from January to June:

- Only around one third of the 41 sets of minutes included references to 'care homes'; and there were very few mentions of older people or people with disabilities. Care homes seemed to be of minimal focus of SAGE.

- Most common subjects tended to be about: modelling; masks; testing; antibodies; and later, on track and trace.
- In most cases the mention of care homes was just one single bullet point. The first mention of care homes was not until the 3 March (meeting #12), and then the focus was about how older people lead to an increased death rate and higher demand for beds and that social distancing would be more difficult in care homes.
- It was not until the 5 May (#33) that the first Action was identified related to care homes.
- The risk of nosocomial infections in care homes was briefly mentioned along with hospitals on the 31 March (#21), but other than this deaths in care homes are then only briefly mentioned on the 14, 23, 30 April, 5 May. Brief mention was on issues such as care homes driving up the R number, the need to test staff and complaint over lack of data and samples. But no mention of IPC or speaking to care homes to understand the problem or get samples.
- The greater emphasis was clearly on what the NHS needed to do to prevent hospital-based infections. In the later minutes this then expanded to some comments on trying to establish how the infections were happening in care homes as well. But this was not until late May/June.
- The first and only time that care homes had their own sub-heading was on the 12 May in #35 meeting of SAGE, when the meeting discussed a range of issues, including related to IPC and there was a mention of a 'Care Homes Sub-Group'.
- Two times the need to focussing on reducing transmission draw up or strengthen IPC guidance and these were:
    - 23 April (#28) – DFID CSA identified to lead a working group on the testing strategy for care homes and reducing the spread.
    - 12 May (#35) – DHSC to draw up IPC guidance drawing from hospital environments, by 14 May.
- Gave advice on the 7 May (#34) that PPE is only required as defence in very high-risk transmission situations, which is concerning considering the knowledge that the government had on asymptomatic transmission effectively since February.
- The first and only time the issue of the need for testing of residents before admission from hospital was discussed was on 11 June.
- Very little mention of other residential settings such as homeless shelters, prisons and refugee shelters. One mention was made on 28 May (#39).

Summary of observations on focus on care homes in the NERVTAG minutes and papers from January to June:

- First mention of care in the community on 3 Feb, NERVTAG #5, was about people who have 'health care workers' visit them in their own home. It suggested that because of challenges with PPE if the person being cared for became COVID+ then they should be moved to hospital to be cared for in this location.

- The first tome data from care homes is discussed [and probably first time it was available) was on the 9 April, NERVTAG #13. Following this a number of meeting discussed an element of the outbreak and care homes.
- On the 17 April, NERVTAG #14, it was also suggested that step-down-care should be used when leaving hospital before being returned to their home.
- In the same meeting the responsibilities for IPC policy and whether there was a task force for the strategy for care homes was discussed. The DHSC, NHS IPC cell and PHE were all mentioned as having different roles.
- NERVTAG were asked to consider the potential for asymptomatic transmission in closed environments such as care homes, in their meeting on 1 May, NERVTAG #16. They concluded that this is possible, but the level of infectiousness compared to symptomatic individuals is uncertain.
- They gave a few recommendations the approaches that should be used in closed settings such as care homes and made a few recommendations, such as the homes needing more stringent measures, the possibility of cohorting staff and residents, that COVID+ asymptomatic staff should not be providing care with vulnerable individuals and there is a need for intensive surveillance. But the recommendations were limited in number.

4.5.2 Timeline - focus on care homes by the UK Government

A simplified summary of the timeline follows. Two entries on NERVTAG have also been included here as well as UK Govt decisions and actions, as the points raised highlight when data on care homes was released to NERVTAG and the fact that they felt they had not been consulted on what was needed in care homes in mid-April.

For more details and quotations see **Annex 2**:

Date	Source	Action or statement
9 April	NERVTAG	• NERVTAG meeting #13 starts discussing data on care homes
15 April	UK Govt. / CARE	• Publishes it's: "COVID-19: Our Action Plan for Adult Social Care"
24 April	NERVTAG #15	• NERVTAG notes that it hasn't been asked to comment on care home measures.
28 April	UK Govt.	• The Government started releasing figures on the significant numbers of outbreaks and deaths in care homes in the Daily briefings, by which time many care homes had been infected.

13 May	UK Govt. – House of Commons	• Sir Kier Starmer challenged the PM in the House of Commons over why government guidance in March said that infections were unlikely in care homes
13 May	DHSC – Daily Briefing	• Announced £600 million for IPC and training from NHS and increasing testing. • Publishes: "OUR PLAN TO REBUILD: The UK Government's COVID-19 recovery strategy" (dated May 2020) – which includes specific support for care homes and IPC.
14 May	HM Govt. / CARE	• HM Government / CARE letter from Helen Wheatly to: Local Authority Chief Executives; Directors of Adult Social Services; Directors of Public Health; Care Home Providers; CCG Accountable Officers - on support for care homes, published on the 14 May. • Noted Evidence on good practices to be effective to reduce infections in care homes by the "UK Centre for Evidence Based Medicine" *[which were few and weak].*
17 May	LSE data	LSE data indicates that: • Data on deaths in care homes under-estimates, as missed deaths in hospitals of care homes residents, problems of identification of reason for the disease, or indirect effects of the pandemic • Data on registered COVID-19 deaths in care homes only account for an estimated 54% of all excess deaths in care homes • Total excess mortality seems to be taking place in care homes since 28 December and estimated at 48% of all excess mortality in England
18 May	UK Govt. Science and Technology Committee	• UK Government Science and Technology Committee writes to the PM, saying that it's strategies on how to deal with asymptomatic transmission of COVID-19 are not clear and that they must explicitly set out the government's approach to manage the asymptomatic form of the disease.
19 May	UK Govt. Parliamentary Committee	• The Parliamentary Health and Social Care Committee Expert Consultation on care homes - included experts from the International Long Term Care Network from the London School of Economics; Hong Kong

		University; Germany; and care home network representatives: Vic Rayner, The Exec Director, National Care Forum; Professor Martin Green Chief Exec of Care England; and James Bullion – President of the Association of Directors of Social Services.
20 May	UK Govt. – House of Commons	• Sir Kier Starmer challenged the PM in the House of Commons over why government guidance had said no tests were needed to discharge patients from hospitals into care homes • PM responded by deflecting the responsibility on to doctors and discharge being clinical decisions
20 May	UK Govt – Daily Briefing	• Culture Minister Oliver Dowden asked by media why the Government was 'glossing over' problems and why they were not admitting they had made honest mistakes, in the same way that Emmanuel Macron had done – and that there will be a Public Enquiry and you will be called to that Public Enquiry so why not begin that conversation now? • Response was that there will be a time for lesson learning late, but the public want us now to be dealing with the crisis.
23 May	UK Govt – multiple agencies	• WHO Europe updated its Long-Term Care guidance and referred to the zoning and approach and the BushProof strategy.
3 June	DHSC – Daily Briefing	• Introduction of David Pearson the Chair of the new National COVID Social Care Task Force

Summary of strategic actions related to care homes by the UK Government:

- On the 18 May the UK Government Science and Technology Committee writes to the Prime Minister to say that it's strategies on how to deal with asymptomatic transmission are not clear and that they must explicitly set out their strategies for this.
- One the 19 May there is a Parliamentary Health and Social Care Committee Expert Consultation on care homes - included experts from UK care home networks.
- Key actions by the government related to care homes were:
    - 15 April – published an action plan on social care.
    - 13 May – announced £600,000 for supporting IPC in care homes including training provided by the NHS and increasing testing

- The National COVID Social Care Task Force was set up on the **3 June**.
- By **19 June** some positive improvements have been made to some documents relating to IPC in care homes, but gaps and errors still exist and the UK Govt is still telling care homes to isolate as they would for influenza. There is still not one-stop-shop IPC guideline.

4.6 What other countries did to reduce the risk of transmission

The CDC and the WHO have now expressly acknowledged asymptomatic and pre-symptomatic transmission.

Examples:

Body	Examples
USA Centres for Disease Control (CDC)	The CDC stated on its webpage **Key Strategies to Prepare for COVID-19 in Long-Term Care Facilities (LTCFs)** (accessed 23 May 2020, https://www.cdc.gov/coronavirus/2019-ncov/hcp/long-term-care-strategies.html): *"If COVID-19 is identified in the facility, restrict all residents to their rooms and have HCP wear all recommended PPE for care of all residents (regardless of symptoms) on the affected unit (or facility-wide depending on the situation). This includes: an N95 or higher-level respirator (or facemask if a respirator is not available), eye protection, gloves, and gown. HCP should be trained on PPE use including putting it on and taking it off". "This approach is recommended because of the high risk of unrecognized infection among residents. Recent experience suggests that a substantial proportion of residents could have COVID-19 without reporting symptoms or before symptoms develop".*
World Health Organisation (WHO)	WHO in two of its latest guidance documents had referred to a wide range of evidence on the high proportion of positive cases that are asymptomatic or pre-symptomatic, and acknowledged that transmission was happening from these groups – see the reference list in these documents: https://www.who.int/publications/i/item/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak https://www.euro.who.int/en/health-topics/Health-systems/pages/strengthening-the-health-system-response-to-covid-19/technical-guidance-and-check-lists/strengthening-the-health-systems-response-to-covid-19-technical-guidance-6,-21-may-2020

The article **"Briefing Note: Current UK guidance on admission and care of residents during COVID-19 is based on symptomatic cases, ignoring early international evidence and lessons from other countries"** shares some examples of good practices from other countries (https://ltccovid.org/2020/04/09/briefing-note-current-uk-guidance-on-admission-and-care-of-residents-during-covid-19-is-based-on-symptomatic-cases-ignoring-early-international-evidence-and-lessons-from-other-countries/):

- *"Countries that, at this early stage, appear to have had relative success in preventing COVID-19 entering care homes, such as Singapore and South Korea, have very strict processes to isolate and test all care home residents and staff who not only have symptoms, but who may had contact with people who have COVID-19 (Tan and Seetharaman, 2020 and Lyu Jy, 2020)".*
- *"Spain, where there have been large numbers of deaths in care homes, initially had similar guidance as the current one in the UK, based on only isolating residents and staff with symptoms. However, this was changed on the 24 March following large numbers of deaths in care homes and also many cases of homes where so many staff were absent that care provision was no longer viable, resulting in the army and fire service (or even local politicians) having to step in. The new guidance in Spain now requires isolation of all possible, probable and confirmed cases among residents and staff. Possible and probable cases are defined as those having potentially been in close contact with someone with COVID-19 (Davey, 2020)".*
- Experience from countries like South Korea, **Singapore** and some regions in Spain and States in the USA, is that they discharge COVID-19 patients into quarantine centres and cared for by primary health services; and then only admit them back into the care home when the quarantine period was over.
- *"Given the high vulnerability of care homes to COVID-19, rather than seeking to use them to capacity, countries such as Spain are now looking to discharge residents who are not positive with COVID-19 back into the community with additional home care support, or in some cases to hotels where care is provided and where it may be easier to isolate them if necessary. Having lower number of residents is seen as way to lower the risk of the care home become overwhelmed".*

Other country experiences are also documented in: Comas-Herrera, A (2020) **"International examples of measures to prevent and manage COVID-19 outbreaks in residential care and nursing home settings"**, last updated 11 May 2020, International Long Term Care Policy Network (https://ltccovid.org/wp-content/uploads/2020/05/International-measures-to-prevent-and-manage-COVID19-infections-in-care-homes-2-May-1.pdf).

