Witness Name: Robin Howe
Statement No.: Final
Exhibits: 33
Dated: 2nd May 2025

UK COVID-19 INQUIRY

WITNESS STATEMENT OF Dr Robin HOWE

I, Robin Howe, will say as follows: -

Background, role, functions and responsibilities

1. I qualified in medicine in 1989, having trained in Cambridge and Newcastle upon Tyne. I trained in Microbiology in Sheffield and Bristol before becoming a Consultant Senior Lecturer at Bristol University and North Bristol NHS Trust in 2002.
2. In 2005, I moved to Cardiff to undertake the role of Consultant Microbiologist and Head of the Welsh Antimicrobial Resistance Programme for the National Health Protection Service, predecessor of Public Health Wales.
3. My particular area of professional interest has been all aspects of antimicrobial resistance, and I have been Chair of the British Society for Antimicrobial Chemotherapy Standing Committee for Antimicrobial Susceptibility Testing since 2012.
4. I was appointed to the new role of Director of Infection Services within Public Health Wales in April 2022 following a restructure of the management arrangements in the Health Protection and Screening Services Directorate. Prior to this I was in a very similar role as National Clinical Lead for Microbiology Division from 2014. The role was/is to provide overall clinical leadership for Public Health Wales Microbiology Service. The title changed to Infection Division in 2021 to recognise the fact that Microbiology Division included Clinical Microbiology services and Infectious Diseases, as well as Diagnostic Microbiology services.
5. I became an Incident Director for the Public Health Wales COVID response alongside my colleague Dr Giri Shankar (Director of Health Protection Services) in February 2020. Our initial selection as Incident Directors was largely based on the leadership roles that we were carrying at the time of the start of the pandemic. As it became clear that the pandemic was

going to be protracted, we drafted in additional colleagues, Dr Chris Williams (Head of Public Health Wales Communicable Disease Surveillance Centre), and later Dr Eleri Davies (Deputy Medical Director, Public Health Wales, and Head of the Healthcare associated Infections, Antimicrobial Resistance & Prescribing Programme (HARP), Public Health Wales). The initial role was as described in the Public Health Wales Emergency Response Plan (Tactical Incident Director). **[EXHIBIT RH/01 INQ000056283**

6. Outside my role as Incident Director, my main role during the pandemic was focused on COVID Testing, both as Lead for the team delivering laboratory testing across Wales and also advising on operational and scientific matters.

Scientific and Advisory Groups

7. From my perspective, there were 3 different Welsh Government meeting structures with which I was primarily involved.
   - 7.1. The Technical Advisory Group structure which was specifically involved in providing scientific advice.
   - 7.2. The Test Trace & Protect (TTP) structure which was involved in policy and delivery of TTP. It should be noted that the processes generally categorised under Test, Trace & Isolate (TTI) in England were structured within the TTP programme in Wales.
   - 7.3. Other groups dealing with specific policy areas.
8. Within the Scientific Advisory structure, my involvement was as:
   - 8.1. Member of the Welsh Government Technical Advisory Group (TAG)
     - 8.1.1. I was invited to join the first meeting of TAG on 2nd March 2020.I remained a member of the group in June 2022.
   - 8.2. Chair of the Virology and Testing sub-Group of TAG, initially called the Testing sub-Group (T-TAG)
     - 8.2.1. The first meeting of T-TAG was held on 18th June 2020.
     - 8.2.2. In January 2021 the name of the T-TAG was changed to the Virology & Testing sub-Group (VT-TAG) to reflect a broader advisory remit.
     - 8.2.3. The VT-TAG was stood down in May 2022 along with other TAG subgroups when it was felt that continued regular meetings were not required. It was understood that the group could be re-convened if required. There was a reflections paper from VT-TAG [EXHIBIT RH**/02 INQ000273701]** which fed into a wash-up event for the TAG held on 5th

May 2022.

8.3. Member of the Children and Education sub-group of TAG

8.3.1. I joined the Children and Education sub-group of TAG from its inception on 5th May 2020. My involvement was limited to discussions about testing. I remained a member of this group until it was stood down in May 2022.

TTP-related groups

9. I was involved in a number of groups within the framework of the TTP programme that supported policy and operational elements:

9.1. TTP Oversight Group. My involvement in this group commenced in May 2020, and continued until the group was stood down on 23rd June 2022.

