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Exhibits: 98
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UK COVID-19 INQUIRY

WITNESS STATEMENT OF KEVIN BAMPTON – ON BEHALF OF THE COVID-19 AIRBORNE TRANSMISSION ALLIANCE [IN RESPONSE TO THE COVID-19 INQUIRY'S MODULE 1 RULE 9 REQUEST FOR EVIDENCE; REF: M1/CATA/01]

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1. I am Professor Kevin Bampton, LLB FCMI FRSA FHEA, a member of the CATA Executive and Chief Executive Officer of the British Occupational Hygiene Society (the Chartered Society for Worker Health Protection)[1], on the Board of the Council for Work and Health, Chair of the British Standards Institute Health and Safety Management Committee, Chair to the Occupational Health Multidisciplinary Forum and a member of the International Standards Organisation Infectious Diseases Committee. I make this statement in my capacity as a CATA executive member.

2. In response to this Rule 9 Request in relation to Module 1, I propose to respond to the Inquiry's questions under four broad headings : i) overview of who CATA is, how it was formed and why; ii) discussion of the basis in principle for claiming that the failure to recognise the airborne route of transmission was a fundamental barrier in pandemic resilience, preparedness and emergency planning; iii) expressing CATA's position, advocacy and engagement around issues of pandemic resilience, preparedness and emergency planning and iv) CATA's proposed lines of enquiry and interim recommendations for Module 1.

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[1] Led the BOHS response to COVID, which included the free publication of some of the most cited papers in relation to PPE and infection control; the development of the UK's only occupational control risk banding guide, international technical on identification of fake PPE, led a rapid review on sterilisation techniques for single use RPE, developed with HSE the COVID-19 general ventilation tool and with the Royal College of Nursing their RPE risk assessment tool, as well as the production of numerous technical guides and advice briefings on controlling occupational exposure to COVID in the workplace. The BOHS team was awarded the Risk and Safety Management Leadership Team of the Year (2021) for their work in this area.
He is formerly: Professor of Public Law at De Montfort University, Professor of Comparative Justice at the University of Derby, Visiting Fellow in Health Sciences at the University of Lincoln; Visiting Fellow in Governance at the University of Leeds, Editor of the Journal of Medical Law and Ethics and was Special Constitutional and Legal Adviser to the United Nations Political Affairs Department. He has designed and delivered programmes in emergency planning and disaster management including in Chemical Biological, Radiological and Nuclear risk.

3. In addition, at Annex 1, I provide a timeline of key events and CATA's communications with government in the early stages of the pandemic on the issue of the UK's emergency and pandemic planning, preparedness and resilience. For the avoidance of doubt, CATA's engagement with government across the pandemic is far more extensive than the communications referred to in Annex 1. CATA's further correspondence with Government will be provided to the Inquiry as evidence in the Modules to which such communication is most relevant.

I. Overview of CATA

A. Introduction

4. CATA is a voluntary association of professional and scientific bodies in the health sector, supported by individuals who have been invited to join it to bring technical expertise or relevant lived experience of COVID-19 in healthcare. CATA represents over 65,000 healthcare professionals from the following bodies:

    a. Association for Respiratory Technology & Physiology
    b. British Association for Parenteral & Enteral Nutrition
    c. British and Irish Association of Stroke Physicians
    d. British Dietetic Association
    e. British Occupational Hygiene Society
    f. British Society of Gastroenterology
    g. College of Paramedics
    h. Doctors Association UK
    i. National Nurses Nutrition Group
    j. Patient Safety Learning
    k. Queens Nursing Institute
    l. Royal College of Speech and Language Therapists

    In addition, the following individuals provide expert support to the work of CATA:

    - David Osborn: Chartered Safety and Health Practitioner
    - David Tomlinson: Consultant Cardiologist and Electrophysiologist

- Geraint Jones: Advanced Pharmacist in HIV and Homecare
- Gillian Higgins: Research Fellow in Cell Engineering/Reconstructive Plastic Surgery
- Marianne Tinkler: Respiratory Consultant
- Nathalie MacDermott: Academic Clinical Lecturer in Paediatric Infectious Diseases
- Tom Lawton MBE: ICU Consultant and Anaesthetist

5. The make-up of the group means that it includes individuals who are among the foremost experts in the fields of prevention and management of hazardous exposures in the workplace and serious infection control. Above all, CATA members, by dint of their professional background, have a deep understanding of the challenges of managing risks to healthcare workers in specific healthcare and community healthcare settings. CATA is not a charity or a legal entity and the opinions of its members are reflected by an executive drawn from its wider membership.

6. The focus of CATA is on ensuring that policy makers, employers and professionals make decisions, and form policy and guidance, founded on the well-established science regarding aerosol transmission of SARS-CoV-2. We have a particular focus on the implications for the health and safety of healthcare professionals, working both in healthcare settings and in the community.

7. CATA was initially constituted as Aerosol Generating Procedures Alliance (AGPA). AGPA was formed in August 2020 and by September 2021, prior to its subsequent name-change, consisted of the Association for Respiratory Technology & Physiology; British Association for Parenteral & Enteral Nutrition; British Association of Stroke Physicians; British Dietetic Association; British Society of Gastroenterology; Chartered Society of Physiotherapy; College of Paramedics; Confederation of British Surgery; Doctors Association UK; Fresh Air NHS; GMB Union; Hospital Consultants and Specialists Association; Med Supply Drive; National Nurses Nutrition Group; Queen's Nursing Institute, Royal College of Speech and Language Therapists; Trident HS&E; Unite the Union. AGPA was a voluntary association which brought together professional bodies and individual experts with a common expertise in the science and practice of healthcare. As will be explained below, AGPA subsequently changed its name

to the Covid Airborne Protection Alliance (CAPA) since it was felt that this better explained its aims and objectives.

8. AGPA's focus was to address the consequences of the decision to restrict respiratory protection against SARS-CoV-2 transmission for healthcare workers to a few categories of medical procedures, termed "Aerosol Generating Procedures" (AGPs). Its particular concern was for the protection of the health and safety of healthcare workers in healthcare settings and in the community, arising from the exclusion of healthcare from protections which would have previously been mandated in the case of exposure to SARS coronavirus. AGPA members held the view that the official list of designated AGPs fell far short of the mark in that it did not include all the medical procedures which generate aerosols. Neither did it address the fact that natural activities such as coughing and sneezing generate significant amounts of aerosol which present a significant hazard to healthcare workers (HCWs) if not provided with adequate respiratory protection.

9. AGPA changed its focus to the changing policy of healthcare policy bodies, the UK government and health sector employers. The policy focus concentrated on an assumed primary pathway for the transmission of SARS coronavirus through droplets and assumed that aerosol transmission was not a major pathway for the transmission of the virus in healthcare settings. In September 2021, AGPA, with a broadened membership became the COVID Airborne Protection Alliance (CAPA).

10. CAPA's central focus was to ensure that there was understanding of the implications of the aerosol transmission route of the virus. In particular, CAPA's advocacy centred on the need for appropriate risk management, controls of the spread of the virus and the protection of the health and safety of healthcare workers. It sought to highlight risks from not only hospital contexts, but for healthcare workers in the community and in non-institutional settings.

11. CAPA still campaigns with Government for recognition of airborne transmission and proactively supports the NHS in development of new guidance which, it is hoped, will prescribe better respiratory protection for healthcare workers. With the announcement of the Inquiry, CAPA turned its attention to preparing to apply for core participant status. Not all members of CAPA wished to remain in this phase of our activities so we changed our name to COVID-19 Airborne Transmission Alliance. CATA membership now also includes a number of individual

campaigners and clinicians afflicted by Long Covid. CATA membership represents those organisations which remain (representing over 65,000 healthcare workers) and is further assisted by a number of individuals as listed above.

II. Discussion of principles, hindsight and lessons for the future

B. The known risk of the SARS/Coronavirus as a cause of major hazard or as a pandemic risk

12. In 2008 SARS/Coronavirus had been identified as a potential significant cause of a major hazards incident and was specifically dealt with in the Health Protection Agency's 2008 'CBRN incidents: clinical management & health protection' [Exhibit KB/1 - INQ000130543]. It was identified as a disease for which aerosol transmission risk precautions needed to be followed. The risk posed by SARS/Coronavirus was further reiterated when the clinical guidance was reissued in 2018.

13. Prior to the COVID-19 pandemic the UK's only fully articulated pandemic strategy was for Influenza in 2011. The UK Influenza Pandemic Preparedness Strategy [Exhibit KB/2 - INQ000130554] was created as a result of the Independent Review following the H1N1 outbreak in 2009 [Exhibit KB/3 - INQ000130566]. The Influenza Strategy stated:

"A pandemic is most likely to be caused by a new subtype of Influenza A, but the plans could be adapted and deployed for scenarios such as the outbreak of another infections disease, eg Severe Acute Respiratory Syndrome (SARS) in healthcare settings, with an altogether different pattern of infectivity."

14. The last phrase, written in a way which is open to misunderstanding or misinterpretation, nonetheless reflects the distinct difference of transmission routes between Influenza viruses and SARS viruses, as it was understood in the Influenza Strategy. The Influenza Strategy's position was that whilst some influenza viruses are predominantly spread by droplets, others (including the more dangerous ones such as avian flu viruses) are known to be airborne and have pandemic potential. It should be noted that there is significant debate as to whether the Influenza Strategy's position regarding the transmission routes of influenza is scientifically accurate – nonetheless, the 2011 Influenza pandemic strategy as published was firmly based

upon a droplet model of transmission.[2] In order to address the difference in transmission routes and also to consider the implications for healthcare settings, the text of the strategy might have been more helpfully expanded.

15. It is significant that influenza planning was based on droplet mode of transmission, as there was a very close similarity between the actual management of the COVID-19 pandemic, including the management of transmission in healthcare, and the prescriptions of the 2011 Influenza Pandemic Strategy. Adherence to this strategy for a SARS Coronavirus pandemic, as opposed to following the specific prescriptions set out in the CBRN guidance, necessarily resulted in the wrong and inappropriate controls of infection in healthcare settings.

C. Requirements for the management of SARS Coronavirus incidents prior to 2020

16. It is helpful, especially in the light of the 2011 Influenza Strategy, to contrast the management of an Influenza virus and a SARS coronavirus. It is also important because the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG) made critical decisions which impacted the response to COVID-19 predicated on the need to be prepared for an Influenza pandemic.

17. Whilst the Influenza Strategy was based on the view that influenza can be spread by droplet transmission, the role of aerosol transmission of influenza was stated to be unclear at the time of the 2011 strategy and was, in 2016, judged by NERTVAG to be less than previously thought. The implications of this for general pandemic preparedness drove some management decisions in relation to the availability of respiratory protection for healthcare workers. The fact that some recommendations of NERVTAG in 2016 were not acted upon further impacted on this.

18. Management of the UK healthcare Respiratory Protection Equipment (RPE) stockpile and the capability to fit that equipment effectively and safely was determined by NERVTAG, who made these decisions based on the assumed requirements needed to manage an Influenza pandemic. However, it must be reiterated that while changes in the understanding and

[2] Further information regarding transmission routes of Influenza, as understood by the UK Influenza Strategy, can be found in the Department of Health and Social Care's guidance on 'UK Influenza Pandemic Preparedness Strategy: Routes of Transmission of the Influenza Virus' [Exhibit KB/2A - INQ000130565].

management of Influenza took place between 2008 and 2016, there was no change in the understanding and management of SARS Coronavirus, as evidenced by the 2018 Chemical, Biological, Radiological and Nuclear incidents (CBRN) Clinical Guidance [Exhibit KB/4 - INQ000130577]. It is unclear whether NERVTAG considered the RPE requirements for the UK for the management of a pandemic that was transmitted by an aerosol route (such as SARS), despite this having been highlighted as a possibility by the UK 2011 Strategy.

D. Controls for the management of SARS Coronavirus

19. In order to understand the UK's preparedness for a pandemic, it is helpful to review the basic principles for the control of exposures in healthcare settings and for healthcare workers in the community.

20. The management of workplace hazards is expected to be undertaken in line with **the Hierarchy of Controls** which identifies strategies to control risks in order of the likely effectiveness. All levels of the hierarchy are normally relevant to effective risk management and reliance on only some approaches are unlikely to be the most effective (or lawful) means by which hazards can be controlled.

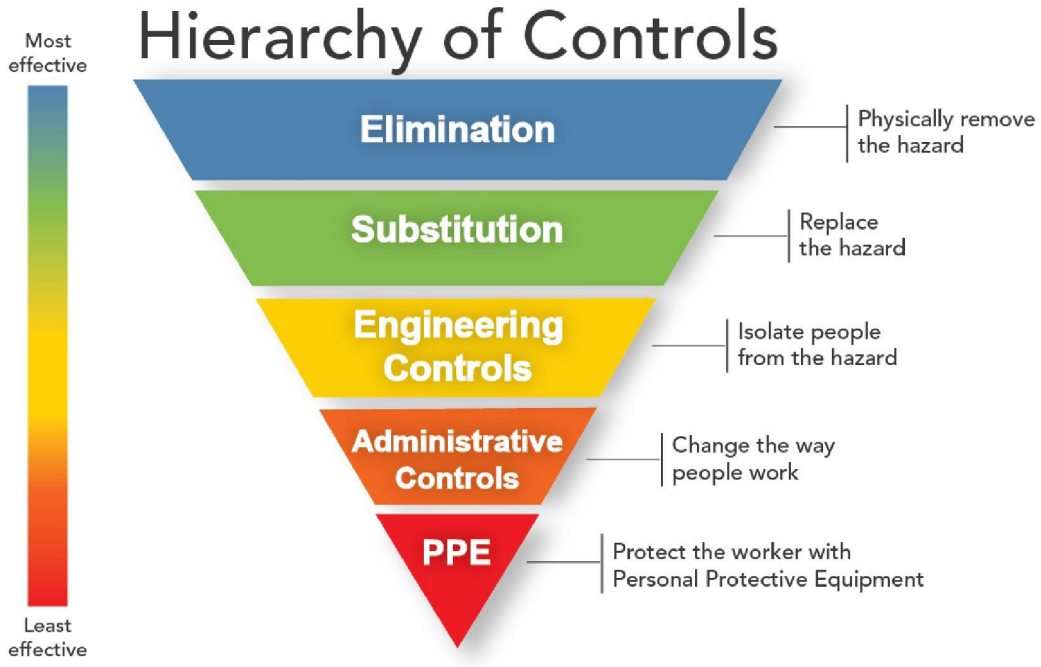

Figure 1: Hierarchy of Controls

21. As highlighted by the Independent report by the Healthcare Safety Investigation Branch 'COVID-19 transmission in hospitals: management of the risk - a prospective safety investigation' [Exhibit KB/5 - INQ000130588], the health sector did not understand the basic principles of the Hierarchy of Controls or its applicability to the management of SARS prior to 2020. Nor was this an explicit feature of either the CBRN guidance or the 2011 Influenza strategy.

    The failure to use systematic and proven approaches to the management of risk in the strategies and in approaches resulted in gaps in the consideration of how to manage pandemic risks in each of these documents and throughout the UK literature on pandemic preparedness.

22. Identifying and isolating symptoms in patients (Patient-identified symptoms) can assist in enabling the highest level of hazard controls in the Hierarchy of Controls. This is called **Elimination, as per the graph above**. For healthcare settings, this approach theoretically allows for infected patients to be isolated or excluded, so as to avoid infectious spread. It is not generally available in normal community settings but was ultimately implemented in the UK by lockdown precautions.