Professor Terry Lum, Head of Social Work and Social Administration, Hong Kong University also shared the experiences and successes of Hong Kong in:

- The Parliamentary Health and Social Care Committee Expert Consultation on care homes – 19 May (https://parliamentlive.tv/Event/Index/5fbbebb5-b2e1-4339-aaeb-f4a53aec56de)
- BBC World Service – NewsDay - from 5 - 10.10 mins – 20 May: https://www.bbc.co.uk/sounds/play/w172x2w724l0fxp

Hong Kong had at this date, zero deaths of health staff and zero infections and deaths in care homes.

Specifically, he explained their strategies:

- How they used what they learnt from SARS to have huge successes in their response.
- Because of SARS, people took it much more seriously and are much more vigilant – in some care homes staff camped in the grounds.
- All care homes had an Infection Control Officer and 3-months' supply of PPE.
- They knew they had to stop transmission from the hospital to the nursing homes.
- In the hospitals they stopped all visitors and admissions.
- The routine care was undertaken by a visiting doctor.
- By late January all care home workers had to wear masks.
- By early February 98% of the general public were wearing masks in public and they have a well-known hand hygiene protocol.

5. Ongoing systemic & operational concerns regarding IPC

5.1 Update on improvements and gaps in IPC guidance

The consideration of asymptomatic and pre-symptomatic transmission, as well as pauci-symptomatic transmission (mild symptoms), and other a-typical symptoms which can be more common for older people, seem to now be slowly making its way into guidance. But it seems that it is not yet consistent and gaps continue to exist.

A full continuation of this analysis will be needed (not yet done to update our previous research), but some examples that are immediately apparent:

Body	Examples
Department of Health & Social Care / PHE / CQC / NHS	The document from the Department of Health & Social Care / PHE / CQC / NHS on (**Admission and Care of Residents during Covid-19 Incident in a Care Home guidance,** 19th June, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878099/Admission_and_Care_of_Residents_during_COVID-19_Incident_in_a_Care_Home.pdf) This document has had some improvements, but still has gaps. Examples of improvements: • **Annex B** - also now states an infectious case as being possibly pre-symptomatic: o *"a 'contact' is a person who has been close to someone who has tested positive for coronavirus (COVID-19) anytime from 2 days before the person was symptomatic up to 7 days from onset of symptoms (this is when they are infectious to others)."* • **Annex A** - now talks about atypical symptoms: o *"It is important to assess residents twice daily for the development of a high temperature (37.8°C or above), a cough, as well as for softer signs i.e. being short of breath, being not as alert, having a new onset of confusion, being off food, having reduced fluid intake, diarrhoea or vomiting."* • **Annex C** - now mentions asymptomatic transmission states: o *"Due to evidence of asymptomatic spread, during periods of sustained transmission we recommend that 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."*

	• p.11 and Annex E – Notes to where possible isolate residents to different areas / wings and also to limit or cohort staff to individual groups of patients or floors/wings. • Annex E – It talks about care home providers minimising movement of workforce to reduce the risk of asymptomatic transmission of the virus between members of staff and members of residents. *"Since the beginning of the pandemic we know that most care home providers have been taking steps that minimise the movement of workforce in order to reduce the risk of asymptomatic transmission of the virus between members of staff and between staff and residents. These steps have been taken on top of, not instead of, appropriate use of Personal Protective Equipment (PPE)".* • Annex A - refers to the British Geriatric Society guidance (which we had helped influence), as well as the Mutual Aid NHS support programme to care homes (the training team for which had been in touch with us to see how they could incorporate zoning into the training). • Section 5 (pp. 17-19) – on advice to staff: o Talks about breaches of PPE and the need to undertake a risk assessment and gives the things to consider when doing this. This is an improvement as previously it was said (April 2 version) that: *"Care home staff who come into contact with a COVID-19 patient while not wearing PPE can remain at work. This is because in most instances this will be a short-lived exposure, unlike exposure in a household setting that is ongoing"*. o For staff with suspected symptoms - talks more about asymptomatic positive cases, and also mentioned to interpret negative test results with caution and take together with a clinical assessment. Gaps or mixed: • The table in Annex D (about PPE and *"care as normal"*) - has been deleted, but it still states that PPE *"should be used when within 2 metres of a resident with possible or confirmed COVID-19"*, which seems to indicate that it is fine to not wear PPE in other cases. If so, this seems to show lack of understanding about the a/pre-symptomatic transmission risk, especially from staff members to residents. • Annex D – IPC measures – It is stating that the care home should undertake isolation procedures the same way as if an individual had influenza or diarrhoea or vomiting – however COVID-19 requires additional levels of IPC above what is required for these more common illnesses.

	"Care homes are not expected to have dedicated isolation facilities for people living in the home, but 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 or diarrhoea and vomiting, taking the following precautions:" • It still does not give the care home managers the tools to consider the transmission across the care home, such as through zoning, and it still does not have all practical guidance in one document. But it is still improved from the previous version.
Public Health England, NHS, Public Health Scotland, Public Health Agency, Public Health Wales, Health Protection Scotland	Yet the main UK Government IPC guidance document (**COVID-19: infection prevention and control (IPC) guidance,** which is the same as mentioned earlier, but now updated on 19 June, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/886668/COVID-19_Infection_prevention_and_control_guidance_complete.pdf). This is still not clear enough on the importance of asymptomatic or pre-symptomatic and continued to provide the same incorrect statements. For example, the same statements exist as before (p.11): *"Infection control advice is based on the reasonable assumption that the transmission characteristics of COVID-19 are similar to those of the 2003 SARS-CoV outbreak";* "*The incubation period is from 1 to 14 days (median 5 days). Assessment of the clinical and epidemiological characteristics of COVID-19 cases suggests that, similar to SARS, most patients will not be infectious until the onset of symptoms. In most cases, individuals are usually considered infectious while they have symptoms; how infectious individuals are, depends on the severity of their symptoms and stage of their illness".*

6. Annexes

Annex 1 - Documents with elements of IPC guidance for care homes – 14 May 2020

	Core document	Date	Link	Notes
A	**Department of Health & Social Care / PHE / CQC / NHS - 'Admission and Care of Residents during Covid-19 Incident in a Care Home' guidance**	2 April 2020	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878099/Admission_and_Care_of_Residents_during_COVID-19_Incident_in_a_Care_Home.pdf	This guidance focuses only on symptom-based screening, not taking into account asymptomatic / pre-symptomatic cases. It says you can give 'care as normal' for someone who does not have symptoms (presumably without PPE). It recommends people with COVID+ tests can be returned to the home. It does not focus much on IPC. Notes is in process of being updated.
B	**PHE Guidance for working safely in care homes**	17 April updated 27 April	https://www.gov.uk/government/publications/covid-19-how-to-work-safely-in-care-homes	Says it is drawn from 'C' below for application in care homes and it is a guide (but where there is conflict with legislation then the legislation prevails – so they leave the responsibility to the care homes to investigate and interpret). Some improvements on the A doc above with clearer bits on PPE and when to use. Brief mentions of possible asymptomatic transmission + need for more than just PPE – but does not say how to respond to these issues.

C	UK Gov – PHE, NHS, PHS, PHA, PHW, HPS - COVID-19: infection prevention and control (IPC) guidance	24 April updated 27 April	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/881489/COVID-19_Infection_prevention_and_control_guidance_complete.pdf	This is the Government's main IPC document across hospitals, health centres and care homes, from which document B has drawn. This document has a range of useful information in it and less incorrect information than in A – but it's quite hard to locate the key information for use in the care home setting.
D	Table 2 - PHE guidance on PPE in community care settings Table 4 - Additional considerations, in addition to standard infection and prevention control precautions	8 April 2020 9 April	Table 2: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877599/T2_Recommended_PPE_for_primary_outpatient_and_community_care_by_setting_poster.pdf Table 4: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879111/T4_poster_Recommended_PPE_additional_considerations_of_COVID-19.pdf	Tables which indicate the PPE that it is advised that care-workers use in care-homes, and for when assessing someone who may have COVID-19. Eye wear protection is just recommended based on risk assessment and based on sessional use. We are recommending they should be used at all times when in contact with residents.
E	Donning and doffing guidance	8 April	Donning: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/f	This is OK - except it misses a hand-washing step after taking off an apron and before taking of the mask when doffing. Risks infecting face.

			ile/878677/PHE_11606_Putting_on_PPE_062_revised_8_April.pdf **Doffing:** https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878678/PHE_11606_Taking_off_PPE_064_revised_8_April.pdf	Note that our document follows CDC advice, advocating an additional hand hygiene between steps 3 and 4 during doffing (i.e. after removing apron, and before putting hands near face).
F	**DH&SC - COVID-19: Our Action Plan for Adult Social Care**	15 April 2020 (V1)	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879639/covid-19-adult-social-care-action-plan.pdf	Mentions that people who are COVID+ can be sent back to care homes while still positive to free up critical care beds in hospitals. But also, that where the care home is not able to isolate / cohort them, that they can be taken elsewhere for quarantine and that the Government has provided funding to support discharge from hospital.
G	**Gov.UK – Management of shortages in PPE**	3 May 2020	https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/managing-shortages-in-personal-protective-equipment-ppe	Based on the WHO advice on re-use (6 April). Discusses the need for face fit for FFP2 respirators + that they are user specific. Notes where acute shortages of PPE it allows the sessional use and reuse of PPE.
H	**HM Government – Our plan to rebuild: The UK Government's**	May 2020 CP 239 (11 May)	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/884760/Our_plan_to_rebuild	This new document has a section on protecting care homes (Section 5.2 – page 34). For the first time the Government has a

	COVID-19 recovery strategy		The UK Government s COVID -19 recovery strategy.pdf	specific focus on IPC - as well as testing, workforce, clinical support, guidance and local authority role. IPC section says: • Government stepping in the support PPE to care homes, hospices, residential rehabs and community care orgs. • *"It is supporting care homes with extensive guidance, both online and by phone, on how to prevent and control COVID-19 outbreaks. This includes detailed instructions on how to deep clean effectively after outbreaks and how to enhance regular cleaning practices".* • *"The NHS has committed to providing a named contact to help 'train the trainers' for every care home that wants it by 15 May".* • *"The Government expects all care homes to restrict all routine and non-essential healthcare visits and reduce staff movement between homes, in order to limit the risk of further infection".*

Annex 2 – Timeline - evidence on a/pre-symptomatic transmission and government action

Links to the references in the table related to:

- Evidence of asymptomatic spread: https://www.bushproof.com/wp-content/uploads/2020/06/Evidence-of-a-or-pre-symptomatic-spread-090620.pdf
- SAGE meeting notes and papers referred to in their meetings: https://www.gov.uk/government/groups/scientific-advisory-group-for-emergencies-sage-coronavirus-covid-19-response
- NERVTAG minutes (noting that the Secretariat is in PHE): https://app.box.com/s/3lkcbxepqixkg4mv640dpvvg978ixjtf

Dates	Evidence of a- / pre- / pauci-symptomatic transmission	UK Government decisions / guidance / actions
January		
13 Jan		NERVTAG #1: • Notes that there are currently three direct flights from Wuhan to the UK • Current reports describe no evidence of 'significant' human-to-human transmission – members note that the word 'significant' may mean that some has been found.
19 Jan	Case of pre-symptomatic spread in a church in Singapore – wife became ill on 22 Jan (noted from a BBC article from May).	