9.2. TTP Programme Board/ TTP Policy & Delivery Board/ TTP Transition Board. My involvement in this group commenced in May 2020. TTP Programme Board was re-named/focused to the TTP Policy and Delivery Board in September 2021 [EXHIBIT RH/03 INQ000583111]. TTP Policy and Delivery Board was re-named/focused to the TTP Transition Board in February 2022. [EXHIBIT RH/04 INQ000583115]

9.3. TTP Testing Group. This was established on 21st May 2020 and stood down on 9th July 2020

9.4. On 20 May 2020, I was asked to join an Antibody Testing Finish Group by Welsh Government. [EXHIBIT RH/05 INQ000583116] The remit of the group was to produce a paper describing the current serology testing capacity with proposals for use, including serosurveillance and use alongside PCR testing. [EXHIBIT RH/06 INQ000493699] This group was stood down soon after on 26th May 2020.

9.5. On 1 June 2020, the SARS-CoV-2 Antibody Testing Group was established to coordinate and deliver the strategic and operational antibody testing activities required for the successful implementation of the Test, Trace and Protect plan. [EXHIBIT RH/07 INQ000583130] This group was stood down on 10 November 2020. [EXHIBIT RH/08 INQ000583131]

9.6. On 1 June 2020, the SARS-CoV-2 Antigen Testing Group was established to coordinate and deliver the strategic and operational antigen testing activities required for the successful implementation of the Test, Trace and Protect plan. [EXHIBIT RH/09 INQ000583133] This group was short-lived.

9.7. TTP Testing Strategy sub-Group. This was established on 27th August 2020 and stood down on 17th December 2020.

9.8. Testing Clinical Advisory & Prioritisation Group (TCAP). This was established on 21st October 2020. The last meeting to which I was invited was on 4th August 2023.

9.9. TTP Digital Pathway Task Group. This was established on 27th November 2020. The Terms of Reference can be found at [EXHIBIT RH/10 INQ000583094]

9.10. VAMC (Variants and Mutants of Concern) Oversight Group. I was involved from 17th February 2021. A description of the role of the Group can be found at [EXHIBIT RH/11 INQ000224513]

Other Welsh Government Groups

10. I was also involved in additional groups dealing with specific policy areas:

10.1. Social care testing and infection control strategy and policy development group. This was established in November 2020. The last meeting to which I was invited was on 14th May 2024.

10.2. Nosocomial Transmission Group Wales, chaired by Deputy Chief Medical Officer for Wales. My involvement began in July 2020. I was only involved intermittently, when there were specific issues regarding testing.

TTP Programme Board

11. The TTP Programme Board provided oversight of TTP Policy & Operations. I do not have the Terms of Reference for the Programme Board.

12. The membership included Welsh Government representatives, operational leads from the NHS Programme Management Office and NWIS (NHS Wales Informatics Service), plus operational and subject leads from Public Health Wales.

13. My role was to provide scientific and operational advice regarding testing. Scientific advice was provided verbally or through advisory papers. In my case, this was usually through papers prepared by the VT-TAG.

14. In September 2021, the TTP Programme Board was retitled the TTP Policy and Delivery Board to reflect the status of TTP as a live service rather than a traditional programme. [EXHIBIT RH/03 INQ000583111]

15. In February 2022 the TTP Policy and Delivery Board was changed into the TTP Transition Board to recognise that the main focus of activities had changed to Transition. [EXHIBIT RH/04 INQ000583115]
16. My impression was that key decisions were taken at Ministerial level following Ministerial Advisory notes that were written by Welsh Government policy officials and based on discussions and advice from multiple sources, including the TTP groups and Scientific Advisory Groups. Less far-reaching decisions were taken within the TTP Programme Board. A RAID log from July 2021 gives a listing of decisions taken to that time in the Programme Board. **[EXHIBIT RH/12 INQ000587468**
17. From my perspective, concentrating on the testing element of TTP, I think the Programme Board was effective in facilitating discussion across the policy and delivery elements of TTP and providing decisions and governance of such.