23. Elimination of the risk of exposure to the virus for all healthcare workers is not possible, since sick members of the public need to be attended to by frontline workers to help manage the virus itself as well as other healthcare needs they may have.

24. The second level of control, **Substitution,** is not, strictly speaking, an option for the management of infectious diseases in healthcare. It primarily relates to changing the hazardous agent (usually a chemical substance) to a different substance which is inherently less dangerous.

25. **Engineering controls,** which might include physical barriers, building design, ventilation, the use of air pressure and other mechanical or infrastructural techniques are a major element of the management of respiratory risk. While these measures can be implemented to great effect, their implementation is often resource-intensive and requires a full understanding of the science, particularly the physics, of the respirable hazard. For example, engineering controls which are effective against larger droplets, may not be effective against smaller

particles. This is because particles behave in different ways when travelling through the air, for example, some particles can be suspended in the air longer and travel further than others.

26. In the same way as engineering controls can be consciously used to control the spread of infection, building design and engineering features can negatively impact the control of infection. Poorly ventilated, confined spaces have the potential to increase respiratory risk. This consideration was not a feature of pandemic preparedness. In a healthcare setting design, the areas of concern include the design of ambulances, wards, staff spaces, public spaces or in the commissioning of new buildings. The Health Building Note (HBN) 00-01 [Exhibit KB/6 - INQ000130589] designing health and community care buildings takes account of ventilation but does not consider the potential impact of ventilation on the control of CBRN or respiratory risk (though it does consider carbon footprint, privacy and noise). The importance of ventilation management for healthcare is well known and was highlighted by Florence Nightingale as far back as in her 1863 book "Notes on Hospitals". The recommended ventilation rate posited by Nightingale, still compares favourably with current standards set out by the Chartered Institute for Building Services Engineers for hospital wards.

27. Healthcare and other buildings developed or in operation prior to the pandemic, do not appear to have been engineered or designed for use in a way that consciously took into account what would be needed to manage a respiratory pandemic. Consideration of the engineering controls needed to manage respiratory risk, seem entirely absent from UK infrastructure development and planning.

28. Specialist engineered isolation facilities, such as negative pressurised rooms, were recognised as appropriate settings for the management of SARS risk in the CBRN guide. However, guidance to healthcare settings on how to set up negative pressure rooms focused on individual isolation e.g. The Health Building Note 04-01 Supplement 1 'Isolation facilities for infectious patients in acute settings' [Exhibit KB/7 - INQ000130590]. The absence of serious consideration of the relationship between the health infrastructure (**Engineering controls**) and pandemic risk is illustrated by its absence in the 2007 (and still extant) Health Building Note 00-07 'Resilience planning for NHS facilities' [Exhibit KB/8 - INQ000130591].

29. **Administrative controls** such as separating groups of people, implementing remote working, managing people traffic flows or even the way in which people respire, can have an impact

on managing infectious transmissible risk. Administrative controls are limited by the infrastructure available as well as personnel and expertise. In healthcare contexts, where demand is high and expertise and personnel are needed, personnel and administrative strategies to ensure business continuity are critical. Pandemic risk was not a feature of the 'Operational Workforce Planning' methodology used by the NHS, for example [Exhibit KB/9 - INQ000130592].

30. It is not possible for CATA to list all of the UK healthcare guidance and documents which should have reflected the need to factor in pandemic risk, but did not. The references here are by way of example.

31. **Personal Protective Equipment (PPE)** is the lowest level of the Hierarchy of Control. This is not because it is the last consideration or the least effective means of protecting people. Properly managed PPE is the difference between life and death in many safety critical industries and in healthcare when dealing with infectious agents. It is at the bottom of the Hierarchy of Control because it is the last line of individual defence and *"it fails to danger."* If PPE is relied upon and does not work, then only the body's own natural protections are left. PPE failure therefore directly exposes a worker to a hazard. Furthermore, if the wrong type of PPE is used for a given type of hazard then this substantially increases the risk to the wearer in that they will be lulled into a false sense of security and so will not take other precautions to keep themselves safe, such as increasing distance from hazards and reducing time exposed to hazards. In some circumstances this can lead to a higher level of risk than if they were not wearing the PPE at all.

32. As evidenced by the CBRN and 2011 Influenza strategy, the UK's pandemic response in respect of the protection of healthcare workers rested almost entirely on PPE.

E. Basic Principles of Respiratory Protective Equipment

33. In respect of controlling respiratory risk through PPE, the form of PPE required is Respiratory Protective Equipment (RPE). However, the elements of RPE effectiveness go beyond merely the possession of the equipment. These are legal requirements outlined by the Health and Safety Executive, Personal Protective Equipment Regulations, but summarised simply below:

a. RPE needs to be available that can be worn by the demographic of potential users, depending on facial size and shape and also obstacles to some forms of PPE fit, such as beards or facial asymmetry.

b. RPE needs to put on properly (and safely removed) in order to maintain its effectiveness in the control of respiratory exposures.

c. Some types of RPE require a tight fit and a good seal to the face in order to work properly. Such equipment needs to be fitted and tested to ensure that it is being worn correctly and providing effective filtration.

d. RPE which can become less effective over time, such as most disposable masks because of the degradation in straps, seals and electrostatic charge, needs to be in date. RPE should never, therefore, be used beyond the manufacturer's specified expiry date.

e. The supply, resupply and (in the case of reusable RPE) maintenance of RPE needs to be effectively and prospectively managed.

f. The quality of RPE and its compliance with UK quality standards for tested effectiveness needs to be assured.

34. Other forms of PPE, such as gowns (or aprons), gloves, visors and safety goggles are part of the PPE "ensemble" which are appropriate for protection against the droplet transmission of infectious diseases. In respect of some viruses such as SARS Coronavirus, where aerosol transmission is a major route of infection but where droplet transmission can also be assumed to be a route, this additional PPE equipment is likely to further reduce the risk of transmission through touch contact and eyes.

35. The absence of a capability in respect of each or any of the elements of PPE management would mean that RPE risks failing as an effective control - and that fails to danger. While the UK was not a major manufacturer of RPE, it was a world leader in the science and management of it and our standards are highly regarded. There was no absence of expertise in the management and deployment of RPE, with clear and effective guidance provided by

the Health and Safety Executive and the Fit2Fit programme supported by the British Safety Industries Federation. The UK deployed millions of items of our RPE every year and industries and SMEs managed thousands of reusable respiratory systems.

F. Types of respiratory protection

36. Surgical masks, or Fluid Resistant Surgical Masks (FRSM), are designed to protect others from the wearer expelling droplets during respiration, speaking, coughing etc. As stated in the CBRN guidance, "*surgical masks do not protect against the infection following inhalation of small (< 5 micrometres) particles*" because they only reduce the risk of the wearer infecting another. Because they do not provide material protection to the wearer from respirable risks, FRSMs are not, and never have been, classed as RPE.

37. FRSMs have never even been formally classed by the HSE as PPE. Nonetheless, Government departments, politicians and the media regularly and erroneously refer to them as such. This is well explained by the HSE on their web page [Exhibit KB/10 - INQ000130544] concerned with protection of healthcare workers during a pandemic. FRSMs are regarded as a "*source control*" in infection control. These are known as IIR (European standard) or Level 2 (US standard) masks.

38. This position has followed on from the 2008 Health and Safety Executive 'Laboratories – Research paper RR619' [Exhibit KB/11 - INQ000130545], into respiratory protection against bioaerosols. The paper was commissioned as part of UK pandemic preparations and confirmed that FRSMs were ineffective against bioaerosols, with live viruses being detected behind each type of mask tested. The HSE subsequently published online guidance (now withdrawn) [Exhibit KB/12 - INQ000130546] that FFP3 filtering masks should be worn when attending a SARS patient (referring to SARS-1).

39. The lower level of respiratory protection is provided by respiratory protection equipment offering 95% filtration of small (< 5 micrometres) particles. The UK (formerly EU standard) for single use filtering face pieces is termed FFP2. Where there is uncertainty about the infective load required for infection or where the wearer is likely to be in contact with high amounts of respirable material over a prolonged duration, this percentage protection is unlikely to provide sustained protection. For this reason, respiratory protection that is 99% efficient in filtering

small particles, was the required protection for health workers for protection against SARS infection by patients in the CBRN guide. Disposable filtering face pieces with this protection level are known as FFP3 (UK and Europe) or N99 in the United States.

40. To be effective, FFP2 and FFP3 masks need to be fitted such that air can only be inhaled and exhaled through the filtration surface and not through any seal around the face. To maintain an effective seal, such a mask:

    (a) needs to be of a corresponding size to meet the shape of the wearer's face;
    (b) needs to be fitted to the morphology of the individual's face;
    (c) needs to be held tightly against the face (invariably by appropriately placed straps round the head that prevent a breaking of the face seal when moving);
    (d) needs to maintain shape;
    (e) needs replacement after contamination or extensive use;
    (f) where used as source control (to prevent the wearer infecting someone else) should not have an exhalation valve;
    (g) needs to be mechanically (quantitative) fit tested or qualitatively fit tested, using aroma/taste detection kits.

    Because RPE is not effective unless these matters are observed, there is a legal requirement that RPE is fitted and tested – as indicated in HSE guidance 'Fit testing basics - Respiratory protective equipment (RPE)' [Exhibit KB/13 - INQ000130547].

41. The CBRN incidents: clinical management & health protection (Health Protection Agency, 2008) [KB/1 - INQ000130543] provides the definitive guidance for the management of chemical, radiological and biological risks in clinical settings. This guidance considers not only the management of risk of infection between patients (Infection Prevention and Control), but also focuses on the protection of health workers. As well as the legal rights that health workers have as employees, they are also essential to maintaining national resilience and continuity in the management of pandemics and, if infected, become a significant cause of persistent infection spread within healthcare settings (nosocomial infection). The guidance specifically states that in the case of contact with a patient suspected of having SARS, "*a fitted FFP3*

mask, must be worn." In 2018, it reinforced that: "*Smallpox and SARS may also be transmissible from person to person by airborne spread: airborne isolation infection precautions are required*" and that there was a requirement to "*enforce AEROSOL spread infection control*." In addition, it emphasised as follows: "*Note: surgical masks do not protect against the infection following inhalation of small (< 5 micrometres) particles." IF coronavirus suspected FP3 respirator (fit tested/checked)*"

42. Not all individuals can wear filtering face pieces. Those who wear beards for religious observance and others who have some disabilities or illnesses need to be particularly considered. There are widespread alternative powered respirator hoods (PAPR) which are not close-fitting, but offer the same level of protection. These do, however, require management and decontamination. Other forms of reusable RPE are available.

G1. RPE capacity for the protection of healthcare workers prior to 2020 – Volume of RPE

43. Following an outbreak of Swine Flu in 2009, the Government established the UK's national pandemic stockpile as an epidemic was seen as the number one threat on the national risk register. Almost £500m was spent on hundreds of millions of items to protect healthcare workers in the case of an outbreak. A 'Consumable Procurement Specification List' 2009 stipulated that the stockpile should contain 28.1 million respirators. By 30 January 2020 the stockpile held at 26.3 million.

44. The lone published review of RPE by NERVTAG (New and Emerging Respiratory Virus Threats Advisory Group) conducted in 2016 [Exhibit KB/14 - INQ000130548], only considered the potential requirement of FFP3 masks in the context of influenza. Their conclusions may easily be read as suggesting that a smaller reserve of respiratory protection equipment was needed. The state of affairs in 2020 therefore reflects either a conscious decision or mismanagement leading to a reduction in the volume of RPE items.

G2. RPE capacity for the protection of healthcare workers prior to 2020 – Diversity of RPE

45. As identified, RPE is available to meet the varied morphology of human faces. There is a global market for RPE meeting industrial use of it for the filtration or aerosols and dusts. Manufacturers provide for the full variety of different ethnic groups and gender differences. In purchasing RPE for a large workforce such as the NHS, consideration of the diversity of that workforce and a model of the proportionate selection of size and type would be expected. This would not only be pragmatic but vital to discharge any duty under the Equality Act 2010. Prior to the COVID-19 pandemic, available PPE in the UK was modelled on Caucasian males, so that women, smaller individuals and people of non-Caucasian ethnic backgrounds, or those with certain disabilities and illnesses, were not likely to gain a good fit from standard RPE. At the commencement of the pandemic, the experience of member organisations was that RPE was not readily fitting groups other than Caucasian males. This would tend to indicate that the stockpile had not been managed through the proper selection of RPE, with any regard to the known diversity of the workforce. The provision of PPE suited to those for whom close fitting respirators would not be suitable, for medical and ethnic reasons, did not appear to have been a factor considered in stocking or preparing for PPE availability. Neither were other factors considered such as the importance, in some circumstances, of voice communication between healthcare worker and their patient or service-user. This is particularly relevant for persons with certain disabilities, including those with hearing impairment, where lip-reading assists communication.

G3. RPE capacity for the protection of healthcare workers prior to 2020 – Training on RPE

46. There is not much evidence about RPE capacity training for healthcare workers prior to 2020. The Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance [Exhibit KB/15 - INQ000130549] identifies the requirement for such training in relation to High Consequence Infectious Diseases (HCIDs), which includes coronaviruses such as SARS and MERS and did include COVID-19 up until its removal on 13 March 2020.

47. Our members observe that there was a lack of widespread understanding about the effective use of RPE among healthcare workers and no evident national programme or authoritative healthcare specific training resources, guides, posters or videos. The prevalence of

healthcare workers wearing beards and FFP3 masks served as the most striking evidence of a lack of training and awareness.

G4. RPE capacity for the protection of healthcare workers prior to 2020 – Fit Testing

48. The effectiveness of RPE depends upon it fitting properly. Even if properly selected for a potential morphological fit, the RPE needs to be tested to ensure it provides a proper seal. In 2016, updated recommendations from the NERVTAG facemask and respirators sub-committee made the following observations, noting that it was not within its remit to develop guidance on infection prevention and control and the use of PPE:

> *"Fit testing in the face of an emerging pandemic is a major challenge but it is important. Adding 'call down' fit testing as part of the procurement (including the fit testing solution etc.) would be advantageous. Just in time fit testing was proposed – however, there may not be sufficient time to put this in place, between pandemic virus emergence and the first UK impact. It was agreed that there is no substitute for a rolling programme of fit-testing in NHS trusts during inter-pandemic periods. There should be a caveat about fit testing in any recommendations."*

49. Fit testing was not, as far as the members of CATA can determine, included in the UK Government's procurement strategy prior to the COVID-19 pandemic. Neither the British Occupational Hygiene Society, which hosts most expert fit-testers, nor the British Safety Industries Federation (BSIF) which operates the fit-testing accreditation scheme for the UK (Fit2Fit), can see any evidence of a rolling programme of fit testing or the training of fit testers. Indeed prior to the pandemic, BSIF were concerned enough about the absence of fit testing in the NHS that they developed a simplified fit test course, which was offered to the Department of Health and Social Care (DHSC) to roll out to NHS Trusts in order to enable them to have fit test capability of their own. The DHSC declined, saying that procurement was determined at Trust level. As at 2023, there are still only 61 Fit2Fit accredited fit testers within the NHS and most Trusts have none.