21 Jan		NERVTAG #2: • Human-to-human transmission has now been reported overnight • Risk to UK population raised from 'very low' to 'low'
24 Jan	Chan *et al* – testing of a family cluster indicated a child which was asymptomatic.	
28 Jan		NERVTAG #3: • Flights from Wuhan stopped 5 days before. • The limited laboratory capacity to test was raised and it was suggested that the focus would probably need to be to focus on cases in hospital. • *"The Committee reported that there is no evidence to support that the wearing of face masks by the general public reduces transmission. It was also noted that this may add to fear and anxiety".* • Noted the first case in Germany of a man infected by a colleague who did not have symptoms who flew back to China – but they say the case should be treated with caution as 'nothing had been documented officially'. • Also mentioned an asymptomatic child in a family. Questions asked about asymptomatic transmission: • *"CW asked NERVTAG if they agree with the working assumption that asymptomatic people are likely to be less infectious than*

		symptomatic persons, and highly symptomatic people are likely to be more infectious than mildly symptomatic people". • *"CS commented that we cannot make that assumption safely, given our past experience with other respiratory viruses where children with robust but naïve immune systems have been shown to be mildly affected but very effective spreaders. However, a highly symptomatic child who is coughing everywhere will likely be more infectious than a child who is mildly symptomatic. This is based on prior experience of respiratory viruses in school age children".* • *"AH commented that with influenza, we know that potentially we shed virus prior symptoms starting and even after decades of research there is uncertainty about the importance of asymptomatic transmission. AH asked whether we know of any cases that are very minimally symptomatic. The Committee members felt there were insufficient data of the spectrum of severity at this stage".* • *"PH asked the committee again if people agree with the working assumption that asymptomatic people are likely to be less infectious than symptomatic people.* • *WB did not agree with this assumption as we do not know that this is the case. WB commented that WN-CoV seems to be behaving very differently to SARS".* • *"Following further scientific discussion, views of NERVTAG members were not unanimous but the predominant view was that the force of infection from asymptomatic individuals, if present at all, is likely to be lower than symptomatic individuals".*

28 Jan		SAGE meeting report #2: • Noted that there was limited evidence of asymptomatic transmission, but early indications are that some is occurring and that the PHE developing and to share a paper on asymptomatic transmission with SAGE. • SAGE urges caution in comparing WN-CoV with SARS and MERS: the transmission dynamics are different.
28 Jan		Report by PHE Virology Cell, "Are asymptomatic people with 2019nCoVinfectious?": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890001/s0005-are-asymptomatic-people-with-2019ncov-infectious-280120-sage4.pdf) • Noted that in SARS-CoV-1 – Viral load greatest in lower respiratory tract. • Only 32% of cases had CoV RNA at initial presentation (mean 3.2 days after illness onset). • States that it is *"a reasonable deduction that the two viruses will have similar tissue tropism and pathway to disease progression".* • Refers to the paper by Chan *et al* – but notes it is not enough evidence for asymptomatic transmission. • Notes that a doctor in Zheijing Province Dr Sheng Jifang has noted in the media that asymptomatic transmission was occurring.

		• It also notes about a case from a Germany EWRS report – about the case of the person from Wuhan having transmitted the virus pre-symptomatically. • Concluded that there was not enough evidence for major asymptomatic/sub-clinical transmission.
February		
3 Feb		NERVTAG #5: Face masks: • *"Wearing a facemask by symptomatic people is recommended, if tolerated".* • *"Wearing of facemasks by well-people living with symptomatic people is not recommended".* • *"Wearing facemasks by well people interacting with well member of the public (either occupationally or otherwise) is not recommended".* • *"The evidence for FRSM use in the general public is near nil therefore the wearing of a FRSM by well people when interacting with the general public (either occupationally or otherwise) is not recommended".* • *"WSL was not suggesting that people should be wearing masks in the general public but just noting on how we defend the recommendation".*

		Understanding of transmission: • *"JVT asked if it is the committee's view that for this novel coronavirus, we do not understand the modes of transmission of this virus, and we do not understand the relative contribution of fine particles aka droplet nuclei, large droplets and contact transmission".* • *"Members commented that yes, NERVTAG do not have a full understanding of the modes of transmission and NERVTAG are making assumptions based on other respiratory pathogens but it is reasonable for us to infer the nature of transmission of this virus, and that hand washing would be a recommended as a counter measure".* • *"MZ commented that diarrhoea is not a big feature of this novel coronavirus, only less than 10% of symptoms, but equally we cannot rule out secretions of virus in the gastrointestinal tract and therefore the role of transmission via the faecal/oral route".* • *"Members agreed to include a point about washing hands after toileting".* • *"BK commented that diarrhoea could be via faecal oral route, but this could also be airborne via aerosols from the toilet, as may have occurred in the Amoy Gardens SARS outbreak, and potentially fomite transmission as well".* *What should happen to people who receive care from health workers in London regards to PPE who visit people at their homes:* • *"Members discussed the feasibility of whether someone who is tested as positive and requires other care should go into a hospital at this stage of the epidemic rather than be cared for at*

		home. If the test did come back positive on someone and they needed some other care, a pragmatic view of the committee is that that person should go into the hospital for isolation and for their other ongoing care. This is so that the patient can be cared for by healthcare workers whose PPE is consistent with current guidelines at this time rather than in the community where healthcare workers are not currently fit tested for respirators which may be able to be resolved in the short term". • *"Action 1: AH to check what is currently happening in London in regards to PPE for healthcare workers visiting symptomatic patients at home and what is or would be in place for a symptomatic person in a residential home".* • *"Action 2: LR will check in the pandemic infection control guidance whether social care workers are included in the guidelines": "Post meeting note: The revised Pandemic Influenza guidance for infection prevention and control 2019 includes social care workers".* <u>Environmental decontamination:</u> • *"MZ explained that PHE need to be able to provide practical advice about decontamination safety in both community and healthcare setting. PHE would like NERVTAG to endorse its approach and the scientific principles raised in the document".* • *"JR commented that it is not clear why the risk to those cleaning hotel rooms is lower than those cleaning a hospital room in the document. BK noted that those in hospital may be more symptomatic than those in hotel rooms".* • *"MZ explained that formal decontamination with PPE, would be anyone decontaminating the environment e.g. in hospitals this*

		will likely be hospital cleaners in full PPE as recommended by the hospital trust. The person going into that environment would be warned about it, given the correct PPE and this would be well controlled".
4 Feb		SAGE Minutes #4: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890001/s0005-are-asymptomatic-people-with-2019ncov-infectious-280120-sage4.pdf • *"Asymptomatic transmission cannot be ruled out and transmission from mildly symptomatic individuals is likely".* • From this report, 3 cases of possible asymptomatic transmission were discussed, but the conclusion was: *"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."*
6 Feb		SAGE meeting report #5: • Third UK positive case
7 Feb		NERVTAG #6: • *"PHE outlined the PPE paper for first responders which has been agreed across government departments and aims to be a pragmatic approach for those who may be first responders in the community".*

		• *"CS commented that the paragraph on how nCoV-2019 is spread is wrong in that it places the emphasis on inhalation as the major risk which it is not the case for typical respiratory viruses; the major spread is by fomites and contaminated surfaces. It needs to be more balanced in recognising surface contact to be a risk".* • *"Members commented that it was not clear in the document how a first responder would know or identify a person who was suspected of carrying the virus. As a first responder, they would not know that the person had relevant travel history. There is a danger of discrimination based on appearance".* • *"Members agreed that the document should focus on contact with symptomatic people only".*
10 Feb		NRSA Pandemic Influenza Planning Assumptions Compared with WN-CoV SAGE Secretariat: (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882712/16-nsra-pandemic-influenza-planning-assumptions-comparison-10022020.pdf) • Notes that: *"Asymptomatic transmission cannot be ruled out and transmission from mildly symptomatic individuals is likely".*
11 Feb		SAGE meeting report #6: • *"Data (including serological) from the cruise ship quarantined off Japan will be informative".* • *"Virus shedding may reach significant levels just before onset of symptoms and continues for 1-2 days after (wide uncertainty)."*

17 Feb		PHE internal / SAGE review by PHE Virology Cell, "Clinical Virology of SARS-CoV-2": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890148/s0185-clinical-virology-sars-cov-2-170220-sage8.pdf) • 9 cases of SARS-CoV-2 in UK by this date. • Noted that from the WHO Daily SitReps there have been several reports of asymptomatic / pauci-symptomatic infection – more than with SARS-CoV. • Notes that the peak of viral shedding appears to occur around second week in illness.
18 Feb	Yu *et al* – Discusses a familial cluster where a grandmother was infected from a pre-symptomatic other family member.	SAGE meeting report #8: • *"To better understand asymptomatic cases, more comprehensive swabbing of returning global travellers during isolation would be useful".* • *"Out of the 9 confirmed UK cases, 7 have had genetic sequencing. Samples taken from the respiratory tract appear to be most reliable for testing, with some positive detections in faeces".* • *"There has been no positive detection from blood or urine so far. This suggests that the transmission route may be faecal-oral alongside respiratory (e.g. coughing and sneezing) and contact"*.
19 Feb	Pan *et al* – Family cluster – indicated the majority did not show clinical symptoms.	

19 Feb	Field briefing on the Diamond Princess cruise ship dated 19/02/2020 by the National Institute of Infectious Disease in Japan.	
21 Feb		NERVTAG #7: Older people and the Diamond Princess Cruise Ship: • *"NERVTAG view is that severe disease is possible in children but is rare. Severe disease is most frequent in older adults (over 50) and those with co-morbidities. There is currently no signal of worse disease or outcomes in pregnant women but this is based on very limited data".* • *"Outside of Mainland China, the total now stands at 1,259, an increase of 106 cases overnight. There are 625 cases distributed across 29 countries and areas and 634 cases on the Diamond Princess cruise ship".* • *"MZ provided a link to NERVTAG relating to a field briefing on the Diamond Princess cruise ship dated 19/02/2020 by the National Institute of Infectious Disease in Japan".* Risk assessment: • *"Current PHE risk assessment of the disease is moderate. The PHE risk assessment to the UK population is also moderate. This is a composite of what is known about transmission and the impact on public health globally and in the UK".* • *"Some members commented that there may be sustained transmission outside of Mainland China. Others commented that there is plenty of scope for escalation in the UK and this would be*

		an argument to keep the assessment as moderate rather than high at this time". • *"PH asked the committee if anyone thought that the PHE risk assessment should change. No objections were raised however after the meeting, JE emailed to say that he was online but for some technical reason could not be heard. JE believes that the risk to the UK population (in the PHE risk assessment) should be high, as there is evidence of ongoing transmission in Korea, Japan and Singapore, as well as in China".* • *"NERVTAG does not recommend a change to the PHE risk assessment at this time".* <u>Asymptomatic cases – question re the level to be used for modelling</u>: • *"NF noted that there were a few modelling groups estimating a higher infection rate when comparing case populations in Singapore, South Korea and Japan, this suggests that at least a third have been missed. JE commented on this after the meeting taking into account the issue of asymptomatic cases, where the evidence suggests that 40% of virologically confirmed cases are asymptomatic".* • *"NF commented that they are seeing a rapid deterioration among older age groups (50+) but the data on asymptomatic and symptomatic proportions in China are not well documented. Data from Japan and Singapore suggest that children are getting infected and the infection rates are similar to adults but showing relatively mild symptoms".*
21 Feb	Bai *et al* - A family cluster indicating that transmission may have been from a pre-symptomatic carrier.	