50. The capacity for fit testing was further impacted by the quality of available equipment. Whilst FFP3 is the usual recommended control measure to prevent exposure to a biological agent, in April 2020, in response to the impact of the COVID19 pandemic, the HSE recognised the

likelihood that global supplies of FFP3 respirators could be compromised. The demand for RPE posed by the pandemic and the shortage of FFP3 respirators in the supply chain, meant that an increased number of healthcare workers needed to wear FFP2 respirators for respiratory protection against the COVID 19 virus.

51. In March 2020, the World Health Organisation (WHO) advised the use of a particulate respirator at least as protective as a US National Institute for Occupational Safety and Health (NIOSH)-certified N95. Research concluded that N95 and FFP2 are equivalent at filtering non-oil-based particles such as bioaerosols, including COVID 19, therefore FFP2 will provide minimum protection against the coronavirus.

52. Early in the pandemic, HSE scientists were asked by the Government to undertake a Rapid Evidence Review [Exhibit KB/16 - INQ000130550] in order to confirm the equivalence of N95. The HSE confirmed that whilst use of FFP3 devices represents best practice, if these were not available due to the impact of the pandemic on stock availability, then FFP2 or N95 masks represented an acceptable, pragmatic compromise and could be used as an alternative to FFP3 respirators as a contingency measure. It should be noted that at no time has the HSE publicly authorised the use of surgical masks for respiratory protection in circumstances where a risk of disease-transmission via airborne aerosols exists.

53. Portacount machines are used within the health and social care sector for face fit testing of RPE. There are currently 2 models available: the model without N95 technology incorporated and a model with incorporated technology. The health and social care sector routinely use Portacount machines without incorporated N95 technology to face fit test for FFP3. However, these models are unable to achieve a face fit pass rate for FFP2 of 100 as stated in 'HSE guidance on respiratory protective equipment (RPE) fit testing - INDG479' [Exhibit KB/17 - INQ000130551]. In simple terms, a protection factor means that the air inside the respirator is a certain amount cleaner than the air outside the respirator. Thus, a protection factor of 100 means that the air inside the respirator is 100 times cleaner than that of the air outside the respirator.

54. To maximise the availability of face fit testing during the pandemic and to allow the use of all face fit testing machines available, HSE agreed a temporary deviation from current INDG479 guidance and accepted a face fit factor of 25 for FFP2, in line with previous guidance, 'Fit

Testing of Respiratory Protective Equipment Facepieces OC282' [Exhibit KB/18 - INQ000130552]. This is because the criteria of achieving a fit factor of 100 could not be measured using Portacount models 8030 and 8040 which do not have N95 technology. This temporary deviation only applied to fit testing using the older Portacount models (8030 and 8040), but it is hard to determine how many tests may have been affected.

G5. RPE capacity for the protection of healthcare workers prior to 2020 – Expiration & Maintenance

55. The safety and effectiveness of FFP3 respirators declines over time. This is because the elements that ensure proper fit (straps and padding) can degrade. Also, there is a risk of the electrostatic charge that assists in filtering being adversely affected. Channel 4 reported documents and photographs that evidenced the expiry of FFP3 respirators in the national pandemic stockpile stock in early 2020 [Exhibit KB/19 - INQ000130553]. According to the report:

> *"All in all, 19.9 million FFP3 respirators expired between 1 June 2019 and 1 January 2020 and therefore could have been delayed until tests confirmed they could be readmitted. More than 84 million facemasks also expired over the same period."*

56. CATA has evidence from frontline healthcare workers that respirators which expired long before June 2019 were also put into service as can be seen via the label on the packaging of an FFP3 mask in figure 1 below:

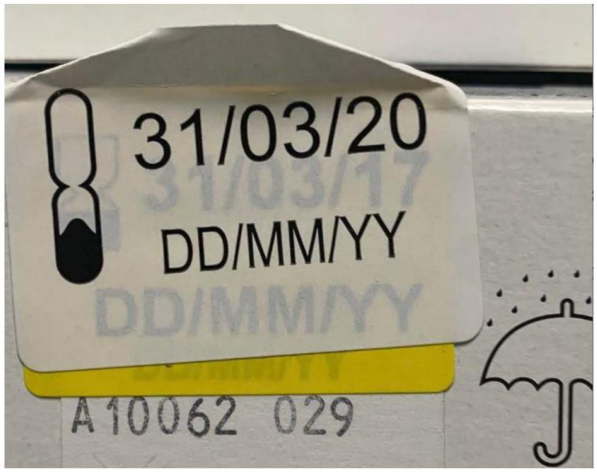

Fig 1: Re-labelled FFP3 respirator prolonging use beyond manufacturers expiry date.

Here, it can clearly be seen that a yellow label with an expiry date (31/03/17) had been stuck over the original date printed on the box. It is not known what that original date was, but it was most likely at least 3 years prior to that (2014). Given that FFP3 respirators ordinarily have an expiry date of up to 5 years from the date of manufacture (2009), this suggests that healthcare workers were being issued with respirators that were 11 years old.

57. An even more disturbing situation concerned hundreds of FRSMs which were supplied to healthcare workers and which had similarly been relabelled beyond their expiry date. This related to 83 'Lots' of masks supplied by Cardinal Health which had reached their shelf-life in 2013/14 (again, suggesting a manufacturing date around 2009).

58. While medical equipment, including PPE and FRSMs were subject to testing prior to reapproving their shelf-life, defects were discovered by healthcare workers when using them, including: (a) the ties and stitching coming away from the mask; and (b) a degraded foam strip on the mask, both of which are observable signs of the deterioration that the shelf-life aims to manage to enable them to be safe and usable. An email was sent out from the PPE Dedicated Supply Channel instructing that all masks from the affected lot numbers be destroyed. One such box is shown at figure 2 below.

Fig 2: FRSM box from an affected batch of time-expired masks subject to "destroy order".

However, despite the instructions to dispose of these masks, one of the boxes has been retained in case it may be useful for or needed by the Inquiry. The "re-label" sticker 2022-01 can clearly be seen. It is not known what date lies beneath as it was decided to leave this label intact for others to examine. Despite the "destroy order" being issued on 26 June 2020 [Exhibit KB/20 - INQ000130555], employees in NHS Blood and Transplant were not alerted to the problem until almost a month later, during which time they could have been exposed to danger.

59. By 2020, HSE had lost most, if not all of its specialists in PPE from its field team, although it does not appear that this was seen as a national risk. The Personal Protective Equipment (Enforcement) Regulations 2018 had come into effect to ensure the quality of PPE in general use and standards of PPE imported into the UK. However, no active work appears to have been done to bring this into effect and there is no publicly available evidence of market surveillance to test the quality of imported PPE over the period since the implementation of the regulations, during which time millions of items of PPE were procured. The Inquiry may wish to also seek further evidence on this issue from the Medicines and Healthcare products Regulatory Agency (MHRA) as they have regulatory and enforcement responsibility for 'medical devices' such as surgical masks and it was they who issued the order to destroy the affected masks.

60. By the time of the COVID-19 outbreak in 2020, the global market for RPE was becoming flooded with "fake" respirators which, despite bearing CE markings (or similar) had not been tested and verified in line with the 2018 Regulations. It is not clear at what point the NHS supply chain became vulnerable to "fake" or inappropriate PPE.

G6. General Capacity for Protecting the Health and Safety of Workers in Health Contexts

61. HSE had regulatory responsibility for PPE in healthcare settings. Under the 'Revised incident selection criteria' 2014 [Exhibit KB/21 - INQ000130556], the HSE did not appear to have a clear duty to investigate deaths as a result of exposure to a biological agent such as SARS. Their overall responsibilities in relation to pandemic impact, including within the healthcare sector, were not laid out amongst the Civil Contingencies considered in their 'Memorandum

of Understanding' with the Health Protection Agency agreed in 2019 [Exhibit KB/22 - INQ000130557]. CATA's observation is that the HSE regarded issues such as the adequacy of RPE and fit testing as matters relating to clinical standards which were either outside its expertise or jurisdiction.

62. Alongside this absence of direct HSE support for hospital trusts, was an absence of workplace health protection expertise within the workforce. Whilst it may seem counter-intuitive, the health service lacked the ability to manage the health of its own workforce. Prior to the Agenda for Change in 2004, when pay conditions and employment status in the NHS was fundamentally changed, the NHS directly employed workforce health protection scientists, called occupational hygienists. By 2020, there were only three Occupational Hygienists employed in the entire NHS.

63. In principle, occupational hygienists are trained to implement PPE programmes and to address and create controls for novel health hazards (including biological hazards) that are customised to workplace needs. They specifically focus on the prevention of exposures to hazards that are harmful to health in the workplace. Occupational hygienists are specialists in the management of respiratory risk and are specifically trained to manage biological risk across all work contexts. The occupational hygiene team in HSE were at the forefront of devising and helping the implementation of measures in the UK workplace which enabled the reduction in COVID-19 cases most evidenced in the 2021 lockdown.

64. By the effect of Regulation 7 of the Management of Health and Safety at Work Regulations 1999, occupational hygienists are required to provide services in all safety critical industries where there is a risk of harmful exposures to health. The work of occupational hygienists on the implementation of the Hierarchy of Controls enabled effective management of SARS Coronavirus across the UK's critical infrastructure, preventing the failure of power supplies, defence infrastructure and most other essential services.

65. Healthcare employs healthcare workers, who may be more-or-less effectively supported by infection control teams. However, the healthcare infrastructure is supported by a vast array of other workers, often contracted by or not even under the direct control of healthcare trusts. This can range from catering, laundry, and facilities workers through to agency staff, administrators and managers. Infection and Control experts focus on Standard Infection and

Control measures and only at an advanced level are trained to use pandemic level PPE. They are not trained to implement the Hierarchy of Controls for the control of biological exposures across the healthcare infrastructure and into the community.

66. From the outset of the pandemic, occupational hygienists were called in to help with the implementation of PPE programmes, to develop ventilation and other systems to support the Hierarchy of Controls and to address issues emerging from the poor management of PPE and IPC precautions. While standard Infection Protection and Control measures may have been understood by many members of the frontline clinical staff, there is little evidence of other staff or workers being prepared or supported for pandemic incidents. The absence of occupational hygiene expertise to support protection against hazards directly arising from the pandemic, but also indirectly arising from it, had further results.

67. At the heart of the problems experienced with the poor preparedness for implementation of RPE programmes and the development of nosocomial infections was the failure to understand critical differences between the duty of the employer to protect employees against exposure to a hazard such as COVID-19 and the measures used to prevent infections in healthcare settings and control their spread. There are critical strategic and practical differences between good occupational hygiene which aims to minimise the exposure of workers to hazards and IPC which aims to minimise the risk of infection spread in patients.

68. In the UK, this was exemplified by the distinction between the protections and measures outside of the clinical space to prevent the spread of COVID-19 and those in the clinical space. Even where RPE was available, staff teams would remove PPE and share confined staff rooms for breaks or celebrate a shift with a “group hug.” Administrative staff were required to work in the healthcare settings, even when work could be achieved remotely. The management of health risk amongst contract staff in catering and other services was not consistently under the control of those overseeing the control of the spread. All these features, identified in reports, such as the Health Safety Investigation Branch (HSIB) Investigation [KB/5 - INQ000130588], arose out of a focus limited to IPC in healthcare settings. Most concerning is that the consideration of the protection of healthcare staff working in community settings (from paramedics, community nurses through to speech and language therapists) did not include a systematic consideration of the risk to them from being in uncontrolled contexts.

H. The State of Preparedness for Tackling a Pandemic – Conclusions in relation to Healthcare

69. The UK should have learned lessons in general terms about its vulnerability to Influenza. Influenza had been determined to be the pandemic risk, but SARS Coronavirus was also identified as such. The UK's strategy for addressing a pandemic risk was centred around a virus transmitted primarily via droplet routes, as, according to the Influenza Strategy, some types of influenza are. The Inquiry may wish to note, for any interim findings, that the most dangerous types of influenza (such as avian flu H5N1) are airborne. The particular strain of avian flu, widely present in the UK since autumn 2022 is airborne. The UK thinking about preparedness lacked depth in the consideration of the potential diversity of impacts on the population, considerations of the impact on healthcare provision of a sustained and mutating virus for which there were no effective vaccines or medicines. There was no nationwide consideration about how to implement a Hierarchy of Controls throughout healthcare to avoid dependence on PPE.

70. The UK's PPE strategy for healthcare assumed that the next and only pandemic would be Influenza via droplet transmission. However, warning signs about the absence of the ability to manage, procure and implement effective and non-discriminatory PPE programmes were not heeded. Reliance upon droplet transmission was a conceptual flaw in the thinking of the public health policy makers. With PPE both the first and final line of respiratory protection, the risks were not managed. Basic observance of the legal requirements for the effective protection of healthcare workers were not present.

71. The UK did not have a plan to address an aerosol-transmitted disease, nor were they in a position to deliver practices in accordance with the WHO's 'infection prevention and control of epidemic-and pandemic-prone acute respiratory infections in health care guidance' (2014) [Exhibit KB/23 - INQ000130558].

72. Public Health England's (PHE's) CBRN strategy nonetheless stated what the requirement and the plan should be in 2018:

"Droplet spread disease precautions

Droplets are particles (> 5 micrometres) generated when a patient coughs, sneezes or talks, and during cough-provoking procedures (eg bronchoscopy, chest physiotherapy, suctioning, intubation, nasogastric tube insertion, nebuliser therapy, non-invasive ventilation, CPAP).

Droplets expelled by an infected patient can travel for short distances through the air and, if deposited on the mucosal surfaces of the eyes, nose or mouth (or subsequently transferred there by hand-face contact) can infect anyone nearby (traditionally, within 1 metre, but possibly, at greater distances).

Diseases that are transmissible by droplet spread include: coronaviruses, influenza, pneumonic plague, monkeypox, smallpox, Mycoplasma pneumoniae, adenovirus, RSV, whooping cough, group A streptococcal infections and meningococcal meningitis (Neisseria meningitidis).

Smallpox and SARS may also be transmissible from person to person by airborne spread: airborne isolation infection precautions are required."

73. In a March 2020 a study by scientists, including the leading authorities from the Centres for Disease Control in America published a comparative study of SARS CoV1 and SARS CoV2 [KB/24 - INQ000130559], concluding that:

> *"Our results indicate that aerosol and fomite transmission of SARS-CoV-2 is plausible, since the virus can remain viable and infectious in aerosols for hours and on surfaces up to days (depending on the inoculum shed). These findings echo those with SARS-CoV-1, in which these forms of transmission were associated with nosocomial spread and super-spreading events, and they provide information for pandemic mitigation efforts."*

74. However, the airborne isolation infection precautions could not feasibly be delivered in the UK in relation to either the healthcare estate or its PPE management regime.

I. The Established State of Knowledge About the Appropriate Management of SARS Coronavirus

75. In 2004 Christian *et al* [Exhibit KB/25 - INQ000130560] challenged the view that SARS Coronavirus was transmitted by droplet route or aerosol-generating procedures. A 2013 paper co-authored by Sir Jonathan Van-Tam, former Deputy Chief Medical Officer, and Lisa Ritchie confirmed that the main routes of transmission of the SARS-CoV-1 virus were via the droplet and aerosol/airborne routes [Exhibit KB/26 - INQ000130561]. The paper concluded that healthcare workers should use FFP3 respirators for protection from SARS. The role of Dr Van-Tam in the management of the COVID-19 pandemic is well known. Lisa Ritchie took on responsibility for the national Infection Prevention and Control Cell during the pandemic.

76. The diagram at figure 3, taken from that paper, illustrates clearly the route to decision-making about the use of FFP3 respiratory protection. However, by 2020, there was no UK capacity to implement this guidance at pandemic scale.

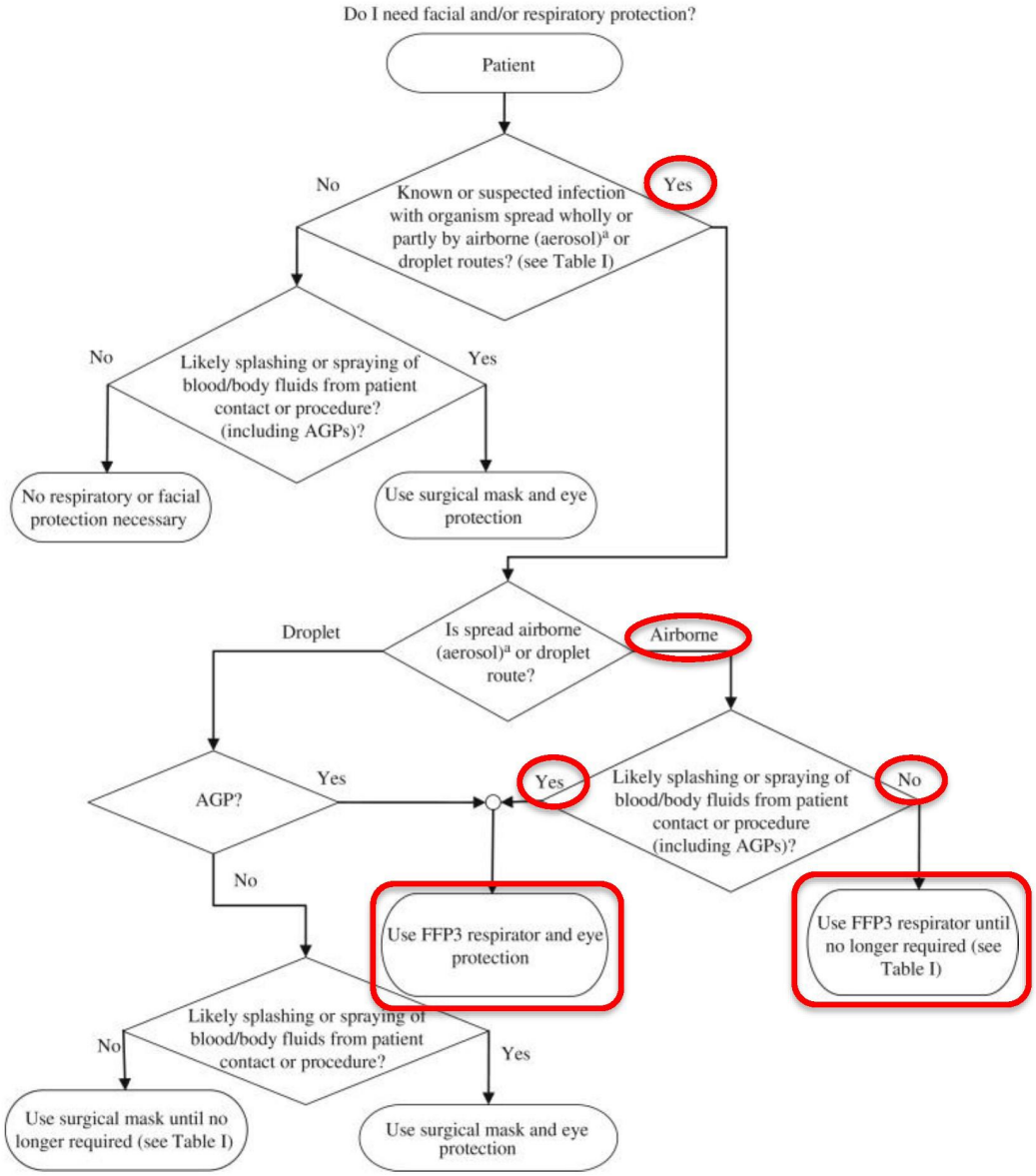

Figure 3: Flow-chart: Decision making process to determine level of healthcare worker protection. Pathway for airborne virus transmission shown in red.

77. Until March 2020, SARS was also classified as an Airborne HCID, by the UK Health Security Agency, the management of which in clinical settings also required the use of FFP3 masks. In January 2020, COVID-19 was specifically added to the list.

    A HCID is defined is defined as:

- acute infectious disease;
- typically has a high case-fatality rate;
- may not have effective prophylaxis or treatment;
- often difficult to recognise and detect rapidly;
- ability to spread in the community and within healthcare settings;
- requires an enhanced individual, population and system response to ensure it is managed effectively, efficiently and safely.

78. In March 2020, around the time the UK decided to implement its first national lockdown and COVID-19 deaths peaked at almost 1,000 in one day, the following statement was made:

> *"Now that more is known about COVID-19, the public health bodies in the UK have reviewed the most up to date information about COVID-19 against the UK HCID criteria. They have determined that several features have now changed; in particular, more information is available about mortality rates (low overall), and there is now greater clinical awareness and a specific and sensitive laboratory test, the availability of which continues to increase.*
>
> *The ACDP is also of the opinion that COVID-19 should no longer be classified as an HCID.*
>
> *The World Health Organization (WHO) continues to consider COVID-19 as a Public Health Emergency of International Concern (PHEIC), therefore the need to have a national, coordinated response remains and this is being met by the government's COVID-19 response.*
>
> *Cases of COVID-19 are no longer managed by HCID treatment centres only. Healthcare workers managing possible and confirmed cases should follow the National infection prevention and control manual for England (or the equivalent devolved administration infection prevention and control manuals), which includes instructions about different personal protective equipment (PPE) ensembles that are appropriate for different clinical scenarios."* [Exhibit KB/27 - INQ000130562]

It is to be noted that SARS-CoV-2 had previously been defined as an airborne HCID along with its close relative SARS-CoV-1 and the reason for this change in classification was not based on changes in the evidence base around its route of transmission , rather, the mortality rate and testing capability. To many scientists and healthcare workers, it seemed incongruous to no longer consider this a disease with high consequence and slavishly apply the pre-defined criteria without any degree of flexibility, given that:

- The disease had significant transmissibility (Reproduction Number R_0) of around 3;
- Symptomless transmission had been confirmed, making this a more dangerous disease;
- A significant number of deaths (4,613) had already occurred around the world;
- A significant number of deaths had occurred to healthcare workers, as evidenced in Italy;
- Just two days earlier WHO had declared a global pandemic.

The revised IPC manual removed the requirement for aerosol precautions, including RPE, from most treatment contexts. The availability of FFP3 protection was restricted to those undertaking so-called Aerosol Generating Procedures.

79. No definitive review or evidence by 2020 established that, contrary to previous clinical evidence, SARS Coronavirus was not transmitted by the aerosol route. Nor was there evidence that this was or was not the main route of transmission at the time. However, in March 2020, the WHO, despite the protestations of many of the world's experts, declared it to be a fact that COVID-19 was not transmitted via aerosols and categorised any claims that the disease was airborne as "misinformation". By December 2021, they had reverted to the common understanding that SARS Coronavirus could be transmitted by airborne routes. It then became apparent where the "misinformation" had actually begun back in March 2020. This "misinformation" led to inappropriate and ineffective risk control measures being implemented, presenting great risk to UK healthcare workers.

80. During the time whilst PHE was vehemently denying that airborne transmission existed, the Cabinet Office was putting out public information videos graphically depicting airborne

transmission. These videos caused healthcare workers to wonder how the virus could be airborne in domestic and other indoor premises, but not airborne when they were caring for known infectious patients. During this same period of time, in November 2020, eminent UK scientists of the Joint Committee on Vaccination and Immunisation (JCVI) published a chapter of the "Green Book" ("Immunisation against infectious disease") [Exhibit KB/28 - INQ000130563] which clearly stated: "*SARS-CoV-2 is primarily transmitted by person-to-person spread through respiratory aerosols*". This added to the confusion and distrust amongst healthcare workers.

J. Management of Risk and Pandemics Planning in the UK Healthcare Context

81. From the outset of the pandemic, the management of health risk in the healthcare sector was entrusted to the UK's healthcare Infection Prevention and Control infrastructure for management and technical leadership. The UK's ability to manage Infection Prevention and Control is subject to the oversight of the Care Quality Commission, having received additional focus arising from the high level of hospital acquired infections. However, although failures of IPC management and standards were highlighted in reports over the preceding decade, CQC did not focus on IPC performance and management at a national level.

82. In 2008, a Parliamentary paper, the House of Commons Public Accounts Committee's 'Reducing Healthcare Associated Infection in Hospitals in England', highlighted the need for a joined-up and systematic approach to managing the risks of healthcare acquired infections [Exhibit KB/29 - INQ000130564]. Ten years later a Parliamentary paper, 'Raising standards of infection prevention and control in the NHS', reiterated the need to focus on this area of healthcare performance [Exhibit KB/30 - INQ000130567].

83. The UK had identified significant issues with HCAI management and effectiveness of infection prevention and control as an area requiring significant focus and better management. That focus has largely excluded respiratory routes of infection, despite the fact that respiratory infections account for 22.8% of UK HCAIs. This was understandable, given the crisis in management of HCAIs, which resulted in 300,000 infections in 2008 and was still resulting in the same number of infections a decade later. Even to this day (March 2023) over one-third of patients in hospital with COVID-19 contracted the disease in hospital, as opposed to being admitted with it. However, there was an understanding of the role of other transmission routes

in contributing to nosocomial infections. (For example, as seen in NHS Scotland's Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) 'Transmission Based Precautions definitions literature review' [Exhibit KB/31 - INQ000130568], although it downplayed the risk, compared to the evidence base upon which it drew, as per Bing-Yuan *et al* [Exhibit KB/32 - INQ000130569], referenced in the review).

84. The effectiveness of the UK's management of Infection and Control was already questionable in 2020 while being faced with standard conditions. Despite making gains and being the subject of considerable focus, the UK IPC infrastructure was not in a good place to face a pandemic and was not equipped to address the challenge of a respiratory illness, especially one transmitted by an airborne route. The UK's IPC focus was on major risks of patient infection, which were not perceived as including diseases transmitted via aerosol or aerosol/droplet routes. It does not appear that there is any UK literature available to CATA members which considers the full range of risks to healthcare staff posed by a pandemic infection. Moreover, such was the challenge on UK IPC professionals, the quality standards and governance, committing resources away from standard HCAIs and SIPCs or using techniques that may compromise standard HCAI infection control may well have been perceived as compromising the long-term strategic objectives and approaches being promoted by UK IPC leaders.

K. What are the dimensions of risks arising from a pandemic virus within healthcare? - Frontline staff and patients

85. When assessing the risk of a pandemic to healthcare, as with any organisation, there needs to be a multi-dimensional response. A pandemic by its definition cannot be regarded as simply an unusual clinical risk, or even an unusual IPC challenge. The formulated strategy for healthcare to deal with a potential influenza pandemic did consider both infection risks to *patients* and also infection risks of *staff* as agents of retransmission of infection to other patients. The National Influenza Pandemic Strategy also considered the impact of fatigue on staff.

86. The extant IPC guidance also states that employers had health and safety legal duties towards healthcare workers that needed to be risk managed. In contrast, the 2011 pandemic strategy highlighted that employers outside the healthcare sector had a responsibility for the health

and safety for their staff and that health and safety duties remained unchanged, but was silent on whose duty it was to maintain the health and safety of healthcare staff (if, as implied, it was not the employers as with other sectors).

87. Neither IPC nor pandemic strategy considered in detail the implications of the management of health and safety duties towards frontline healthcare staff. The assumption was that if patients were protected against infection, then staff would be protected by the same systems and to the level of protection required by health and safety law. While the point may seem legalistic, the standard of care for patients in relation to IPC was as defined in NHS Professionals Infection Control Policy Clinical Governance V5 May 2018, i.e. compliance with Standard Infection Prevention and Control procedures. However, the focus of these standards are routine situations and do not aim to protect the worker, but to prevent the worker from causing infection to patients. Throughout the first and second waves IPC guidance was prescriptive in that it specified that FRSM must be worn when providing direct care within 2 metres of a suspected or confirmed COVID-19 case. It is CATA's contention that this prescription was a most dangerous instruction, in that it presented mortal risk to healthcare staff with the probable consequence of hundreds of healthcare worker deaths and thousands of cases of Post-Covid Syndrome (Long Covid) amongst others.

88. Later in 2021, IPC guidance was amended such that if an "*unacceptable risk of transmission remains following a 'hierarchy of controls' risk assessment*" then RPE, such as FFP3 respirators, may be used for non-AGP activities. However, the IPC authors introduced the concept of 'risk assessment' without any appreciation that, in virtually all scenarios of patient care (other than in purpose-built HCID rooms), it is impossible to undertake a 'suitable and sufficient' risk assessment in the context of close-quarter care of infectious patients. There are a number of reasons for this such as:

    - Infectious aerosols in the air around the patient cannot be detected by any human sense (sight, smell etc);
    - The concentration of the infectious agent (SARS-CoV-2 virions) suspended in the air around the patient cannot be directly measured by any meter, monitor or other direct-reading instrument;
    - The effect of infection upon the worker cannot be reliably predicted. Even young, healthy, non-BAME, non-pregnant healthcare workers can (and

have) become seriously ill with COVID-19, with many going on to either die or develop serious chronic complications.

The HSE have been asked how they, themselves, would conduct such a risk assessment but have remained silent [Exhibit KB/33 - INQ000130570].

89. IPC guidance recommended the use of FFP3 masks for AGP procedures in respect of SARS coronavirus, but played down the need for this as required by evidence. However, emergency planning guidance highlighted the importance of health workers protecting themselves against infection, reflecting health and safety rules which adopt the concept of the precautionary principle. That is, if it is unknown whether a hazard may (in this case) be transmitted via an aerosol route, then aerosol precautions should be used.

90. The precautionary principle should remain in place until such credible scientific evidence exists which shows beyond reasonable doubt that (in this case) the disease is not transmitted via an aerosol route. However, the 'precautionary principle' was removed from IPC guidance in mid-March 2020 without any such evidence. The Inquiry may wish to explore this with those responsible for publishing the guidance.

91. The relevance of protecting healthcare workers from the risk of infection was really only considered in the IPC guidance and the Influenza Strategy as being needed to manage the risk of onward transmission of infection within the frontline healthcare setting. However, this failed to recognise other dimensions of pandemic risk, aside from the mere protection of the health and lives of the workers themselves. These dimensions of risk go to the heart of resilience, business continuity and sustainability of UK healthcare provision itself.

L. What are the dimensions of risks arising from a pandemic virus within healthcare? – Staff-to-staff infection

92. Infection prevention and control strategies and the 2011 Influenza Pandemic Strategy defined the healthcare frontline as being almost entirely in the clinical setting, i.e. the interface between healthcare staff and patients. However, the nature of a pandemic is such that it cannot just be viewed in healthcare as a HCAI on wards and in operating theatres, or something contained in rooms with a few patients with high-risk disease. By definition, a

pandemic infection is not contained to clinical contexts, and healthcare management needs to consider all routes of infection, not just clinical contexts. The UK approach to pandemic planning in healthcare did not do this and did not integrate the clinical control of infections with the general management of a pandemic in a busy high-risk and complex workplace such as a hospital.