26 Feb		Current Understanding of COVID-19 compared with NSRA Pandemic Influenza planning assumptions: (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882716/19-current-understanding-covid-19-compared-with-nrsa-pandemic-influenza-26022020.pdf) • Notes that: *"Asymptomatic transmission cannot be ruled out and transmission from mildly symptomatic individuals is likely".*
28 Feb	Huang *et al* – Study on a family cluster in Nanjing, China - providing evidence of asymptomatic transmission.	
Feb	Tabata *et al* - Cases on the cruise ship the "Diamond Princess" – by 1 March over 200 cases were confirmed. 31.7% of cases were asymptomatic, 41.3% were classified as mildly symptomatic and 26.9% as severe.	
March		
3 March		SAGE meeting report #12: (1st mention of care homes) Throughout all of the SAGE notes older people are rarely mentioned specifically, and here they are only mentioned in relation to their effects on death counts and the demand for critical care beds: • *"Social distancing for over-65s is likely to have a significant effect on overall deaths and peak demand for critical care beds, but will not significantly reduce overall transmission. This would be most effective for those living independently; it will be a challenge to*

		implement this measure within communal settings such as care homes".
4 March	Hu *et al* – Presented the clinical characteristics of 24 asymptomatic infection. These indicated that a large proportion had impacts in their chest shown through CT images.	
5 March	Rothe *et al* – Case of a German businessman who contracted the virus from attending meetings with a business partner from China who later proved to be pre-symptomatic.	SAGE meeting report #12: • *"Cocooning of older and vulnerable patients can start later, and would have to continue longer, than other measures"*
6 March		NERVTAG #8: Face masks, scrub hats and PPE for cleaners: • *"Members raised concerns around explaining why facemasks were acceptable for healthcare staff but not the general public".* • *"Members asked if scrub hats would be a sufficient replacement for the hood/ cagoule. JD responded that scrub hats were initially on the COVID-19 IPC guidance for about 24 hours and then were removed as they received reports that scrub hats were not available in all hospital departments and there was little supporting evidence for the use of scrub hats as an additional measure".* • *"PH summarised that although having a head covering is considered optimal, these are not available and the evidence for supporting a head covering is limited to showing that you can get splashes on your hair. Therefore, it seems proportionate to not recommend a head covering".*

		• *"JD works in a HCID centre and spoke to the matron who said that a terminal clean can take about 30mins with 2 people doing it minimal and sometimes requires two shifts with two people, therefore up to an hour to do a terminal clean. The matron's concern is that it is a hot and difficult job and there is a greater possibility of contamination if you are just wearing a gown and gloves. It's difficult not to touch your face and nose if you're not wearing a visor, mask or respirator to cover your mouth and nose. This is the HCID rationale for continuing to use full PPE for a terminal clean. Rather than gloves and apron, they will use gown, gloves, a FRSM or FFP3 respirator (depending on aerosol risk which should be negated if the room is left long enough), and the full-face visor to stop staff self-contaminating during a long cleaning procedure".* PHE capacity for testing: • *"CB goes on to say that the anticipation is that PHE will not have the ability to test in the community as numbers increase".* Pre-symptomatic transmission and viral shedding: • *"NF noted that the WHO report highlighted that infectiousness seems to be just before and just after symptom onset and this is consistent with the Chinese data and other respiratory infections".* • *"CB explained that operationally, there are currently around 35 people who have been told to self-isolate who are asymptomatic who this recommendation would apply to directly as to when they can come out of isolation".* • *"WSL noted that the committee may want a different range for those in immunocompromised groups and those on steroids as*

		the data suggests that those on steroids have more viral shedding".
9 March	Tong *et al* – Case studies of 2 persons who were infected by other people who were pre-symptomatic and then went on to transmit to other family members who were at the time of testing asymptomatic.	
10 March		SAGE meeting report #14: (2nd mention of care homes) • *"SAGE agreed that social distancing measures for the elderly should apply to those aged 70+. Modelling using 65+ and 70+ deliver comparable results, but there is a large drop off in efficacy if the measures are confined to 80+"* • *"SAGE advised that these social distancing interventions should consider 2 distinct groups: a) those aged 70+ who are generally well and b) vulnerable groups of all ages (including those aged 70+).* • *"Transmission is underway in community and nosocomial (i.e. hospital) settings".* • *"SAGE endorsed NERVTAG's advice that individual case isolation should last for 7 days from onset of symptoms".* • *"SAGE advised that special policy consideration be given to care homes and various types of retirement communities (where residents are more independent)".*

12 March		NERVTAG paper: "Paper for SAGE – distance, time, handshakes": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890022/s0050-nervtag-distance-time-handshakes-120320-sage15.pdf) • It notes that transmission can occur quickly and therefore there is no entirely safe distance. However, they felt that 15 minutes that PHE recommends for risk for contact tracing is a pragmatic and possibly conservative threshold for the purposes of contact tracing. This is based on one study which concluded that exposure for > 30 min at less than 1m was the highest risk factor.
12 March	Cai *et al* – Examination of a cluster of cases associated with a shopping mall in Wenzhou, China – concluded that indirect transmission occurred and presumed it was either via virus contamination of common objects, virus aerosolization of asymptomatic transmission.	
13 March		SAGE meeting report #15: • *"The science suggests that household isolation and social distancing of the elderly and vulnerable should be implemented soon, provided they can be done well and equitably. Individuals who may want to distance themselves should be advised how to do so".* • *"Community testing is ending today – which will increase the pace of testing (and delivery of results) for intensive care units, hospital admissions, targeted contact tracing for suspected clusters of cases and healthcare workers. This includes faster confirmation of negative results".*

16 March		SAGE meeting report #16: • *"SAGE agreed that its advice on interventions should be based on what the NHS needs and what modelling of those interventions suggests, not on the (limited) evidence on whether the public will comply with the interventions in sufficient numbers and over time".*
19 March	Zou *et al* – Established that the viral loads in an asymptomatic patient was similar to that in the symptomatic patients. It clarifies that this aligns with other reports that there is transmission potential from both asymptomatic and minimally symptomatic patients. It also notes that transmission may occur early in the course of infection and that case detection and isolation may require strategies different from those needed for SARS-CoV-1.	
20 March		NERVTAG # 10: Asymptomatic and aerosols: • *"JVT noted that the previously circulated paper by MZ presented the evidence position well. There is plenty of information on asymptomatic people testing positive for SARS-CoV-2 but very little information regarding transmission. There is an ongoing process at PHE to track new information. There are sporadic reports, but the data are not convincing. The Chair requested that the paper be updated by WB & PHE Virology Cell".* • *"[Action: PHE to update previous paper on asymptomatic transmission and pass to WB for additional input]"*

		• *"Members discussed the issue of the COVID-19 aerosol risk from coughing. It was noted that the infectious dose from aerosols was not known for this virus".*
20 March	Tabata *et al* – Retrospective study of non-severe vs severe symptomatic cases on the cruise ship "Diamond Princess". 31.7% of cases were asymptomatic, 41.3% were classified as mildly symptomatic and 26.9% as severe. Study of 104 cases indicated that a high proportion of people who were mildly symptomatic had a high prevalence of abnormality in their lungs on CT scan and also in some asymptomatic cases. It noted that this is a different clinical feature to both SARS-CoV-1 and MERS. It suggested that asymptomatic patients may also spread the virus from the upper respiratory tract.	
23 March	Qian *et al* – Discussed a family cluster in which family members were infected pre-symptomatically and also other asymptomatic.	
26 March	Luo *et al* – It noted that the proportion of asymptomatic and mild infections accounted for almost half of all confirmed cases among close contacts and that clinically more severe cases were more likely to pass infection to their close contacts.	SAGE meeting report #19: • *"More urgently, SAGE needs to understand nosocomial transmission and how to limit it".*

31 March		SAGE meeting report #21: (3rd mention of care homes) • *"It was noted that data on deaths in the community are now available, as well as hospital deaths".* • *"NHS to urgently create and chair a nosocomial infection sub-group, with dCMO support, involving modelling, genomics, clinical expertise and engineering: the sub-group needs to consider the role of healthcare workers in nosocomial spread, the risk to care homes and solutions for reducing nosocomial spread".*
April		
1 April	Wölfel *et al* – Detailed virologic investigation of 9 cases showed that there was active virus replication in the upper respiratory tract, which suggests the potential for pre- or oligosymptomatic transmission.	
3 April	Kimball *et al* – Study of residents in long term care nursing facility in USA found high proportion of positive cases were asymptomatic	NERVTAG #12: Aerosols: • *"The Chair asked AB for an update on environmental sampling. AB referred to a Chinese paper which reported, similar to the Nebraska results, that virus detection in air sampling was very low, but virus is being detected. The first aerosol positives have been recorded at very low levels in the UK; however, these need to be validated. Most samples are registering as negative. AB added that assays on samples from Nottingham are being carried out. WB noted that air sampling is also being undertaken at St*

		Marys. Preliminary data show virus detection in the environment. One of four air samples was a very low level positive". Asymptomatic transmission: • *"MZ informed members that the paper from 6 weeks ago on asymptomatic transmission had been updated. The current paper considers what approaches are being used to assess asymptomatic infection, what data are available and the preliminary data for the UK. There is information available on the detection of infection in asymptomatic individuals but little information on the transmission risk from asymptomatic individuals. There are 3 basic approaches for studies: direct epidemiological, indirect epidemiological and virological".* • *"It was noted that the majority of samples are upper respiratory tract".* • *"The PHE data show that day 7 is the last time point of recovery of infectious virus, which is consistent with international data (Wolfel et al)1. This is also important with regards to policy and the recommendation for self-isolation of 7 days in the community. There is an inference that the viral load is building before the onset of symptoms, suggesting an individual could be infectious while asymptomatic. It was noted that these samples came from hospitalised patients and it would be useful to have data for community cases. There is a need for systematic sampling of patients, both in community and hospitalised patients released into the community".* • *"Members discussed the importance of clarifying between pre-symptomatic transmission and asymptomatic transmission and using the correct terminology. It was agreed that there is data of*

		pre-symptomatic transmission (both direct and indirect, based on the models). JE confirmed that both pre-symptomatic and asymptomatic transmission are assumed in the SPI-M models. In their model, ~40% of cases don't seem to display symptoms and these cases are given an arbitrary assumption of 50% infectiousness compared with symptomatic cases".
7 April		SAGE meeting report #23: • *"NERVTAG concluded that increased use of masks would have minimal effect (in terms of preventing the uninfected general population from becoming infected), based on a review of the available science. Questions were raised about whether this would change if it were found that individuals have high levels of pre-symptomatic/asymptomatic infectiousness (in which case could masks reduce early pre-symptomatic spread)?"*
8 April		Comas-Herrera, A – **"Briefing Note: Current UK guidance on admission and care of residents during COVID-19 is based on symptomatic cases, ignoring early international evidence and lessons from other countries".** LTC Responses to COVID-19, International Long-Term Care Policy Network. (https://ltccovid.org/2020/04/09/briefing-note-current-uk-guidance-on-admission-and-care-of-residents-during-covid-19-is-based-on-symptomatic-cases-ignoring-early-international-evidence-and-lessons-from-other-countries/) This highlighted two main areas of concern re the UK guidance: 1. Requirement to isolate residents and staff on the basis of symptoms – when international evidence is that many people who are positive are asymptomatic.

		2. Care home capacity and isolation capabilities – raising concern about whether care homes will have the capacity to isolate residents. Points the reader in the direction of experience from countries like South Korea, Singapore and some regions in Spain and States in the USA where they discharge COVID-19 patients into quarantine centres and cared for by primary health services.
9 April		NERVTAG minutes #13: Care homes and other institutional settings: • *"Indicated that they only started discussing data on care homes from 9 April when there were 844 new acute respiratory outbreaks in care homes of which 412 had tested positive for SARS-CoV-2 (whereas in comparison there were only 39 outbreaks in hospitals, with 34 positives)".* • *"Asked for breakdown of other category into 'prisons and shelters for the homeless'"* • *"Members discussed the success of the measures in place in the community compared to the apparent lack of success of measures in place in institutional settings, and the potential increase in nosocomial transmission. The issue of staff working between different care homes was also raised".* • *"Members queried whether the timing of the epidemic curve varied between the community and institutional settings. There would be an expectation that institutions would be the last to be infected if the correct shielding is in place and this issue needs further investigation. It was noted that flu outbreaks in care homes often precede outbreaks in the wider community".*

		• *"The issue of discharged hospital patients being placed in care homes was also discussed. It was noted that the period of isolation for all institutional environments e.g. for a care home resident being discharged from hospital back to their home, is 14 days".* • *"[Action: GD to feedback on any intelligence related to staff working between care homes.]"* • *"[Action: JVT to feedback NERVTAG concerns to DHSC about the number of outbreaks in care homes.]"* Face masks in public: • *"JVT informed members that the issue of facemasks remains a key policy issue. WHO's reputedly changed their position, but this remains in line with existing NERVTAG recommendations. The US have introduced a "soft advisory" position on wearing facial protection outside the house and it has been questioned why the UK is not doing the same.* • *"The committee noted the global shortage of PPE. SAGE has asked NERVTAG for specific advice on the general wearing of facemasks by the public. A SAGE subcommittee reviewed the situation for specific occupational groups. It was noted that there are modelling papers being released which suggest widespread use of facemasks in the community may have had an effect in some areas".* • *"Also more data has become available on people who may be infectious prior to developing symptoms. The recommendation of wearing face masks in the community may not be to protect*

		people from getting the infection but to prevent the virus being passed on during the presymptomatic phase".
10 April	Wei *et al* – Seven clusters of cases in Singapore from 243 cases in which pre-symptomatic transmission was likely.	
11-12 April		Study by PHE on staff and residents in 6 Nursing Homes in London. Report was not released for some time even to the care homes – findings are mentioned in: • 28 April – Minutes of the NERVTAG 15th meeting • 13 May - NERVTAG paper: "Asymptomatic SARS-CoV-2 infection"
13 April		NERVTAG paper: "Duration of infectiousness following symptom onset in COVID": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890055/s0128-nervtag-duration-infectiousness-following-symptoms-covid-130420-sage25.pdf) • *"Available scientific literature on the detection of SARS-CoV-2 RNA, reviewed at this meeting suggested that on average up PCR results falls below the limit of detection of available PCR tests at about 10-14 days after the date of onset of symptoms. In the largest study, of 292 confirmed cases, the median time from the onset of symptoms to first negative RT-PCR results for oropharyngeal swabs of convalescent patients was 9.5 (6.0- 11.0) days. However, some patients can remain PCR positive for a month or longer days. This is also true for prolonged detection of*

		viral RNA in faeces. A PCR positive sample does not necessarily mean the person is infectious".
		• *"Based on the available, but very limited, information it is NERVTAG's opinion that for mildly unwell individuals managed in the community, a period of seven days of self-isolation after illness onset is reasonable. This may need to be revisited as additional evidence on the duration of infectiousness arises".*
		• *"A longer period of isolation (14 days) may be warranted for certain groups:*
		  ○ *People who care for vulnerable individuals at home or in institutions where infection prevention and control measures are not in place.*
		  ○ *Immunocompromised individuals and those on steroids (including those with lung disease) who may have a more prolonged period of viral replication and infectiousness.*
		  ○ *Moderately or severely ill, hospitalised patients, who are likely to have higher viral loads and more prolonged viral replication, and therefore a more prolonged period of infectiousness.*
		  ○ *Particular caution should be exercised in COVID-19 patients discharged from hospital to nursing homes, homeless shelters, or other institutions where there are vulnerable individuals".*

14 April		SAGE meeting report #25: (4th mention of care homes) • *"There is significant transmission in hospitals".* • *"Care homes also remain a concern. There are less data available from these."*
15 April	He *et al* – Study of 94 patients found that viral loads in throat swabs confirmed that infectiousness peaked on or before symptom onset – it estimated that 44% of secondary cases were infected during the index cases pre-symptomatic phase and proposes that there is likely to be substantial pre-symptomatic transmission.	
17 April	Vetter *et al* – Study looking at observational and modelling reports – indicating that up to 12% of transmission may be happening pre-symptomatically.	NERVTAG #14: Care homes - outbreaks: • *JLB presented the paper on acute respiratory outbreaks. There are still high numbers of outbreaks being recorded, with these primarily focused in care homes. The number of outbreaks that tested positive for SARS-CoV-2 were provided for each setting. It was noted that there are a large number of care home outbreaks which have not been tested for SAR-CoV-2, so it is likely that the numbers will be higher than those listed. It was thought the numbers for week 16 were likely to increase from previous weeks. A breakdown of acute respiratory outbreaks (all causes) over recent weeks was provided for both setting and region".* • *"In addition, data were provided on the number hospitalised and number of deaths for some of the outbreaks. PHE requests that the reports from care homes are updated at the end of the outbreak, but this does not always happen, so the numbers of*

		final cases and fatalities may be underestimated. Members recognised that hospitalisation figures were not a good indicator of severity as not everyone who is severely ill will be sent to hospital". • *"Members discussed the numbers of outbreaks in care homes. It was clarified that the numbers presented in the outbreaks paper was only for England, while the numbers in the surveillance update covered the UK. For the cases not tested, it was assumed that approximately 90% would be positive for SARS-CoV-2".* • *"Members questioned whether there had been any swabbing carried out on an entire nursing home, with both symptomatic and asymptomatic being tested. AH noted data from a hotel for the homeless where 117 tests showed 2 symptomatic positives and 6 asymptomatic positives. It was understood that a set of such tests had been carried out on a selection of care homes across London last week, but the data are not yet available".* • *"It was noted it was important to include follow-up samples to distinguish asymptomatic and pre-symptomatic cases".* <u>Step down intermediate provision:</u> • *"One of the objectives of the enhanced surveillance is to consider care pathways, particularly for people coming out of hospital".* • *"Members suggested that there should be some level of intermediate care provision between leaving hospital and re-entering a care home. JE noted that this was being considered in the modelling. CB added that the proposal was included in the NHS/DHSC paper released recently, for provision of care if self-isolation cannot be achieved in the home. Some of the*

		Nightingale hospitals may be repurposed from acute facilities to step down facilities". Older people in hospitals – testing not prioritised: • *"Members asked about large-scale swabbing of care of the elderly and frailty units within hospitals. CB noted that this was to be done in a few hospitals next week, but the focus to date has been on the frontline".* IPC guidance for care homes: • *"CB added that PHE guidance for care homes is currently being updated, focusing on transmission within a home".* • *"Consideration still needs to be given on inter-home transmission driven by staff moving between homes".* • *"CSm noted a request to extend the CCP into long term nursing homes under NHS provision".* • *"Members asked if there was a specific taskforce for the strategy for care homes. It was determined that the work is with the NHS IPC cell, with support provided by PHE".* • *"LR noted that the IPC guidance was rapidly being updated to make the guidance for care homes and acute care settings clearer".* • *"GD added there is a DHSC social care action plan and that DHSC would be the policy leads for this issue".* Audit of IPC for hospital trusts: • *"MZ noted an action for an audit of IPC practices for hospital trusts".*

		Symptoms: • *"Members discussed enteric presentation. Approximately 4-5% of patients will present with solely enteric symptoms (vomiting, diarrhoea and abdominal pain), which is also typical for novel influenza virus infections in an adult population. Enteric presentations do risk mis-classification at admissions".* Pre-symptomatic transmission: • *"The Chair noted that although evidence was increasing, it was still sparse. GD noted that there were some emerging reports from complex cluster investigations and agreed to produce a discussion paper for the next meeting".* • ***"[Action: GD to produce a discussion paper on pre-symptomatic transmission for the next meeting]"***
20 April		Riley, S. WHO Collaborating Centre for Infectious Disease Modelling, Imperial College, London, "Potential impact of face covering on the transmissibility of SARS=CoV-2 in the UK": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/893648/S0207_Imperial_face_covering_plausible.pdf) • *"Hong Kong, Taiwan, South Korea and mainland China have been the most successful populations at maintaining COVID-19 case reproduction numbers at or below 1 since the start of February and have all strongly encouraged face covering."*

21 April		University of Manchester "Preliminary analysis of PHE Care Homes data": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/893126/S0218_Preliminary_analysis_of_PHE_Care_Home_Data.pdf) • This team looked at the PHE HPT team data which at this time said nothing about the scale of the outbreak, or the management, only if one way happening. They also had some data on all-cause mortality, but not COVID-19 specific. • They note in their summary: o *"However, it may be that the vehicle of connecting care homes is the Staff and staff seem to be suffering disease at similar number to residents (though reason for staff absence is unclear in the data and may be that staff are absent for precautionary reasons). If staff work in multiple care homes then these high attack rates may lead to depletion of susceptible staff and so reduce transmission in time. Moreover, staff interact with households and community and so infection can be passed to and from care homes in this manner.* o But disturbingly add: *"This is uncertain and so should not be factored into planning yet (on the basis of this email alone that is)."*
22 April	Jiang *et al* – Report on a 3-family cluster of infections involving asymptomatic and pauci-symptomatic transmission in China.	