93. A notable risk in the pandemic context, is that staff can infect other staff, whether frontline or not, irrespective of infections acquired from patients. However, because of their specific public-facing nature, the risk of acquiring infection from patients in the healthcare context is higher and predictable. Therefore, it is necessary for high-risk settings to have measures in place to control the risk of infection between frontline staff and other frontline staff, or between frontline staff and support staff. Those measures themselves should be planned according to the Hierarchy of Controls. The barrier between staff and infection by patients in standard infection controls is solely through the use of PPE ensembles. There is no provision in the IPC guidance beyond PPE, other than handwashing (and specific provision around staff with diarrhoea in relation to intestinal viruses remaining off shift), to restrict the potential that infection may be spread from staff to staff.

94. Thus, the sort of measures used for the management of inter-staff infective risk in other occupational contexts were not articulated or planned for in the healthcare setting. PPE is at the bottom of the Hierarchy of Controls because it fails to danger. In the context of infectious diseases, this means that when PPE fails, its result is predicted to be infection of a member of staff. In the absence of other control measures, then a transmissible disease has no further barriers against the infection of other workers.

95. As would be demonstrated by the HSIB's prospective report on the management of nosocomial infections in the early stages of the pandemic, the UK's approach to pandemic management in healthcare did not have a plan for the management of infection between frontline staff and between frontline and support staff. Given the absence of other planned control measures in place, the importance of avoiding PPE failure was critical, as it was the sole method relied upon to prevent not only infection of frontline workers, but also other workers that they may further infect. The potential for patient-to-staff, staff-to-staff and patient-to-patient cross-infection has been robustly proven by studies involving Whole Genome

Sequencing (a form of DNA fingerprinting) – as in Lindsey et al 'Characterising within-hospital SARS-CoV-2 transmission events' [Exhibit KB/34 - INQ000130571].

M. What are the dimensions of risks arising from a pandemic virus within healthcare? Capacity, continuity, resilience and sustainability

96. While the 2011 pandemic strategy acknowledged the likely impact on fatigue in healthcare staff, there was not a more specific consideration of the likely short, medium and long-term effects of a pandemic on healthcare. Immediate infection of frontline workers would be likely, resulting in less staff being available, potentially following a random and unpredictable pattern. This would be the predictable consequence of any failure of containment of patient-generated infection risk, environmental risk or staff-to-staff infections, but also, at the pandemic level scale anticipated by the 2011 strategy, because of the likelihood of community acquired infection.

97. Business continuity planning to ensure the assignment of staff resources to areas of critical need would need to be in place to anticipate the impact of a pandemic on the ability to deliver services. However, the impact of additional demand, sickness and death on the availability of staff would need consideration. Beyond recovery, the lasting impacts of sickness, overwork, stress and trauma arising from a pandemic would need to be in plan.

98. CATA's members are not aware of any published or disseminated national plan to support and guide employers and team leaders on how to manage these aforementioned pressures. The willingness of healthcare workers to put themselves and their families in harm's way by providing frontline services in any future pandemic (particularly one with a higher mortality rate) has been irreversibly damaged by the flawed arrangements for their protection, the resulting harm caused, and the uncaring way in which Health Trusts have sacked those who are too chronically ill to work. This experience may result in a further breakdown of trust in the country's health services. Future pandemic planning will somehow need to take this factor into account.

99. Moreover, specific considerations relating to healthcare workers in pandemic situations were not explored. Many industries require workers to spend long shifts in PPE, including uncomfortable RPE. There are decided mental and physical challenges which flow from that.

It appears that pandemic planning didn't envisage the need to manage prolonged PPE usage, enhanced hand-washing and administrative controls to address pandemic management. All of these issues were documented risks arising from epidemics in the past, and in the general methodology of emergency planning and business continuity for pandemics [Exhibit KB/35 - INQ000130572].

N. Environmental controls for pandemic preparedness

100. In the management of pandemic risk in a healthcare setting, PPE should be the last line of defence. This is not only because it fails to danger, but it is also the most resource intensive and makes every person wearing it a front line of defence. Effective pandemic protection manipulates the environment to minimise the transmission and viability of an infectious agent. This is one of the oldest principles of healthcare from before a clear understanding of the nature of infectious diseases.

101. In planning for the containment of an infectious disease, the environmental aspect a of strategy is critical. The Francis Crick Institute was opened in 2016 and had been designed with an eye to the use of naturally anti-microbial surfaces, effective ventilation and a whole host of precautions designed to limit infectious spread. At the same time, while a very extensive guide to controlling CO_2 emissions was made, the 'Health Technical Memorandum 07-02: EnCO2de 2015 – making energy work in healthcare' [Exhibit KB/36 - INQ000130573], no systematic guide for designing out nosocomial infections was extant. This is despite this being repeatedly highlighted in research, e.g. the Association Of Medical Microbiologists' New Hospital Developments Project Group's 'Building new hospitals: a UK infection control perspective' [Exhibit KB/37 - INQ000130574].

> *"Building design in relation to infection control needs stricter national regulations, allowing Infection Control Teams to focus on more local usage issues. Further research is needed to provide evidence regarding the relationship between building design and the prevalence of infection."*

Since 2015, perhaps 10 new hospitals have been built, with billions expended in the construction of new wards.

102. Furthermore, since 1994 it has been, and still remains, a strict requirement of the Construction Design and Management Regulations (CDM) that designers have a statutory duty to "*eliminate, reduce or control foreseeable risks that may arise during … the use of a building once built*". Given the foreseeability of an airborne-transmissible pandemic and the persuasive arguments put forward by Stockley et al, it seems that this statutory duty has not been well met. Indications drawn from the HSIB report and others suggest that poor design of new healthcare facilities limited the opportunity for effective implementation of environmental controls or even contributed to the spread of COVID-19 in a way that could have been anticipated and provided for at design stage.

103. While these features have a general positive impact on the reduction of other hospital acquired infections (that cost and estimated £774m, a year to the NHS), they also provide effective pandemic risk reduction. The Environmental Design Strategies to Decrease the Risk of Nosocomial Infection in Medical Buildings Using a Hybrid MCDM model [Exhibit KB/38 - INQ000130575] helpfully drew together known (prior to the pandemic) design features to prevent general nosocomial infections (not just pandemic risk) within healthcare buildings:

a. Optimization of Sanitary Ware Layout and Design - While the NHS's standard for the design of sanitary provision does consider infection prevention and control in Health Building Note 00-02: Sanitary spaces, it does not consider the key ergonomic elements outlined in the literature for the reduction of infectious risk and makes no reference to ventilation or the containment of risks, for example of infectious spread by "toilet plume aerosols" [Exhibit KB/39 - INQ000130576]. The fecal-oral route of transmission of SARS 1 was already known and there was recognition of the risk early in the pandemic in relation to COVID-19 risk, but by then problems had already been designed [Exhibit KB/40 - INQ000130578].

b. Comfortable and Efficient Public Space/ Control the Crossing and Gathering of Crowd Movement Lines – As Xiong puts it:

> "*crowd density in an enclosed space is positively correlated with the infection rate, and poor design can increase the time that patients*

remain in hospital…Insufficient waiting space, complex and tortuous streamline design, long distances between departments, and poor guide design increase the risk of infection….in some narrow, crowded, and poorly ventilated indoor environments, aerosol transmission in close contact through some small, atomized particles is combined with respiratory droplets and contact transmission….

"The design for medical buildings must separate different types of traffic routes to control. The flow lines for common, susceptible, and high-risk groups must be distinguished in terms of the contact risk elements, and the range of movement within the hospital must be controlled.

"The design for moving lines must use the path-finding characteristics of patients because difficulty in identifying a location is a common reason for unnecessary contact between patients. Specific measures include simplifying the paths, arranging rooms according to patients' path-finding habits, and reducing invalid space transfer.

"*Practical experience shows that a space can be classified according to the risk of Nosocomial Infection and cleanliness. There are ordinary areas, high-risk areas, and buffer areas. Significant buffer areas can be established in different cleanliness conversion areas and materials and colors can be used to emphasize the level of risk."*

104. Health Building Note 009 Infection Control and the Built Environment considers only clinical spaces and does not consider these crucial issues in the control of general nosocomial infection in non-clinical context. In effect, in the design of buildings, the impact of non-clinical spaces on infection transmission risk is not considered. The risk of airborne transmission is played down in the design guidance: "*This route is only relevant for a small number of infections, principally tuberculosis.*" It is an explicit design consideration only in relation to

isolation rooms and is not mentioned as a potential risk in the guide to microbial infection for contractors.

105. The inherent weakness in the aforementioned design approach is that it provides only one line of effective defence. If isolation fails, then there are no further elements of designed building controls to prevent infectious spread, particularly to staff and public areas. Even for the prevention of a droplet-spread respirable infection route, the design of UK hospitals would not have features to prevent person-to-person transmission in any context outside of clinical ones and, more specifically, isolation spaces.

Correct Air Circulation and Purification – Per Xiong's summary of the literature:

> *"Previous studies show that a building's properties, especially the source of ventilated air and the airflow rate, are related to the diversity and composition of indoor bacterial communities. Hobday and Dancer noted that buildings are designed to increase exposure to outdoor air and sunshine to inhibit the survival and transmission of indoor infectious agents. However, many hospitals rely on mechanical ventilation, so air flow and filtering must be designed to prevent Nosocomial Infection."*

106. Ventilation is specifically the subject of the "Health Technical Memorandum 03-01 Specialised ventilation for healthcare premises" [Exhibits KB/41 - INQ000130579 and KB/42 - INQ000130580]. In its latest version, published in 2021, it explicitly states that the document was prepared before the pandemic. There is no consideration of the role of ventilation in nosocomial infection control, the need for ventilation to address CBRN or pandemic risk. It states "Most healthcare staff are no more at risk from airborne hazards when at their workplace than they are when not in a healthcare environment." There is no consideration of risks in non-healthcare settings.

107. Hospitals are places where people with infectious diseases go. People do not always know that they are infectious. Neither do the staff who deal with them (whether healthcare or support staff). Some HCIDs and HAIs are transmitted through a respiratory route. Therefore, staff in healthcare contexts are inherently at a higher risk of airborne transmission. The probability is

higher and the impact from the type of exposure (e.g. for a rare but dangerous disease) is also higher.

O. Management systems for pandemic management

108. Pandemics require specialised management preparedness, response and contingencies. The Inquiry will doubtless be apprised of the findings of Exercise Cygnus in 2016 , which had established that the UK's preparedness for response to a large-scale influenza pandemic was inadequate and had made recommendations regarding PPE, which were not followed. This was further highlighted by Exercise Iris in Scotland which identified general issues with the capability of the UK and Scottish authorities to supply, manage and deploy PPE. All these exercises highlighted significant challenges with aspects of the management of any future pandemic, while not considering all of the dimensions which may be anticipated from a prolonged and widespread pandemic.

109. Significant factors which did not arise in the planning for the pandemic, but which would be routine considerations in the context of emergency planning include:

a. Readiness and accessibility (including distribution and procurement) of the necessary equipment and materials (including PPE and sanitation products) required to manage a pandemic situation. As identified earlier, NERVTAG in 2018 had indicated that this was a national issue. However, the management skills to implement something like a RPE programme safely and effectively were simply not in place. This was particularly critical because systems for the use of sustainable (reusable) PPE, such as powered respirators require not only access to equipment, but the management and processes needed to maintain it. The impact of not having the capability to manage reusable RPE with a high protection factor would always fall particularly on those who cannot easily wear close-fitting disposable RPE. These are groups such as those who wear beards for religious observation, have medical or disability reasons preventing effective face fit and also those with different facial morphology than available RPE.

b. In the event of any national emergency, especially one which may be dynamic, effective channels of communication are vital. For healthcare having a single authoritative and joined up communications structure is essential to deliver a nationally coordinated response, capable of adaptation to local need and for the sharing of emerging intelligence to manage risk. The table-top exercises for pandemic preparedness in some ways have to sacrifice the methodology of communication in the creation of a scenario. However, notwithstanding this, Cygnus and Iris both identified the need to enable better communication. There was an absence of consideration of how to achieve messaging which was consistent, but crafted to be meaningful for leadership, management and clinical leads. Even more problematic was the question of how to integrate the complex interaction between infection prevention and control guidance on protecting the legal rights of workers in healthcare under the Control of Substances Hazardous to Health Regulations (COSHH). This was ambiguous and perhaps inadequately considered in the 2011 pandemic plan for Influenza.

P. Human Resources and workforce planning for pandemic readiness

110. Perhaps because all the modelling for pandemic planning considered localised and short-term incidents, the normal considerations of business continuity planning seem to be absent from any shared management documentation and guidance for UK pandemic planning. While the 2011 Influenza plan considered the possibility of fatigue, the direct and foreseeable impact of a pandemic illness on the health workforce and its supporting staff and supply chain was not explicitly considered.

111. Workers in healthcare are more likely to be exposed to the risk of infection than other workers. This can and should be effectively controlled. However, they also experience societal infection risks. Typically, this will have an impact on reducing access to high speciality workforce members, depleting shifts and reducing overall capacity. These issues in workforce planning are likely to become more pronounced and less predictable as a pandemic takes root, in much the same way as attrition occurs during a war. It is not apparent to CATA that considerations of how this risk might be managed was a feature of UK preparedness for a pandemic.

112. The nature of a viral pandemic is that the greater the level of replication through spread, the greater the possibility of mutation and new variants. Coronaviruses are relatively good examples of this. With a rapidly-moving and poorly understood disease, the transmission of knowledge and training to counter that disease needs to move faster than the disease itself if knowledge is to be effective. In the contemplation of pandemic planning, the need for dynamic communication and ongoing adaptive training was not a feature of the management infrastructure. The capability to move from status quo based "deep" and "routine" learning and knowledge to dynamic and contingent knowledge transfer was not factored into pandemic management thinking. In effect, it meant that pandemic readiness was premised on the pandemic risk that was known and understood, but did not consider that a critical factor in enabling spread might be a "surprise factor" – that the infection that might take hold would be the one that we did not know how to manage and may require different responses to those that healthcare professionals and systems were accustomed to dealing with. Adaptable and dynamic knowledge transfer and the capability of staff at all levels not only to learn new information and skills, but to challenge their approaches and change their minds as the evidence evolved were not planned elements of the approach to pandemic management.

113. This "surprise factor" came with 'symptomless transmission' and associated 'super-spreading'. For instance, with SARS-1 the lag time between onset of symptoms and maximum infectivity was 5 to 7 days which allowed time to isolate infectious patients at an early stage. However, with COVID-19 the R value may be zero (infectious as soon as symptoms show) or even negative (at maximum infectivity before symptoms show). The Government was on notice about this circumstance early in February 2020, given a well-publicised outbreak in Sussex stemming from a symptomless 'index case' but failed to address this in its pandemic management policy during the ensuing months.

Q. Procurement contingencies for pandemic readiness

114. We have already highlighted that NERVTAG had identified that there were fundamental unresolved problems with the procurement and maintenance of PPE and also the ability to manage a programme of fit testing. No action was taken in this respect and the HSE, who were the regulatory body responsible for PPE were depleted in resources and unable to focus on this from a regulatory perspective. In classic consideration of business continuity, there

was not a sustainable UK supply chain in the event of a global pandemic increasing demand internationally.