23 April		SAGE meeting report #28: (5th mention of care homes) • *"A small but significant proportion of deaths relate to deaths in care homes, rather than in hospitals".* • *"Action: DFID CSA to lead working group to advise on testing strategy for care homes (including volumes required) and on reducing spread".*
24 April	Arons *et al* - Study of residents in long term care nursing facility in USA found high proportion of positive cases were asymptomatic.	
24 April	Ghandi *et al* – Study of viral loads found that peak of viral load for SARS-CoV-2 are 5 days earlier than for SARS-CoV-1 – stating that this made symptom-based infection more effective for SARS-CoV-1. It noted that 71% of pre-symptomatic persons had viable culture 1 to 6 days before the development of symptoms.	
24 April		NERVTAG #15: (https://m.box.com/shared_item/https%3A%2F%2Fapp.box.com%2Fs%2F3lkcbxepqixkg4mv640dpvvg978ixjtf/view/677989903140). Investigation in a military barracks outbreak in March in London: • There were a couple of reported cases and approximately 20 individuals in self-isolation. Approximately 300 people were sampled. The preliminary data are on detection from the swabs (nose and throat) and from antibody tests. 24/302 (7.9%) participants were positive on swab testing. 20/24 (83.3%)

		participants with positive swab results were asymptomatic until the day of swabbing. • *"Members discussed the CT values and viral loads in symptomatics and asymptomatics and whether the viral load in asymptomatics was high enough for them to be considered infectious. It was noted that infectious virus was recovered from some of the asymptomatic individuals. Numbers were not available. CB noted that screening of ~5000 individuals was being carried out over a selection of 11 hospitals, so there will be more data available shortly".* <u>Investigations in three homeless hostels:</u> • *"have shown similar ratios of asymptomatics to symptomatics to that in the military barracks. There may be a need for whole population screening in institutional settings".* <u>Information on the care homes investigation in six care homes in London over the Easter weekend</u>: • *"All residents and staff were sampled and a total of approximately 500 swabs were collected. The six care homes were at different stages of outbreak. One of the homes had only identified two cases and had very few symptomatics".* • *<u>"It was found that 75% of the residents carried the virus and only 25-33% were symptomatic. Approximately 45% of the healthcare workers were also carrying the virus, with 25-33% symptomatic".</u>* • *"For two care homes, with registered deaths of 11 and 19 residents respectively, approximately 50% of residents were still positive for the virus and most of these were asymptomatic".*

		• *"It was noted that symptomatic staff were self-isolating and being replaced by bank staff, who moved through multiple care homes. The individuals who were sampled will be followed up over the next two weeks".* • *"It was noted that some homes struggled with the implementation of infection control measures. Even with the use of full PPE, there was still a high rate of infection once a case had been reported."* • *"It was noted that the data presented to members showed that of the staff from the six care homes who tested positive, the majority were asymptomatic".* • In an *"investigation of five care homes, where swabs were taken immediately that the first case is reported. For one of the homes, the preliminary results show that 40% of the residents tested positive and 30% of the staff were also positive".* • *"It was noted that at present NERVTAG has not been asked to comment on care home measures"* Pre-symptomatic transmission: • *"One report from Singapore, one from Germany and three from China were reviewed. It was noted that there were reports of secondary cases presenting with symptoms at the same time as the index case".* • *"Members discussed the papers from He et al from Hong Kong and from Ferreti et al which estimated the proportion of infectiousness based on the serial interval between infections in chains of transmission. Members agreed that the limited evidence suggest that pre-symptomatic transmission does occur.*

		The importance of pre-symptomatic transmission is unclear but may account or up to 40% of transmission". • *"[Decision – members agreed that the phenomenon of pre-symptomatic transmission exists]"* • *"Members discussed pre-symptomatic transmission and asymptomatic transmission in the context of isolating contacts. The period of time prior to symptom onset for tracing the contacts was discussed. The evidence in the He paper suggests two days; however, the review of the five reports suggests a wider range, up to seven days, with the strongest evidence being for two days".* Face masks: • Face masks was discussed at SAGE on 21 April and summary of evidence has gone to Ministers for the decision.
27 April	Baggett *et al* - Study of residents in a homeless shelter in Boston USA found high proportion of positive cases were asymptomatic.	
28 April		The Government started releasing figures on the numbers of outbreaks and deaths in care homes in the Daily Briefings by which time many care homes had been infected. Data from 17 April indicated that around 2,000 people had died in care homes where COVID-19 was suspected on the death certificate.
30 April		PHE and DoH questions to NERVTAG in a document called: "Assessment of Pre-symptomatic transmission of COVID-19": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/890236/s0267-nervtag-

		assessment-pre-symptomatic-transmission-covid-19-300420-sage30.pdf) • Asked whether there was enough evidence for pre-symptomatic transmission, how it compares to the symptomatic period and if it should be considered when contact tracing? • They discuss 5 cases – identifying what was shown and whether other sources were excluded. • But they make no conclusions or recommendations.
30 April		SAGE meeting report #30: (6th mention of care homes) • *"There remains significant transmission in care homes, but number are plateauing. It will take a few more days before there can be greater confidence that these numbers are in fact stabilising".* • *"Understanding the transmission in care homes is more challenging, where the key limiting factors are the availability of metadata and materials to sequence".*
May		
1 May		NERVTAG #16: Asymptomatic transmission: • *A working group led by AH was convened to review and summarise available information on the proportion of COVID-19 infections that are asymptomatic from literature, for NERVTAG review prior to SAGE on 12th May. PHE agreed to provide*

		additional data updates on asymptomatic transmission and collated hospital trust data on snapshot testing of staff. • *"Members discussed the strength of the evidence of infectiousness of asymptomatic individuals. The assumption used for modelling is asymptomatics are 50% as infectious as symptomatics. JE referenced work from Vietnam and Germany which appears to show asymptomatic transmission but acknowledged the difficulty in distinguishing asymptomatic from pre-symptomatic infection".* • *"Members questioned whether asymptomatic PCR-positive individuals seroconvert. SL confirmed that in the military investigation, 10% of asymptomatic individuals did seroconvert. Four individuals were simultaneously sero-positive and PCR-positive. Infectious virus was recovered in one individual who was antibody-positive but had no neutralising antibody. SL added that more information on the care homes investigation would be available in the coming week. Sequencing is being carried out as part of the investigation".* • *"It was noted that there are very few data on proven transmission from asymptomatic PCR+ve individuals. WSL reported on work in Guangzhou province which found the risk of transmission from asymptomatic cases was 0.33%, using a cohort of 4,950. MZ reported figures for infectious virus isolation from asymptomatic individuals in both the military and care home investigations". "Members discussed whether PCR cycle threshold (Ct) levels in asymptomatic individuals may prove a useful correlate of infectiousness. It was agreed that individuals with no symptoms who are PCR positive can be infectious".*

		• *"[Decision: NERVTAG agrees that PCR-positive asymptomatic individuals may be infectious; but the level of infectiousness compared to symptomatic individuals is uncertain]"* <u>Asymptomatic transmission in care homes:</u> • *NERVTAG was asked to consider the potential for asymptomatic transmission from test-positive individuals, with specific consideration for closed environments, such as care homes and concluded that PCR-positive asymptomatic individuals may be infectious; but the level of infectiousness compared to symptomatic individuals is uncertain. Furthermore, PCR-positive asymptomatic staff should not provide care or have contact with susceptible vulnerable individuals.* • *The conclusion is that asymptomatic transmission may be part of clusters both outside and inside the household.* • *"CB introduced the circulated paper. PHE are swabbing staff and residents in care homes. It was noted that swabbing would detect a mixture of asymptomatic, pre-symptomatic, symptomatic and post-symptomatic individuals".* <u>Recommendations on procedures for care homes</u>*:* • *"Members discussed what approaches should be employed in closed settings, such as care homes, with vulnerable residents. A variety of approaches have been used in hospitals following swabbing of staff and determination of PCR-positive asymptomatic infection".* • *"Members agreed that more stringent measures are needed for nursing homes to improve shielding of highly vulnerable individuals".*

		• *"PCR+ve asymptomatic staff should not provide care or have contact with susceptible vulnerable individuals. The possibility of cohorting +ve staff and residents was discussed. It was noted that cohorting would need to be backed up with intense surveillance of staff and residents".* • *"The operational approaches should be decided by PHE & DHSC. CB would relay NERVTAG's comments to DHSC".*
5 May		SAGE meeting report #33: (7th mention of care homes – most mentions so far – first time an action has been stated to find out more information about transmission in care homes, which was an action for the PHE) • *"The overall reproduction number, R is in the range 0.5-0.9. If health and social care settings are excluded it is likely to be at the lower end of this range. As community incidence decreases, hospitals and care homes account for an increasing proportion of the overall number of cases. These settings can then drive transmission elsewhere".* • *"SAGE advises that based on current data, focus should be maintained on reducing transmission in health and care settings. Urgent action should be taken in establishments where relevant measures are not already in place, in line with previous advice (such as avoiding movement of patients or staff between establishments, separating people as far as is practical, and testing extensively)".* • *"Better data are needed from care homes, as is better understanding of the different environmental factors affecting spread in care home settings".*

		• *"More work is needed to understand transmission mechanisms, including in care homes and hospitals and in different contact situations. This should include understanding behaviours of healthcare workers".* • *"PHE to confirm the data on different types of transmission in hospitals (healthcare worker to patient, patient to patient, and health care worker to health care worker), by 7 May".* • *"Andrew Morris, with Charlotte Watts and Cath Noakes, to identify available data and further requirements on infection transmission of COVID-19 within care settings, as soon as possible (to be discussed at SAGE on 12 May).*
6 May		Daily Briefing: First time that the importance of transmission within care homes was mentioned on the daily briefing (by Dame Angela Mclean).
7 May		SAGE meeting report #34: (8th mention of care homes) • *"Genomic epidemiological analysis in progress in both healthcare and care home settings".* • *"SAGE reported the importance of addressing the epidemic in the healthcare and care home sectors, and reiterated its advice that there should be extensive testing of healthcare workers including asymptomatic workers as well as the application of other measures previously advised. SAGE participants offered to provide advice to the healthcare worker testing programme if required".* • Re the 'Risk assessment approach for environmental mitigation measures' - *"The principle that PPE was a defence only required*

		for very high transmission risk situations where other mitigations were not possible should be emphasised".
12 May		SAGE meeting report #34: (9th mention of care homes – second time that several bullets were included – first time that a 'care homes' section has been included – first time that preventing transmission with in a home has been mentioned – first time that IPC has been mentioned – first time the 'Care Homes Sub-Group' has been mentioned): • *"SAGE reiterated the importance of extensive and rapid testing focused on those at highest risk of becoming infected and transmitting the virus to others including health and social care workers".* Care homes: • *"Extensive testing of both residents and staff is crucial in care homes which have reported cases and those which have not".* • *"Preventing cases coming into care homes should be a key aim, with avoiding transmission within homes also important".* • *"Workforce management and behaviours are key factors in transmission. SAGE reiterated the need to minimise and ideally avoid completely, staff movement between homes. This presents a challenge to the operating model of care home providers".* • *"Working conditions in the sector similarly present challenges, including disincentives to self-isolate. Addressing these issues is critical to reducing transmission".*

		• *"IPC procedures are important and should draw upon expertise from healthcare".* • *"There are other settings where similar issues may arise, such as domiciliary care, hostels, and university halls of residence. Similar principles apply in these settings".* • *"Further targeted studies, including to understand variation in scale of outbreaks between different care homes and the reasons for this, are needed. Serological data, viral sequencing, behavioural data, and data from Das will also be helpful".* • *"SAGE endorsed the paper from the 'Care Home Group' subject to some changes to reflect SAGE discussion".* • *"**Action:** Environmental and Modelling Group to link to work by Andrew Hayward (UCL) groups or partners what additional data sources could be used to monitor care home infection and how this can be provided, by 14 May".* • *"**Action:** Care Homes Group to agree with ONS, PHE and DHSC and other relevant groups or partners what additional data sources could be used to monitor care home infections and how this can be provided, by 14 May".* • *"**Action:** DHSC and Care Homes Group to draw on IPC guidance from hospital environments to inform care home guidance by 14 May".*
13 May		<u>House of Commons:</u> • Sir Kier Starmer – challenged the PM on the statement in one of their documents in March 2020 saying that infections were 'unlikely' in care homes