115. There was no clear plan that identified at a technical level what suitable PPE would be needed. The British Safety Industries Federation has categorised it as a "*race to the bottom*", buying whatever was cheapest or available. Staff were neither trained to implement face fit testing (essential for effective deployment) or to get access to external supply of expertise. The assumption was that single-use RPE would be sustainable and consideration of sustainability of the resource and the desirability of reusable RPE was not present, even leaving aside sustainability and cost considerations. The failure of pandemic procurement is a matter of public record, but focus has been placed on the material availability of PPE, rather than the procurement of the skills required to make it effective and the choice of sustainable alternatives to single-use RPE.

III. CATA's position, advocacy and government engagement

A. The State of Pandemic Preparedness in the UK

116. In 2011, the UK had a pandemic preparedness plan. It was for one type of pandemic – a droplet-spread, local hot-spot driven incidence of Influenza. By 2018, many of the elements of that plan were either not in place or had been in place but had been dismantled. Our healthcare infrastructure was quite literally built on the assumption that the one form of infectious disease which was not going to happen was an aerosol transmitted virus that would become nationally and globally pandemic and to which we had no immediate cure, vaccine or treatment.

117. We were somewhat prepared for a droplet-spread respiratory virus. However, when SARS-CoV-2 emerged, WHO and NERVTAG initially claimed they did not know whether it was spread by an airborne route or by droplet transmission. Evidence indicated that SARS-CoV-2 might have been transmitted by the airborne route. Other coronaviruses, including its close-relative SARS-CoV-1, were also known to be airborne transmitted. No virus has ever been known to change its mode of transmission to one with a lesser capability for infection. Contingency planning suggested that it should be treated as being spread by this route. The legal principles of health and safety at the time – the precautionary principle and

the COSHH regulations – determined that it must be treated as if there was a risk of infection by this route.

118. However, instead of adapting our pandemic plan to address the threat according to these principles, the UK government deployed the plan that they had. The scientific assumption that a pandemic would not be spread by an airborne route, which we have outlined as being designed into our health infrastructure, was therefore fundamentally entrenched. It is CATA's contention that subsequently all official scientific pronouncements and infection control guidance were adapted and designed based upon this assumption. This was not, in CATA's submission, a finding of science, but a reflection of adherence to the planned-for model.

119. This approach found endorsement by the WHO. However, at the beginning of 2020, the largest funding nation of the WHO, the US, was threatening to withdraw funding from the WHO. This left the UK as the largest total funder, bearing in mind additional funds through the GAVI alliance. It would be a legitimate question for the Inquiry to determine whether the UK influenced the WHO's widely-criticised and surprising decision to announce in March 2020 definitively that COVID-19 was not transmitted via an airborne route without a significant change in the scientific evidence base.

B. How Aerosol Generating Procedures Became the Mainstay, rather than the Fallback for Infection Prevention and Control

120. Even in respect of infections that are largely spread by larger respirable droplets, there is a long-standing acceptance of the likelihood of increased transmission risk arising from infectious fluids becoming aerosolised. The concept that AGPs may create an increased risk of aerosolisation of infectious fluids was hypothesised as a result of high recorded instances of infections of healthcare workers in certain contexts. These hypotheses were based upon studies which had extreme limitations. The hypothesis developed in a paper by Tran and others in 2012 highlighted its own limitations [Exhibit KB/43 - INQ000130581]:

> *"Despite the comprehensive nature of the search, the limitations of the included studies serve to emphasize the lack of high-quality studies which have examined the risk of transmission of microbes responsible for acute respiratory infections to HCWs caring for patients undergoing aerosol*

generating procedures. In addition, the findings serve to highlight the lack of precision in the definition for aerosol generating procedures. Further, the results of this report should not be generalized to all acute respiratory infections because the evidence available is strictly limited to SARS (1)."

121. In 2016, the UK's scoping report on AGPs concluded that the AGP hypothesis was one that was lacking in a firm evidence base [Exhibit KB/44 - INQ000130582]:

> *"The existing evidence is substantially heterogeneous, leading to difficulty in interpreting findings and forming recommendations. Much of the variation in countries AGP list content may be attributable to a reliance on expert opinion in the absence of evidence. A stronger evidence base and standardised recommendations would inform health policy and practice, improve resource allocation and help to ensure optimum patient care."*

In 2017 Health Protection Scotland (HPS) scrutinised the Tran review and AGP hierarchy, concluding as well that it consisted of "*Poor quality papers*" and proposed a "*hierarchy not suitable for clinical decision making, only for academic discussion*".

122. At the heart of the flaw in the evidence base, which was the failure to create a reference point, based on aerosol science, to determine whether aerosols created as a result of clinical procedures were somehow more problematic than those created through, coughing, breathing or shouting. The absence of an interdisciplinary approach to the critique of the evidence base determining infection transmission risk resulted in a crucial policy focus on prioritising healthcare workers for RPE based on the procedures that they were carrying out (AGPs) over the risk of infection because of their working location (poorly ventilated spaces, uncontrolled community environments and contact with population groups not taking public health measures). The critique of the evidence base for AGPs is most eloquently summarised in the 2022 rapid review on AGPs [Exhibit KB/45 - INQ000130583].

> *"In the process of conducting the review it became apparent that the major change in the evidence base around AGPs during the pandemic has come*

from important advances in the ability to detect aerosol produced during medical procedures (either within hospitals or in simulated models with varying degrees of fidelity). This clinical aerosol science has enabled a quantitative assessment of aerosol generation that can be useful to inform the relative risk association with these activities.

In particular, volitional coughing from study participants has been operationalised as a reference for risk, such that aerosol generated from volitional coughs can be used as an appropriate relative risk comparator for aerosol generating procedures. The volitional cough has the advantage that it can be detected above baseline aerosol levels (if in a clean environment) and is a discrete, transient event. There is considerable variation between both individuals and between studies reflecting individual respiratory (patho)physiology, measurement techniques and experimental conditions. Nonetheless using within-subject comparisons has demonstrated that several AGPs on the extant list produce much less aerosol than a cough and so by this measure can be considered as not being high risk for aerosol generation. Importantly, there is an increasing evidence base of aerosol measurements during normal respiratory activities such as tidal breathing, breathing during exercise, talking, shouting and singing. Each of these activities generates measurable aerosol in a graded and proportionate way and importantly this physiological respiratory aerosol has been demonstrated to contain SARS-CoV-2 in patients with COVID-19.

"For many of the reviewed procedures, the aerosol generated by natural respiratory activities exceeded that produced by the actual procedure, often by more than an order of magnitude. It is further apparent that the source of the detected aerosol in several of the AGPs that do generate increased aerosol (such as, upper gastro-intestinal endoscopy) is predominantly from the patient's own respiratory activities (i.e., coughing) rather than from the actual procedure."

123. In 2018, however, PHE adopted the Hierarchy of AGPs and the allocation of RPE to health workers is still prioritised by IPC guidance (now withdrawn) [Exhibit KB/46 - INQ000130584], based on the concept of an increased risk associated with AGPs, despite the concept being largely discredited as a basis for infection risk assessment by the NHS's own research.

124. By April 2020 healthcare workers were being threatened with dismissal if they wore RPE that they had purchased themselves unless they were conducting procedures on the AGP list. This was despite many of those workers having clinical, medical and scientific skills necessary to make an assessment of infection risk. Healthcare workers were placed in an impossible conflict that their professional ethics drove them to consider that they could not exercise their legal right not to work in a context where their health was at material risk in the workplace. However, they knew that by working without adequate PPE, they would be rendering themselves susceptible to personal danger and increasing the transmission risk to colleagues and patients.

125. CATA's origins are founded in the AGP Alliance, which as discussed before, consisted of healthcare professional and scientific bodies who challenged the notion that the AGP list was a legitimate, lawful, ethical or scientifically valid basis to restrict the legally and professionally required respiratory protection. At heart, its existence was a response to the inadequate scientific basis for the restriction of PPE to a discredited list of procedures, predicated on a route of transmission of infection (droplet) which was a convenient proposition, rather than founded in scientific fact.

126. Having written to the Prime Minister, Secretary of State, PHE, NHS England, NERVTAG and many other bodies, we realised that our name (AGPA) was a distraction from our real purpose. We therefore altered the name to the Covid Airborne Protection Alliance or CAPA in September 2021 with widespread support from our constituent members. This meant we could more easily focus on the implications of a failure to recognise the airborne route and in particular, the need for better ventilation and FFP3 protection for all close contact care in all healthcare settings – By this point, we had been joined by the Queens Nursing Institute, so the community issues could be highlighted to a greater extent. Indeed, we attracted more members throughout 2020-22 including FreshAir NHS, Medical Supply Drive UK, British Occupational Hygiene Society and David Osborn (Health and Safety expert). We successfully involved the media and for a while we had the support of David Shukman at the BBC. He

published many useful supportive pieces until his retirement from the BBC in October 2021. We collaborated with the Royal College of Nursing and British Occupational Hygiene Society to produce the first Risk Assessment Tool in December 2021. As IPC guidance continued to omit clear indications of the route of transmission, CAPA, Royal College of Nursing and British Medical Association campaigned in a coordinated manner to change the guidance.

127. The Inquiry will need to determine whether it was because the UK had only prepared for a pandemic transmitted by droplets, rather than aerosol, that it chose to ignore legal duties and established emergency planning principles resulting in the unnecessary deaths and illness of workers in the healthcare sector. It may alternatively discover that a doctrinal adherence to "expert opinion" in relation to AGPs and how infection prevention should be managed, without the support or actually in disregard of scientific evidence bases, resulted in a stubborn refusal to accept inconvenient truths.

C. CATA's repeated call for an objective scientific basis for the handling of the pandemic

128. Throughout the Alliance's existence, CATA has mobilised its considerable scientific and medical expertise to try and inform decision-makers from Prime Ministers, Secretaries of State, other Ministers, Government Departments to the leadership of the NHS. CATA understands the governance requirements in the determination of matters at a time of crisis and the challenges associated with leadership in these times. However, the public law duty to take into account relevant considerations and disregard irrelevant ones becomes even more critical at times of national emergency.

129. Moreover, CATA has always drawn attention to existing health and safety obligations which were never planned to be diminished in either law or policy, as well as scientific fact, resting on a pre-existing and growing evidence base. Responses to focused and science-based inquiry and advice from CATA were consistently provided in general political terms such as "*the safety of healthcare workers is our greatest priority*", "*We are working hard to provide PPE"* and "*our experts are keeping the evidence under review*". These responses indicated a failure to engage or perhaps understand the scientific and practice-based nature of the material being provided. Moreover, in the case of employers or those exercising control over the health and safety of employees, illustrated a failure to engage with duties under the

Health and Safety at Work Act etc 1974 to consult with the employee groups expressing concern.

130. In all CATA's correspondence in its capacity either as a collective voice of the workforce or as a group of scientific and professional bodies, there was not one reasoned, evidence-based or technical response provided. Nor indeed was there any indication that the legitimate concerns for safety or for the application of evidence-based consideration of decisions evidenced in correspondence. CATA would like the Inquiry to determine whether decision-makers involved with the early implementation of the pandemic response were ever apprised of the crucial scientific and other observations by CATA to enable them to make the modifications envisaged for other routes of transmission identified in the 2011 Influenza Pandemic Strategy.

131. We have reason to believe that information was filtered by civil servants and policy gatekeepers to prevent the reception by decision-makers of inconvenient scientific, technical and front-line truths. For example, at one meeting between AGPA with DHSC and others, the civil servant Chair repeatedly refused any opportunity to discuss FFP3 masks and the principle of airborne transmission – which was the main reason for the meeting being convened.

132. At the invitation of the Rt Hon Jeremy Hunt MP, detailed written evidence was submitted to the Health and Social Care Committee which he chaired [Exhibit KB/47 - INQ000130585]. The report provided accurate and well-founded scientific and legal information intended to alert the Committee to the extreme danger that healthcare workers were being placed in by being issued with inadequate respiratory protection. However, the report, which highlighted the concerns of professional bodies about the risk of death and illness (and the scientific basis for this) was not referenced or reflected in the publication of the Committee. Similarly the AGP Alliance, together with the Royal College of Nursing, submitted written evidence to the Public Accounts Committee voicing similar concerns [Exhibit KB/48 - INQ000130586]. These representations were neither referenced nor reflected in any public document. While the determinations of a Parliamentary inquiries may be beyond the scope of this Inquiry, our experience is another indicator of the extent to which the legitimate concerns of healthcare professionals and the scientific evidence which they put forward to underpin those concerns were excluded from public discourse.

133. CATA firmly believes that, as the pandemic progressed, the Government's refusal to substantially change its approach to RPE was due to the fact that to do so may indicate that there had been inadequate preparation for a pandemic and that, in choosing to implement the Influenza Pandemic Plan without consideration of the implications of the mode of transmission of the infection, it had made some fundamental errors. CATA has documentary evidence which suggests this was in fact the case.

134. The 4-Nations IPC Guidance document was authored by the "IPC Cell." Its existence is not reflected in the hub and spoke governance model for pandemic and emergency governance which was the basis for pandemic emergency planning exercises like Cygnus and Iris. Its membership was not made public, although the unsatisfactory operation of IPC arrangements was remarked upon in May of 2021, when changes were brought into effect in its operation and leadership. The minutes of the IPC Cell meetings were never put in the public domain, despite being the basis for almost all operational decisions about health and safety of staff and patients in the UK. However, a few sets of notes were released in response to a Freedom of Information request [Exhibit KB/49 - INQ000130587]. The notes of one such meeting record the fact that "*Public Health England are recommending FFP3 masks in all medium/high risk pathways (irrespective of AGPs) as there could be increased airborne transmission in these pathways*". In response, a representative from Northern Ireland voiced a concern that if there was a move to FFP3, "*colleagues might think they have not been appropriately protected with what has been previously recommended*".

135. This discussion in itself indicates a series of fundamental failures in governance and decision-making. It poses the question immediately of why the body legally responsible for the protection of public health (PHE) could be over-ruled by a non-statutory group. It also indicates irrelevant considerations in decision-making relating to the IPC Cell's role. The IPC Cell's terms of reference and the relationship with general health and safety were inadequately defined and managed. This led to IPC guidance which was in effect contradictory to public health decision-making and health and safety law.

136. In the setting up and management of the IPC Cell in governance, operational and legal terms, there was a fundamental failure in pandemic planning. Either the pandemic plan had failed to determine that preventing and controlling infection would need a specific focus in healthcare settings or a decision was made to remove IPC control from the existing

governance arrangements and establish a separate body. If the former (which on the face of the 2011 Pandemic Plan, it seems is possible, if incredible) then it shows a fundamental flaw in the appreciation of the role of and risks to healthcare in pandemic contexts. If the latter, then the Inquiry will need to satisfy itself of what the basis of that decision was and what fundamental flaw in governance and legal arrangements required such a move.

137. CATA consists primarily of those involved directly in the delivery or management of healthcare. The fact that CATA members , as critical players in healthcare delivery, remain in principled objection to the Government's pandemic planning, is an indication of how profoundly important the failure to prepare for an airborne transmission virus is to the nation's healthcare provision. The fact that the Alliance still exists and still needs to campaign is even more demonstrative. The health and safety protections required to protect healthcare workers against COVID-19 are the same as would be legally required to protect worker in a car body shop from the threat of occupational asthma. The fact that the organisation most critical to the continued health and life of the country was unprepared for the risk of respiratory disease that could be transmitted through a respiratory route is wholly indicative of the lack of preparedness.

138. The primary significance of the airborne route of COVID-1 transmissions are part of the unequivocal findings of the UK's national core study on COVID-19, the WHO's change of viewpoint and the Cabinet Office's confirmation of airborne transmission in January 2022. Nonetheless, the IPC guidance and current practice still deprives healthcare workers of the right to be protected from infection. While current vaccines are largely effective against existing strains of COVID-19, the absence of largescale systematic testing means that our ability to detect vaccine-resistant strains in the community is limited and it is likely that the first point of identification and the main hub of transmission for any new COVID-19 strain is likely to be in healthcare settings. Currently, we are in no better position in the governance and organisation of healthcare to respond to this in relation to worker health protection.

139. Healthcare workers feel a professional duty to work, even when they put themselves at risk. The Government would have been aware of the dedication of healthcare workers and that even if they were not provided with adequate PPE, they would work at a time of national crisis. As the referenced IPC notes and comments in Exercise Silver Swan suggest, the admission of the inadequacy of PPE provision may have been perceived as something that

may have undermined that commitment. By providing guidance which was not scientifically grounded and which represented a lesser standard of protection than that required by health and safety law, the UK's healthcare workforce was effectively misled as to risks.

140. The lack of clarity in the pandemic strategy and the inherent inadequacy of general health and safety and specific occupational hygiene provision meant that there was no corrective to that misleading guidance. The pandemic saw the Government and employers leveraging of the professional ethics of healthcare professionals to ensure business continuity. This was done while depriving workers of crucial protections in the healthcare workplace and of practical resources to do their jobs, while failing to plan for the inevitable capacity demands of the pandemic. Fundamentally, it sent the message that healthcare workers in terms of health and life could be sacrificed at a time of national crisis.

141. It is conceivable that this has fundamentally broken a crucial aspect of the professional relationship between healthcare workers, their employers and the Government. It may be that the Inquiry considers whether this is a contributory factor to the unprecedented decisions by healthcare workers to undertake industrial action and, to leave the NHS. The failure to consider the centrality of healthcare workers and the maintenance of their health was one of the critical obvious failings in preparation for any pandemic.

142. In the early days of the pandemic there was an insistence that UK policy on the pandemic would be led by the science. CATA's members have for years persisted in the proposition that by providing the scientific evidence base to the UK Government and decision-makers, the required steps for the protection of those working in healthcare would be taken. However, the Inquiry will see the evidence as it emerges that shows the real reason for the failure to provide adequate protection for healthcare workers, resulting in their deaths and illness, the avoidable transmission of COVID-19 in healthcare settings, through hospitals to care homes and then beyond.

143. The reason for the levels of unnecessary deaths and levels of illness resulting from the COVID-19 pandemic was because the Government had prepared for a different pandemic – an acute localised Influenza outbreak spread by droplets (insofar as it had prepared at all). It slavishly followed those plans, because to do otherwise would be to publicly admit that it was not prepared at all for the crisis we were actually facing.

IV. Proposed lines of enquiry and interim recommendations

144. Three years after the UK's most significant pandemic event in a century, the UK is no better prepared for any new pandemic threat. This Inquiry needs to investigate what the current pandemic strategy is, if there is indeed one. The previous Influenza Strategy was not designed to address anything but the most narrow threat. As CATA's evidence shows, that strategy was riven with gaps, particularly in relation to the management of health and safety and protection of resilience in the workplace. It is unlikely that the aspirations of even that defective strategy could be realised in the current context, and for any new pandemic threat.

145. Importantly, a new pandemic threat is likely to come in the context of an NHS workforce that is depleted, exhausted and overwhelmed. The contingencies anticipated to arrest even a localised outbreak would tax the NHS beyond its capability. Staff morale is lower than ever and the poor management of the health and safety and exploitation of healthcare ethics to secure the COVID-19 pandemic response is likely to mean that staff are less willing to fling themselves into the frontline without adequate protection, in the face of any new or emergent pandemic threat. The Inquiry will need to investigate what the UK's strategy is to secure the capacity, capability and cooperation of the healthcare workforce, were a pandemic threat to materialise now.

146. The UK's PPE situation is considerably worsened, with standards in disarray as PPE regulations are scheduled for deletion under the Retained EUL Bill. HSE's PPE team is even smaller, if existent, and the emergency supply routes and stockpiling provisions are tattered and unclear. The Inquiry must examine the current legal and regulatory standards expected for the protection of healthcare workers of respirable risks from airborne and aerosols and the means by which the regulator HSE is ensuring that healthcare employers are compliant.

147. CATA proposes that this Inquiry pursues the following lines of enquiry, during the course of Module 1:

i) Examine changes that have been made to the training and education of infection control leads and specialists to ensure a proper understanding of the correct approach (as required in normal

circumstances by HSE) to respiratory protection. Specifically, the Inquiry should seek to ascertain how lower standards that may have been acceptable at the peak of the pandemic are being eliminated and how IPC leads can manage and implement a sustainable RPE programme. In other words, the Inquiry should seek to establish whether national training and education standards are being pursued with RPE specialists in order to embed them within core IPC training.

ii) The Inquiry needs to see a new version of the IPC guidance reflecting the scientific findings of the national core study on COVID-19 transmission, the removal of the use of AGPs as a basis for prioritisation (following the NHS's own evidence review findings) and the incorporation of proper principles of COSHH management into the guidance, led by HSE and relevant specialists in the precautionary protection of workers. This should further reflect principles of the control of nosocomial infection outlined in the HSIB COVID report and in other professional and scientific literature. The Inquiry should be provided with a national standards for healthcare worker respiratory protection, with particular reference to a precautionary approach to the overall management of airborne risks. This should include, but should not be limited to RPE, public space control, ventilation, and corporate, supervisory and risk assessment tools.

iii) The Inquiry needs to see a clear, lawful and transparent governance structure for decision-making in relation to pandemic management which ensures that bodies such as the IPC Cell are properly constituted as public bodies, subject to clear supervision by accountable agencies and operate in full compliance with the law, especially health and safety law. IPC standards cannot be set at any standard that is lower than the legal requirement for the protection of health and safety at work. The legal basis and the IPC Cell and its relationship with employer duties, the Health and Safety

Executive, UKHSA and the civil contingencies framework needs to be made available to the Inquiry.

iv) The Inquiry needs to see updated building design standards reflecting the design and building of new healthcare facilities which explicitly consider the issues at the heart of control of CBRN and pandemic risk, including ventilation and shared spaces. Beyond this, the Inquiry needs to see how community-based and social care based healthcare provision, including paramedic and ambulance services are now in the frame of infection control and current and planned measures to fill the protection gap which is apparent in previous pandemic planning.

v) The Inquiry must have provided to it the principles of governance of the sharing, use and publication of scientific knowledge in the formation of public policy, particularly where it is critical to the life of the nation. It needs to be able to understand how scientific evidence is separated from policy determinations to enable decisions to be made lawfully without misconstruing administrative, practical or political convenience from the objective state of scientific knowledge. It needs to understand how the sharing of scientific expertise across Whitehall is managed and mandated to avoid a situation where one arm of government is aware of a risk and another continues with policies that increase that risk (e.g. the management of the pandemic in healthcare and the findings of HSE's national core study).

vi) The Inquiry needs to understand the legal and governance principles under which it is permissible for public authorities to mis-inform, partially inform or to fail to inform the public of scientific facts or risks to health and life, especially where to do so would be to directly deprive them of the ability to freely exercise their legal rights to self-protection or where it would expose them to the risk of death and harm. In particular the current legal basis for misinforming

workers as to immediate risks needs to be published to inquiry to determine the lawfulness of it.

vii) The Inquiry needs to understand how, in the context of COVID-19 deaths, the reporting and investigations arising from negligence, misinformation or mismanagement through mechanisms like RIDDOR and the coronial system have been maintained to ensure the protection of Article 2 protections arising from the proper investigation of causes of death.

148. As a matter of urgency, this Inquiry must seek to establish the current plans for the management, procurement, storage, refresh and distribution of PPE, with particular reference to the means being undertaken to use data derived from the NHS to ensure that PPE is not procured solely for the benefit of a fit to white males. The Inquiry needs to examine what the plan is for adequately sourcing fit test kits or testing equipment to bring all healthcare providers up to standards at least as required at March 2020. This is required to immediately address the ongoing systemic and structural discrimination that has been made obvious by the pandemic. Given the critical importance of maintaining our capability to address the continued pandemic risk and the fact that the problems of diversity associated with their use are not in dispute, our submission is that a review of the current arrangements to remedy this problem could properly be the subject of interim recommendations. The proposed recommendation would read:

> *The Government needs to immediately address structural and systemic discrimination in health and social care in the current approach to health and safety precautions, in particular in the availability of life-saving RPE. The DHSC (or other responsible body) needs to publish and maintain in a domain accessible by health care employers and employee health and safety representatives (and the Inquiry) accurate data to enable the judgement of:*
>
> - *adequacy of stocks, rotation and resupply of RPE (bearing in mind diverse demography of health and social care workers, required protection factors);*

- *adequacy of stocks, upgrading and supply of fit-testing equipment (together with arrangements set in place to ensure a minimum training level with all health and social care employers and additional arrangements for surge testing in times of height demand) to ensure that appropriately fitting RPE is available regardless of gender, ethnicity, religion or ethnicity.*

The DHSC, needs to publish and maintain in a domain accessible by health care employers and employee health and safety representatives (and the Inquiry) a protocol with HSE to ensure the capability of health and social care to:

- *manage sustainable RPE programmes, and undertake local risk assessment of needs (particularly those of a diverse workforce), bearing in mind the availability of other effective controls;*
- *amend IPC guidance to specifically reflect the standards required for protection of workers needed to be observed to make it compatible with health and safety law in all circumstances, explicitly recognising the needs of diverse workforce.*

149. It is CATA's hope that by pursuing these lines of enquiry in Module 1, the Inquiry will be able to ensure that the appropriate lessons are learned and that there is adequate preparation and planning for any future pandemic.

Statement of Truth

I believe that the facts stated in this witness statement are true. I understand that proceedings may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief of its truth.

Signed **Personal Data**

Dated: _19/04/23_____

Annex 1: Timeline of engagement with government by CATA and its members indicating insufficient or ineffective planning and preparedness for the pandemic.

Specific Mention of Airborne Transmission of Covid-19 ↘

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
1.	KB/50 [INQ000130504]	**2 March 2020**	House of Commons H&SC Committee: oral evidence from Chris Whitty 2020-03-05 Min H&SC	N/A	" All infections that have a very strong force of transmission and that are airborne have the capacity to travel worldwide". [KB/50A - INQ000148455: HSCC Preparations for Coronavirus HC 36, Page 3, Para 4]	Yes
2.	KB/51 [INQ000130514]	**2020 March 10th**	BOHS publishes articles on the needs and challenges of Respiratory Protection Equipment for healthcare workers, including the challenges of single use fit and the opportunity to use PAPR to overcome challenges to be faced in the pandemic [KB/51A - INQ000148456: Are Powered Air Purifying Respirators a Solution for Protecting	N/A	Reiterates advice provided to CDC and European authorities (followed by CDC) BOHS Annals Editors Prof Lisa Brosseau and Prof Rachel Jones in 2016 about the need to be ready for airborne transmitted pandemic risks. This previous advice prompted Centres for Disease Control to revise guidance and prepare for aerosol transmission.	Y

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
			Healthcare Workers from Emerging Aerosol-Transmissible Diseases? | Annals of Work Exposures and Health | Oxford Academic (oup.com)]		(Publication is read by HSE PPE team and members of HSE's Workplace Health Exposure Committee) It also highlighted the need for consideration of other forms of respiratory protection equivalent to FFP3 level to address the challenges of diversity and usability of FFP3 single use PPE. See HSE response to IPC Cell 20th February: "Our current national IPC guidance is use 'FFP3 respirator conforming to EN149'. This standard (EN149) is solely for 'Respiratory protective devices – Filtering half masks to protect against particles' and not powered hoods. There is no reference in our guidance to powered hoods, although use appears to be more widespread than we believed and we are trying to find out the extent" (Advice sought	

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					on use of respirator hoods vs FFP3 - HSE response) No consideration of the need to provide RPE for those who wear beards for religious reasons or who have "non-standard" facial morphology, or indeed have skin conditions would have prompted consideration of PAPR use, which is widespread in industries where RPE is required. Shows gaps in understanding the type of RPE needed for pandemic response and lack of preparedness to address pandemic issues in RPE scheme.	
3.	KB/52A [INQ000130524] KB/52B [INQ000130525]	**13 March 2020**	Letter from Prof Tom Evans, Chair JCVI (copy available from minutes) to Dep CMO J Van Tam DHSC stating unanimous view of ACDP committee that Covid-19	N/A	It is clear from the PHE explanation [KB/52D - INQ000148458] that the basis for declassification was concerned with the availability of laboratory tests and lower mortality rates associated with SARS-CoV-	N/A

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
	KB/52C [INQ000130526]		should be declassified as a Highly Consequential Infectious Disease 2020-03-13 Ltr ACDP 2020-03-13 Min NERVTAG 2020-03-13 Min ACDP		2. There was no suggestion that its status as 'airborne' had altered from that originally declared in January. This item had not been agendered and was dealt with briefly under AOB during a meeting otherwise dedicated to discussion of transport of infectious test materials- See D Osborn evidence (section 9) [KB/52E - INQ000148459: 'ILG0015 Written Evidence submitted by David Osborn'] . A member of the ACDP committee later confirmed to a BBC reporter that the reason for this was that there were not enough FFP3 masks to go round [KB/52F - INQ000148460: 'Covid PPE How healthcare workers came to feel expendable'].	
4.	KB/53 [INQ000130536]	**16 March 2020**	New IPC guidance (COVID-19: Guidance for infection prevention and control in healthcare settings. Version 1.0)	N/A	PPE downgraded to FRSM for all except AGPs. PPE in short supply at this time as mentioned by the President of the Royal College of Physicians (PRCP)/Dame	N/A

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
			2020-03-16 Guid PHE…		Donna Kinnear in approaches to DHSC at this time -see PRCP email reply to BJ 10th February 2021.	
5.	KB/54 [INQ000130538]	**22 March 2020**	Communication by Prof Susan Hopkins 2020-03-22 Twt PHE…		Publicising the new PPE poster defining when FFP3 and FRSM should be worn.	
6.	KB/55 [INQ000130539]	**2020 March 25th**	Letter by Occupational Health Professional bodies to SoS Matt Hancock where BOHS points out issues with RPE compliance and availability	No reply	The letter outlines the gap in support for the health of healthcare workers, but observable problems with RPE availability, use and guidance. Indicates our view that there was a lack of a clear RPE plan in contrast to other safety critical industries where there is a residual risk of exposure of the workforce to aerosol-based hazards.	
7.	KB/56 [INQ000130540]	**2020 March 26th**	AHPF letter to SoS Hancock re FFP3 for SLT 2020-03-26 Ltr AHPF…	?no reply	Concern expressed over SLTs not having FFP3 for dysphagia assessment or procedures in common with respiratory physiotherapists. Also mentions community/primary care/community nurses. Indicates failure of pandemic planning to	

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					consider the context of community healthcare delivery.	
8.	KB/57 [INQ000130541] KB/57A [INQ000148462]	**26 March 2020**	Prof Yvonne Doyle (Medical Director, PHE) providing evidence to MPs at a meeting (Q259) of the Health and Social Care Committee 2020-03-26 Min…	N/A	She denied that the reason for the downgrade was due to there not being enough FFP3 kit to go around.	N/A
9.	KB/58 [INQ000130542]	**2020 March 27th**	RCSLT guidance on PPE issued. 2020-03-27 Guid RCSLT…	N/A	For RCSLT purposes extends the definition of AGPs to a very large number of procedures that SLTs may undertake. Susan Rastrick, Chief Allied Health Professions Officer (England) advises all SLTs to follow RCSLT not PHE guidance, as quoted in the guidance. Indicates that the link between professional bodies who understand the practice risks and the guidance-producing bodies was not planned for. Effectively shows that planning to use specialist knowledge for	YES

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					implementation, health-risk management and clinical risk analysis was not built into pandemic planning.	
10.	KB/59 [INQ000130505]	**2020 March 28th**	Call to BOHS members to supplement RPE testing stock in NHS authored by HSE PPE team		Occupational hygienists are professionally trained to provide fit testing and constitute the majority of accredited fit testers in the UK. Most of the early fit testing in the NHS and kits were provided by BOHS members, often free of charge to make up the shortfall in fit testing (a requirement for the use of RPE). There were inadequate stocks of fit testing kits and BOHS members provided for much of the early shortfall by donation. In the PPE stockpile, the absence of understanding of how to manage RPE programmes (i.e. that fit testing requires equipment and consumables as well as people) created a fundamental weakness in resilience.	