		BBC Government Daily Update: • Government announced £600 million for IPC and action plan for social care. Includes NHS England support package for IPC. Notes all older people and staff should be tested by early June.
13 May		NERVTAG paper: "Asymptomatic SARS-CoV-2 Infection": https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/893330/S0358_Asymptomatic_SARS-CoV-2_infection.pdf Key conclusions of the paper (and level of confidence in these): • *"Asymptomatic / paucisymptomatic SARS-CoV-2 infection does occur (high confidence)".* • *"The proportion of infections that are asymptomatic / paucisymptomatic may vary by age, with an increasing proportion of infections being symptomatic with increasing age (moderate confidence), however this may decline again in the oldest age groups".* • *"Estimates of the proportion of infections that are asymptomatic / paucisymptomatic vary very widely, between 4% and 50%. Some of the highest estimates are from nursing home studies, and information on the completeness of follow up data are not always available. In elderly nursing home residents, symptoms may be difficult to ascertain".* • *"Current data (see summary table) suggest that the proportion of infections that are asymptomatic / paucisymptomatic is likely to be in the range of 10 - 35% (moderate confidence)".*

		Tabulates data from several studies including some data from the Sheffield NHS Trust, the Easter weekend PHE data and two other studies.
14 May		BBC Government Daily Update: • Mention of symptomatic and asymptomatic cases in care homes (Professor Van Tam).
14 May		SAGE meeting report #36: (10th mention of care homes) • *"The steady decline in hospital and care homes deaths continues; the rate of decrease is slowing, but not more than would be expected".* • *"NERVTAG has received various studies on asymptomatic infection. Many do not differentiate between asymptomatic / pauci-symptomatic individuals and pre-symptomatic individuals"* • *"It is possible that asymptomatic individuals are less infectious, but this cannot currently be quantified. There is a key knowledge gap concerning how positive testing correlates with the presence of live, recoverable virus (i.e. infectiousness), although PHE is currently investigating this."*
14 May		HM Government / CARE letter from Helen Whately, Minister of State for Social Care on support for care homes, published on the 14 May: (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/885214/14_May_2020_-_MSC_letter_-_support_for_care_homes_1.pdf)

		To: Local Authority Chief Executives; Directors of Adult Social Services; Directors of Public Health; Care Home Providers; CCG Accountable Officers. • It was noted that asymptomatic transmission had been a big issue, and advised some action points around staff movement. • Noted some evidence by the 'UK Centre for Evidence Based Medicine' – which had looked at actions that are likely to be effective – this list is weak and very incomplete: o Hand hygiene -effective hand hygiene measures were in place where there was strong managerial backing, adequate provision of sanitizer and access to hand hygiene facilities. o Staff rotation with staff allocated to one facility consistently, which may reduce spread across several locations and care homes. o Visitors and restrictions of visitation to only emergency/critical cases. o Testing of care homes residents and staff supports the home to rapidly respond and put additional measures in place to contain and prevent further spread. o Resident wellbeing as quality of life is important in PH emergency measures and can reduce anxiety.

16 May		Scottish Government interim guidance on testing for care home staff: The Scottish Government published this interim guidance on testing which acknowledges the risks from pre- and asymptomatic transmission in care homes: https://www.hps.scot.nhs.uk/web-resources-container/interim-guidance-on-covid-19-pcr-testing-in-care-homes-and-the-management-of-covid-19-pcr-test-positive-residents-and-staff/. The report notes that this was published after NERVTAG: • *"declined to provide definitive recommendations on how asymptomatic test positive cases should be managed"* (p.7). They said that: "*This guidance has therefore been developed using a consensus-based model and is being published as 'interim' guidance, to be updated in light of new evidence and lessons learned by care professionals and local HPTs from practical experience*".
17 May		Report from LtcCovid team on England mortality in care homes: https://ltccovid.org/wp-content/uploads/2020/05/England-mortality-among-care-home-residents-report-17-May.pdf Summary points: • Data on deaths in care homes directly attributed to COVID-19 underestimate the impact of the pandemic on care home residents, as they do not take account of indirect mortality effects of the pandemic and/or because of problems with the identification of the disease as the cause of death.

		• Not all care home residents die in care homes. According to ONS data, 13% of all deaths of care home residents took place in hospitals (28% of residents whose deaths were linked to COVID died in hospitals). • Data on registered COVID-19 deaths among care home residents in England only accounts for an estimated 54% of all excess deaths in care homes (compared to same period in 2019). • Total excess mortality taking place in care homes since 28th December is estimated to be 19,319 (48% of all excess mortality in England), and excess mortality among care home residents was 22,231, 55% of all excess mortality in England.
18 May		Daily briefing: • Addition of loss of taste and smell discussed in daily briefing, but nothing mentioned about asymptomatic / pre-symptomatic etc transmission
18 May		The UK Government Science and Technology Committee wrote to the Prime Minister identifying the lack of attention on asymptomatic transmission: It noted it being a major gap in the UK Government's strategies and had recommended that the government needed to explicitly set out its strategies to managing asymptomatic transmission: https://publications.parliament.uk/pa/cm5801/cmselect/cmsctech/correspondence/200518-Chair-to-Prime-Minister-re-COVID-19-pandemic-some-lessons-learned-so-far.pdf. They stated that (pp.13-14):

		• *"Finding 6: Strategies to deal with carriers of COVID-19 who were asymptomatic have not been clear."* • *"Recommendation 6: The Government should explicitly set out its approach to managing the risk of asymptomatic transmission of the disease."*
18 May	Ing *et al* – Study of infected cruise ship on visit to Antarctica which left mid-March and did not have anybody with symptoms on embarkation. They also did not leave the ship for the whole trip. 59% tested positive and 81% were asymptomatic. They note that there may have been cross-contamination after cabin isolation.	BBC interview by Professor Susan Michie, Professor of Health Psychology, Director of the Centre for Behaviour Change at UCL (who is on the SAGE Behavioural Science group): She said that: • *"No-one is talking about the fact that a person is most infectious 2-days before the symptoms start" and that "this is an important issue to communicate".*
19 May	Report from BBC that had obtained a copy of a PHE report from a genome study undertaken Easter Weekend on staff working across care homes had indicated that there were high number of asymptomatic and pre-symptomatic residents and staff. It indicated that infection could be introduced by staff working across homes.	BBC report on PHE care home worker study: (see: https://www.bbc.co.uk/news/uk-52727221) • Public Health England had reportedly confirmed themselves through a study carried out over Easter weekend (this report does not seem to have been released to the public, although some meeting minutes refer to it – See NERVTAG minutes of the 15th meeting on 28 April), that: • "*High numbers of asymptomatic or pre-symptomatic cases among staff and residents*" and that "*infection may be being imported into the homes by staff*" • *"It was found that 75% of the residents carried the virus and only 25-33% were symptomatic. Approximately 45% of the healthcare workers were also carrying the virus, with 25-33% symptomatic."*

19 May		The Parliamentary Health and Social Care Committee Expert Consultation on care homes: (https://parliamentlive.tv/Event/Index/5fbbebb5-b2e1-4339-aaeb-f4a53aec56de) Includes experts from the London School of Economics; Hong Kong University; Germany; and care home network representatives: Vic Rayner, The Exec Director, National Care Forum; Professor Martin Green Chief Exec of Care England; and James Bullion – President of the Association of Directors of Social Services
20 May		House of Commons: • Sir Kier Starmer – challenged the PM over why the Government guidelines said no tests were needed to discharge patients from hospitals back into care homes • PM deflected the question saying that they would not have been sent back to care homes without the doctors discharging them
20 May		Daily Briefing: • Culture Minister Oliver Dowden asked by media why the Government was 'glossing over' problems and why they were not admitting they had made honest mistakes, in the same way that Emmanuel Macron had done – and that there will be a Public Enquiry and you will be called to that Public Enquiry so why not begin that conversation now? • Response was that there will be a time for lesson learning later but the public want us now to be dealing with the crisis.

21 May	Roxby *et al* – Early surveillance and testing of residents and staff in an independent and assisted living community for older adults in Seattle, USA – identified a- and pre-symptomatic individuals and prevented a wide-spread facility outbreak.	
22 May	Wang *et al* - Study of 279 contacts of hospitalised patients between January to March in Wuhan China and concluded that Asymptomatic individuals infected are an important source of transmission.	
23 May		The document: Admission and Care of Residents during Covid-19 Incident in a Care Home guidance, dated 2 April and downloaded 23 May (but noted that it would be updated at some point and referred the reader to some other documents for some information): (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878099/Admission_and_Care_of_Residents_during_COVID-19_Incident_in_a_Care_Home.pdf) • This document still stated that if someone was discharged from hospital with no symptoms of COVID-19, then care home staff should provide *"care as normal"* (Annex D). • Annex B - also still stated few symptoms as indicting infection (although adding one symptom to the list), and still defined an infectious case as: *"anyone with the above symptoms is an infectious case for a period of 7 days from the onset of symptoms."*

26 May	Graham *et al* – Study of 4 nursing homes in the UK – identified asymptomatic positive staff and residents and those with atypical symptoms – Viral sequencing provided evidence of multiple viral strains within a single nursing home suggesting there were multiple introductions.	
27 May		WHO updated its Long-Term Care COVID guidance – and linked to BushProof strategy mentioning the zoning approach: (https://www.euro.who.int/en/health-topics/Health-systems/pages/strengthening-the-health-system-response-to-covid-19/technical-guidance-and-check-lists/strengthening-the-health-systems-response-to-covid-19-technical-guidance-6,-21-may-2020)
28 May		NERVTAG paper: "Asymptomatic SARS-CoV-2 Infection": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895793/S0482_NERVTAG_-_viral_dynamics_of_infectiousness.pdf) (Written 3/6/20) Key conclusions of the paper (and level of confidence in these): • *"Asymptomatic / paucisymptomatic SARS-CoV-2 infection does occur (high confidence)".* • *"Viral RNA dynamics (measured by RT-PCR) confirm a peak in viral load just prior to or around the time of symptom onset followed by a gradual decline in viral load".* • *"RT-PCR detection can extend until day 43 post symptom onset in some individuals, but beyond 14 days post symptom onset most,*