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
11.	KB/60 [INQ000130506]	**28 March 2020**	AoRMC/PHE/NHSE-I to NHS 2020-03-28 Ltr PHE…		PPE supply and downgrading of C-19 as HCID. Admits initial supply issues. FRSM for all non AGP/ITU/Hot area EDs. Note AoRMC involved in this decision and advice to all NHS settings. States that "COVID-19 is not airborne, it is droplet carried"	YES (denies)
12.	KB/61 [INQ000130507]	**2020 March 29th**	RCSLT responds to **Consultation: COVID-19 – guidance on personal protective equipment in secondary care by Public Health England** 2020-03-29 Cons RCSLT…	No response	RCSLT asks for procedures undertaken by SLTs that induce a cough to be considered AGPs to enable access to the appropriate PPE/RPE. Very detailed response RCSLT shares its PPE guidance (dated 27 March 2020) with PHE. Indicates that secondary care had not been adequately planned for in the context of pandemics.	YES
13.	KB/62 [INQ000130508]	**2020 March 30th**	BOHS write to the Head of NHS workplace policy with advance of press release	Referred to IPC team who, in telcon agree that there	BOHS point out that the science and the perceived practice in healthcare worker protection are deviating in a concerning way. Highlighted the inadequacy of the	

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
				are issues with the management of IPC policy	resources to provide for pandemic planning in NHS workforce policy.	
14.	KB/63 [INQ000130509]	**2020 March 30th**	NHS Redeploying AHP workforce safely doc and response from RCSLT 2020-03-30 Rpt…			
15.	**None**	**2020: March 31st:**	BAPEN issues initial safety guidance on NGT insertion to members on website including statement that NGT not currently considered as an AGP. Within days, this view was challenged by BAPEN and guidance revised on its w/site.	N/A	Subsequently, multiple professional bodies were found to dissent from PHE guidance and state NGT insertion is/might be an AGP. BAPEN obtains support of 20 other bodies directly or indirectly including all Royal Colleges of Physicians and Surgeons in GB, and 4 international "Parental and Enteral Nutrition" societies. See Appendix 2. BJ holds documentation. Indicates the failure to plan for clinical input into the creation of reactive guidance for pandemic planning. Pandemic planning drawing on limited range of expertise and	YES (COUGH)

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					inability to manage expert clinical input at short notice.	
16.	KB/64 [INQ000130510]	**2020 March 31st**	Letter to the Editor of the Journal of the International Society for Respiratory Protection by R Howie (BOHS) sent also to Scottish Administration, BMA and HSE	N/A	Detailed analysis of all practical issues relating to RPE standards and use in relation to pandemic by one of the authors of the British standard on RPE. Indicates known shortcomings, specifically leading to institutionally prejudicial provisions relating to RPE standards and consequently to disproportionately negative protection outcomes for BAME and female healthcare workers.	
17.	KB/65 [INQ000130511]	**2020 April 2nd:**	RCSLT write to SoS Matt Hancock (1): "Provision of personal protective equipment for aerosol generating procedures (AGPs)". 2020-04-02 Ltr RCSLT	No reply until 12th August 2020 from Jo Churchill MP.	Pointed SoS to RCSLT evidence showing dysphagia assessment, multiple upper airway procedures & NGT insertion should be AGPs. Mentions close range care risk. Asks for his help. RCSLT had also spoken to NHSE/I & PHE about this. Indicates insufficient consideration in planning for the	YES cough airborne

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					management of exposure risks transmission as a result of close care.	
18.	KB/66 [INQ000130512]	**2020 April 3rd**	RCSLT response to consultation on National IPC-AGP agreement 2020-04-03 Cons…		Dysphagia assessment/tracheostomy procedures/induction of sputum	
19.	KB/67 [INQ000130513]	***2020 April 8th:***	*Recommended PPE for healthcare sectors PHE/AoRMC/PHW/HPS/PHA/NHS publish on line table of PPE for various settings/procedures 2020-04-08 Post PHE…*	*N/A*	*Only indication for FFP is AGP. All other indications = FRSM Type 11R*	*No*
20.	KB/68 [INQ000130515]	**2020-04-12**	National Nurses Nutrition Group 2020-04-12 Guid NNNG		NNNG guidance on feeding Covid-19 patients safely. Pandemic planning did not consider risks in relation to providing personal care for infected persons.	No
21.	KB/69 [INQ000130516]	***2020 April 14th:***	The Environmental Modelling Group, chaired by HSE's Chief Scientific Advisor, Prof Andrew Curran, publishes an 2020-04-14 Rpt EMG…	N/A	This confirmed that aerosols up to 100 microns are airborne and inhalable, thereby overturning the popularly held notion amongst IPC personnel that the threshold for inhalability was 5 microns.	YES

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
22.	KB/70 [INQ000130517]	**2020 April 15th**	BAPEN guidance on NGT 2020-04-15 Guid BAPEN		BAPEN guide on feeding via nasogastric tube during COVID-19 crisis. Professional body again needs to supplement guidance which should have been planned for had professional bodies been involved in drawing up pandemic plans.	No
23.	KB/71 [INQ000130518]	**2020 April 16th**:	BAPEN writes to CEO PHE Duncan Selbie to request review of AGP list to include NGT insertion. Letter endorsed by RCN & BDA. 2020-04-16 Ltr BAPEN, RCN, BDA…. 2020-04-16 Ltr BAPEN…	See reply 5th May 2020 below.	Points out that droplet/aerosol definition in use may be wrong. Outlines evidence base for NGT as a non-AGP by WHO/HPS/PHE Dissects review for WHO by Tran et al 2012: only 2 studies found, both small and retrospective observational studies of SARS1. Tran categorised these studies as quality very low. Neither looked into aerosol or droplets. HPS went on to say "given the extremely limited volume and quality of studies available, this hierarchy (of AGPs-BJ) should be used for academic purposes only and not for clinical decision making". Precautionary approach is mentioned. Our	YES

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					letter noted change in AGP list to include upper GI endoscopy and nasendoscopy. Our position supported by BDA, NNNG, RCN, Intercollegiate General Surgery Group, ASPEN. Highlights the failure of pandemic planning to consider the role of precautionary approach, especially when considering emergent or poorly understood threats.	
24.	KB/72 [INQ000130519]	**2020 April 22nd**:	RCSLT write to SoS Matt Hancock (2) on aerosol generating procedures as applicable to SLTs Support of Intensive Care Soc, National Tracheostomy Safety Project, British Thoracic Society, ENT-UK, UK Swallowing Research Group, European Society for Swallowing Disorders, & BAPEN. 2020-04-22 Ltr RCSLT…	No reply but see reply to letter 2nd April RCSLT to SoS 12th August 2020 below.	**2nd letter from RCSLT to SoS with many other professional bodies in support** This article was published June 2020 [KB/72AA - INQ000148457: 'Aerosol Generating Procedures, dysphagia assessment and COVID-19: A rapid review'] Letter copied to CEO NHS, CEO PHE, Prof Powis National Medical Director NHS-England (NHSE), S Rastrick Chief Allied	**Yes**

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					Health Professions Officer NHSE. Also sent to CMO C Whitty Airborne transmission referred to on page 2 of the article attached to letter. *Aerosol generating procedures, dysphagia assessment and COVID-19 u*nder the heading of: **COVID-19 transmission and aerosols.** Highlights the absence in planning for the potential for new knowledge or changes in the infectious agent to make another route the dominant mode of transmission. The adaptation of a pandemic threat is predictable and should be planned for.	
25.	KB/72A [INQ000130520]	**2020 April 24th**	RCSLT Nightingale Hospitals 2020-03-24 Rpt RCSLT		SLT modelling- lack of workforce planning. Highlights that workforce planning was insufficient to consider the need to have multiple site operations.	

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
26.	KB/73 [INQ000130521]	**2020 May 1st**:	Letter to SoS Matt Hancock (3) from BAPEN including RCSLT letter above & letter from BASP (British Association of Chest Physicians) + statement from RCP on NGT as an AGP Endorsed by RCP London, BSG, BASP. 2020-05-01 Ltr BAPEN…	No replies except from CNO England below.	Asking that NGT insertion and swallowing assessments be made AGPs. Position supported by: BSG/RCN/ENT-UK/IGSG/RCP/RCSLT/BDA/BASP/ASPEN This letter copied to CEO NHSE, Nat Med Director NHSE, S Rastrick CAHPO NHSE, CEO AoRMC, NERVTAG and Ruth May CNO England (this latter separately on 12th May 2020) Highlights the complexity of communications and decision-making structures. No central point for the collation of evidence and redistribution across "national" health service. Command and control planning insufficient.	YES
27.	KB/74 [INQ000130522]	***2020 May 5th***:	*Reply from Duncan Selbie, CEO PHE to BAPEN letter of 20th April 2020* 2020-05-05 Ltr PHE	*YES to letter 2020 April 20th from BAPEN*	*CEO PHE replies with reiteration of current guidance, no comment on our scientific criticisms and erroneously refers to "studies of clinical procedures were assessed for*	*NO!*

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
				Copied to NERVTAG by PHE but no reply	*their association with historical transmission events and generation of aerosols/environmental contamination" -no such papers USING AEROSOL STUDIES were reviewed or used in the AGP guidance by WHO/HPS or PHE as in our letter of April 16th 2020. No studies of aerosol or droplet transmission were reviewed in the context of NGT insertion. Duncan Selbie, CEO NHSE copied his response to NERVTAG secretariat, but we did not hear from them.*	
28.	KB/75 [INQ000130523]	**2020 May 6th**	RCSLT forward their evidence on Dysphagia and AGP, and letter to SoS to NERVTAG and PHE 2020-05-06 Eml RCSLT…	No reply	Follows PHE response to BAPEN's letter above	
29.	***None***	***2020 May 12th***	SBAR NHS Scotland (National Services Scotland)	N/A	Rationale for AGPs in detail	YES
30.	KB/76 [INQ000130527]	**2020 May 12th:**	Email from BAPEN to CNO Ruth May asking for her help with letter sent to SoS 2020 May 1st	Immediate	Ruth May responds by email to BJ/BAPEN email of same date containing BAPEN May 1st letter to SoS and agrees with Susan	yes

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
			2020-05-12 (R MAY)		Hopkins to ask CMO England to set up a review. An Independent High Risk AGP Panel to be set up (1st met end of July , reported Jan 2021. Minutes incomplete and published late). Report also later than promised with no changes to guidance on AGP list despite finding no new evidence other than that in our letter of April 16th 2020. No reference made to our letters with scientific critique of guidance. No engagement with us as stakeholders. Highlights inability to manage clinical and professional evidence base in a transparent way to ensure confidence or present rationales for practice recommendations. Without such, it is impossible to undertake proper clinical risk assessment.	
31.	KB/77 [INQ000130528]	**2020 May 13th**	BAPEN Guidance to members 2020-05-13 Guid BAPEN		Guidance on Enteral Tube Feeding of COVID-19 patients	No

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
32.	KB/78 [INQ000130529]	**2020 May 14th**.	BJ(BAPEN) writes on behalf of BAPEN to WHO- Dr Maria Van Kerkhove. 2020-05-14 Eml BAPEN	No response	e/m held by BJ Re NGT as AGP	
33.	KB/79 [INQ000130530]	**2020 June 15th**:	BAPEN "In Touch" article by BJMJ	N/A	Summarises BAPEN's views on NGT insertion.	YES
34.	KB/80 [INQ000130531]	***2020 July 8th***	*BBC report WHO reviewing route of transmission:* ***Coronavirus: WHO rethinking how Covid-19 spreads in air***		*Important article and informatics. Sorry -not a pdf* *Still using 5 micron cut off for droplets/aerosol.*	*YES*
35.	KB/81 [INQ000130532]	***2020 July 9th***	*WHO report:* *Transmission of SARS-CoV-2* 2020-07-09 Rpt WHO		*Implications for Infection Prevention precautions* *Has a long section on airborne transmission - gives examples of clusters (choir practice, fitness classes, known super-spreading events etc) but then says*	*YES*

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
					these infections could be attributed to poor hand hygiene...!	
36.	KB/82 [INQ000130533]	**2020 July 23rd**	BJ(BAPEN) writes third time to WHO. 2020-07-23 Eml BAPEN	No response	e/m held by BJ. Despite assistance from Chair of WHO Mass Meetings committee, Dr Brian McCloskey	
37.	KB/83 [INQ000130534]	**2020 August 12th**:	Reply to RCSLT letter from 2nd April 2020 from Jo Churchill MP. 2020-08-12 Eml DHSC	YES	Does not include response to letter of 22nd April 2020. No mention of need for RPE for SLTs, only that guidance includes SLTs.	NO
38.	***None***	***2020 August 24th:***	***AGP Alliance meets for first time. See Appendix 1.***	N/A	FORMALISES EXISITNG RELATIONSHIPS WITH THOSE WISHING TO JOIN. Others preferred to remain outside a formal group but to continue liaising e.g.RCN, RCP London. BJ elected chair.	N/A
39.	KB/84 [INQ000130535]	**2020 August 28th**	Letter to RCPL from BDA/RCSLT/BAPEN/AGPA 2020-08-28 Ltr AGPA	Reply received rejecting invitation	Request for RCP to join AGPA. BJ holds later emails to and from PRCP London	
40.	KB/85 [INQ000130537]	**2020 September**	AGPA Position Statement on AGPs/PPE, Updated October	N/A	Itemises many non AGPs which AGPA thinks should be AGP	yes

	Exhibit number	Date	Correspondence	Reply received	Response or Comment	Airborne?
	KB/85A [INQ000148461]		2020 BAPEN, BDA, RCSLT BASP, CoP CSP, NNNG BSG, HCSA, GMB, Unison, Unite the Union in Health 2020-10 Stat AGPA Position Paper		Close contact <1m. Cough a symptom of C-19 and thus a risk of aerosol for which growing evidence from around world. Health and Safety of HCWs being disregarded. Lack of clarity on membership of IPC Cell or IHR AGP Panel. List of supporting bodies. Unprecedented Alliance. "The science is clear. The evidence is clear. The risks are clear". Safety of HCWs must come first. This marks the point where the member bodies conclude that the issue is not gaps in preparedness, but actually a dimension of the government's response and management of the pandemic.	