		***but not all**, infected people shed virus at amounts lower than can be cultured suggesting they are no longer infectious".* Recommendations: • *"Returning to work after mild COVID: Individuals can remain RT-PCR positive for more than 40 days after infection but this does not mean they are infectious to others. Provided symptoms are resolving, the probability of infectiousness is likely to be low, but not zero, 7 days after illness onset".* • *"Returning to work with vulnerable people: For this occupational group, consideration should be given to adopting a risk-based approach. Reassurance that it is safe to return could be obtained by measuring Ct values (viral load) in a swab taken at time of return, considering time since symptoms and severity of symptoms and perhaps also measuring antibody levels. Low viral load (high Ct value), longer times since symptoms, mild symptoms and the presence of antibody mitigates the risk of transmission".* • *"Discharge after COVID that required hospital care: A small number of hospitalised COVID patients (fewer than 5%) may continue to shed infectious virus beyond day 14. These do represent a small risk for onwards transmission to carers and cohabitants. A risk-based approach is recommended, especially for people who will be discharged to an environment where they will interact with vulnerable people (e.g. nursing homes). Assessment for these people can be informed by considering the viral load indicated by the Ct value from RT-PCR testing (if it is available) and measurement of serum antibody. Low viral load and presence of antibody mitigates the risk of transmission".*

		• *"Discharge back to settings with vulnerable people: Since there continues to be ongoing acquisition of SARS CoV2 infections in hospitals, patients admitted for other reasons may be presymptomatic or asymptomatic for COVID on discharge and might reseed infections into the community. Consideration should be given to screening patients before discharge back to vulnerable settings. A low Ct value and absence of antibody would indicate they may still be infectious".* Analysis of evidence (p.10): • *"Viable virus was recovered from 70% of pre-symptomatic patients, supporting the hypothesis that patients are likely infectious in the pre-symptomatic phase".*
28 May		SAGE meeting report #39: (11th mention of care homes) • *"SAGE endorsed paper by Andrew Hayward and Ian Hall, which highlights risks in the homeless sector, prisons sector (including custody suites), in immigrant reception centres and other institutions featuring vulnerable populations and communal facilities".* • *"SAGE advised strongly that efforts to limit transmission in these settings (including testing and surveillance) must be proactive (rather than waiting for outbreaks to occur) – and that they must be treated differently from settings such as care homes, given trust issues and particular challenges around test, trace and isolate".*

31 May	Increase in interest in the asymptomatic issue in the media – 'The mystery of the silent spreaders' – by David Shukman – 31 May - https://www.bbc.co.uk/news/uk-52840763 – includes description of cases of the pre-symptomatic spread in a church in Singapore on 19 Jan.	Evidence summary by: Hospital Environment / SAGE Environment and Modelling / SAGE Hospital Onset COVID-19 Infection Sub-groups: "Mask wearing to reduce virus transmission in hospitals": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895818/S0485_EMG_SARS-CoV-2_in_the_hospital_environment.pdf) • Summarises that there is some mechanistic evidence that medical/surgical face masks can block a significant proportion of droplets emitted by people infected with influenza and seasonal coronavirus. • That it is reasonable to consider the use of extended use of facemasks in hospitals by healthcare workers and face coverings by the public. • *"The extended use of face masks in other healthcare settings should also be considered, although supply chain issues are also pertinent here".* • *"Taiwan, Singapore and Hong Kong have imposed the use of face masks when entering healthcare settings. Additionally the policies of countries such as South Korea, China and Czech republic that, in addition to other measures, recommended the generalised use of masks from the beginning of the pandemic, led to widespread use of masks in countries hard hit by the pandemic, such as Italy and Span, despite the fact that the WHO does not recommend its use by the general public".*

June		
June	Du *et al* - CDC article on study looking at data from transmission in China of 8 February – which indicated that 12.6% of case reports indicated pre-symptomatic transmission.	
3 June	Oran *et al* – Review of available evidence – concluded on both asymptomatic positive cases and asymptomatic spread.	Government Daily Update: • Introduction of the Chair of the National COVID Social Care Task Force – David Pearson.
4 June		Government Daily Update: • Transport Minister was asked a question about why the government strategy was to discharge patients into care homes without testing – he said twice in the response that the discharge would have been 'clinical decisions' and that this guidance was updated an at early stage
4 June	Byambasuren *et al* – Systematic review and meta-analysis – Confirmed that both asymptomatic cases and asymptomatic transmission is occurring, although their estimated rates were lower than other studies.	SAGE meeting report #40: (12th mention of care homes) • *"CoCIN data suggests it is highly likely that a significant proportion of total transmission is derived from hospitals or care homes."* • *"Action: Care Homes Sub-group to consider recommendations from Nosocomial group paper 'Mask wearing to reduce virus transmission in hospitals', and assess its implications for care homes, before Nosocomial group paper is endorsed at SAGE subgroup chairs meeting on 8 June"*

10 June		NERVTAG paper: "Asymptomatic SARS-CoV-2 Infection": (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/895788/S0518_NERVTAG_paper_-_viral_dynamics_of_infectiousness.pdf) - (minutes written 10 June): • Similar findings and recommendations to the previous 28 May meeting. • p.10 – *"Several more recent preprints and publications have addressed the length of shedding and amount of virus shed in asymptomatic infections. These papers show very small differences in viral load and length of RT-PCR positivity between asymptomatic and presymptomatic groups".*
11 June		SAGE meeting report #41: (13th mention of care homes – and first time the issue of the safe return of patients and staff to care homes has been mentioned) • *"Action: Care Home Subgroup to send 'Wearing of mask coverings to reduce infections within care homes and other potential settings' paper, once complete, to DSHC and to SAGE secretariat for placement in repository".* • *"The peak viral load occurs just before or around the time of symptom onset".* • *"Action: PHE (with senior clinicians' group, as appropriate) to determine additional advice on testing to enable safe return of patients and staff to settings involving vulnerable people (e.g. care homes)".*

		• *"Public toilets are a potential vector for transmission because of stacked risk of aerosol presence, faecal matter, frequently touched surfaces, confined pace and public queuing".*
18 June		The main UK Government IPC guidance document (**COVID-19: infection prevention and control (IPC) guidance,** had some minor edits on the 18th June, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/886668/COVID-19_Infection_prevention_and_control_guidance_complete.pdf). It is still not clear enough on the importance of asymptomatic or pre-symptomatic and continued to provide the same contradictory statements. For example, the same statements exist as before (p.11): • *"Infection control advice is based on the reasonable assumption that the transmission characteristics of COVID-19 are similar to those of the 2003 SARS-CoV outbreak";* • *"The incubation period is from 1 to 14 days (median 5 days). Assessment of the clinical and epidemiological characteristics of COVID-19 cases suggests that, similar to SARS, most patients will not be infectious until the onset of symptoms. In most cases, individuals are usually considered infectious while they have symptoms; how infectious individuals are, depends on the severity of their symptoms and stage of their illness".*

19 June		UK Government incorporates some asymptomatic transmission considerations into: **Admission and Care of Residents during Covid-19 Incident in a Care Home guidance,** dated 19 June: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878099/Admission_and_Care_of_Residents_during_COVID-19_Incident_in_a_Care_Home.pdf • This is an improvement on the previous version from the 2 April. • But still **Annex D – IPC measures –** states that the care home should undertake isolation procedures the same way as if an individual had influenza or diarrhoea or vomiting – however COVID-19 requires additional levels of IPC above what is required for these more common illnesses. *"Care homes are not expected to have dedicated isolation facilities for people living in the home but 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 or diarrhoea and vomiting, taking the following precautions:.."* So the UK Government is still providing confusing information to care homes, by implying that the IPC procedures for SARS-CoV-2 are the same as for influenza – which they are not.

Annex 3 - Views of scientists on asymptomatic transmission - January 2020

Who	Opinion – late January 2020
Dr. Kwok-Yung Yuen of University of Hong Kong-Shenzhen Hospital, said in a statement (reported on 24 Jan)	*"Because asymptomatic infection appears possible, controlling the epidemic will also rely on isolating patients, tracing and quarantining contacts as early as possible, educating the public on both food and personal hygiene, and ensuring health care workers comply with infection control,"* Dr. Kwok-Yung Yuen from the University of Hong Kong-Shenzhen Hospital, who led early Coronavirus research in China, said in a statement.
Professor Mark Woolhouse, Professor of Infectious Disease Epidemiology, University of Edinburgh (27 Jan)	*"In my view it is premature to conclude, on the basis of the evidence currently available, that the new virus can be transmitted before symptoms appear.... In any case, this is a new virus and we are still learning about it, including how and when transmission can occur. Further, robust research on this point is urgently needed. That is because the question is crucially important. In the absence of any treatment or vaccine our main hope of controlling the epidemic is the rapid identification of cases and the immediate prevention of onward transmission through patient isolation and infection control. The efficacy of those interventions would be compromised if significant levels of transmission occurred before symptoms appeared and the patient reported to a health care facility."*
Prof Jonathan Ball, Professor of Molecular Virology, University of Nottingham (27 Jan)	*"Defining the scale of asymptomatic transmission remains key: if this is a rare event then its impact should be minimal in terms of the overall outbreak. But, if this transmission mode is contributing significantly then control becomes increasingly difficult. It's looking like this coronavirus is behaving very differently to SARS and MERS, and this is a big concern. I would be surprised if WHO do not declare this as a Public Health Emergency of International Concern."*
Professor Wendy Barclay, Department of Infectious Disease, Imperial College London (26 Jan)	*"Many of the respiratory viruses that spread amongst humans do transmit even in the absence of symptoms, including influenza and other cold viruses. They are carried into the air during normal breathing and talking by the infected person. It would not be too surprising if the new coronavirus also does this. If this does prove to be the case then controlling the spread does become more of a challenge, and measures like airport screening are unlikely to stem the virus effectively."*
Michael Head, Senior Research Fellow in Global Health,Faculty of	*"If 'symptomless spreading' is confirmed, it would not be too surprising. Other respiratory infections such as measles and influenza can both be spread, without the infected person showing symptoms. A key factor would be the extent of the person-to-person*

Medicine, University of Southampton (26 Jan)	*transmission. If transmission between people is not too extensive, then the impact of symptomless spreading would not be too great. If there is significant levels of person to person transmission, this would make containment of the outbreak harder."*
Nathalie MacDermott, NIHR Academic Clinical Lecturer, King's College London (26 Jan) – referring to one of the three studies in the PHE report to SAGE	*"While the suggestion that the 2019-nCoV virus may be contagious during the incubation period, as reported by a doctor in Zhejiang province in relation to a cluster of cases linked to an individual who had yet to show any symptoms, is concerning it is not surprising. It is known that several other coronaviruses and respiratory viruses from other virus families can be spread during the incubation period, the period during which a person is infected but has not yet developed symptoms. This was taken account of in some of the modelling exercises undertaken by colleagues recently, and was likely given the degree of spread of the outbreak within China. There is often the question of whether individuals who may be infected with the virus but never show any symptoms (asymptomatic or subclinical cases) may also be contagious to others. The report from Zhejiang suggests this may be the case, but further confirmation is required. This report highlights the importance of identifying individuals who may have travelled from affected regions or had contact with a known case of 2019-nCoV infection to establish if they may have symptoms and to request they limit their attendance at public gatherings in order to try and contain the spread of infection. While these findings may cause concern, the possibility of transmission of virus during the incubation period and from asymptomatic individuals has been considered by public health authorities and the WHO, and has been included as a factor within response plans to tackle an outbreak of an airborne virus."*
Professor Paul Hunter, The Norwich Medical School, University of East Anglia (26 Jan)	*"Current headlines are stating that the Wuhan coronavirus is being spread by asymptomatic people. Whilst there appears to be good evidence from at least one report this is surprising. If person to person spread from people without symptoms became common then this would be extremely worrying. It would also be very surprising."*