TTP Oversight Group

18. The TTP Oversight Group included Welsh Government representatives, executives from the NHS Health Boards and Trusts and Local Authorities, plus subject leads from Public Health Wales.
19. I do not have the Terms of Reference for the TTP Oversight Group, but I do not believe it was a decision-making group but rather provided oversight for the TTP system from the wider system.
20. My role was to provide scientific and operational advice regarding testing. Scientific advice was provided verbally or through advisory papers. In my case, this was usually through papers prepared by the VT-TAG. I also had a role in explaining scientific aspects of testing.
21. I think this Group was established to ensure the wider group of stakeholders were informed and involved in TTP. I am unable to comment on the strengths and weaknesses of this Group.

TTP Testing Group

22. The TTP Testing Group was a sub-Group, and reported to, the TTP Programme Board. It was established on 21st May 2020. This group and structure were separate from the Testing Technical Advisory Group (TTAG, later VT-TAG) which was a scientific advisory group reporting into the Welsh Government Technical Advisory Group.

23. The role of the TTP Testing Group was to oversee establishment of an All-Wales Covid-19 Testing Network to coordinate and deliver the strategic and operational activities required for the successful implementation of the TTP strategy.
24. Membership of the TTP Testing sub-Group included Welsh Government Policy Leads, Health Board representatives, Public Health Wales subject matter experts, NHS Wales Shared Services Partnership, and NHS Wales Informatics Service. I was co-chair with Claire Rowlands from Welsh Government.
25. I think that the purpose of the TTP Testing sub-Group group became unclear. Decisions seem to be taken in fora around this group (i.e. TTP Programme Board or associated sub-Groups), and I felt there was less useful discussion than in other groups.
26. In July 2020, an NHS Wales Operational TTP team was established and this led to a review of the meeting and governance structures. The TTP Testing Group was stood down and the new meeting arrangements included a TAT (Turnaround Time) meeting, Health Board TTP meetings, and a new Testing Strategy Group meeting.

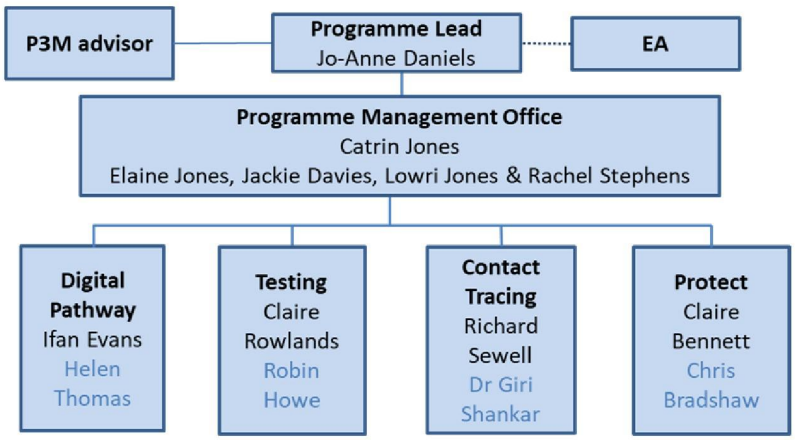
TTP Testing Strategy sub- Group

27. The Testing Strategy sub-Group was established on 27th August 2020 to set the direction to ensure the Testing Strategy was met across workstreams and task & finish groups. It was anticipated that it would work alongside the Testing TAG and the Testing Clinical Advisory and Prioritisation Group. The group included representatives from Welsh Government, Health Boards and Trusts, Public Health Wales, and NHS Wales Informatics Service. I was co-chair with Claire Rowlands from Welsh Government. The Terms of Reference can be found at [EXHIBIT RH/13 INQ000583097]
28. The purpose of the group, as stated within the Terms of Reference, included, "The Testing Strategy Sub-Group will provide an external insight forum to Welsh Governments implementation of the Testing Strategy across the 4 priorities, workstreams, and task and finish groups. In providing an external view, and with an understanding of operational issues and concerns, members of the Testing Strategy Sub-Group will inform policy development." I do not have details of any Task and Finish groups that were established.
29. I am unable to comment on the key decisions made by the TTP Testing Strategy sub-Group. My recollection is that this sub-Group did not make any key decisions, with decisions made by the Welsh Minister on recommendation from Welsh Government officials, informed by the TTP Programme Board and sub-groups.
30. I do not have any information on questions that were fed into TAG or SAGE.

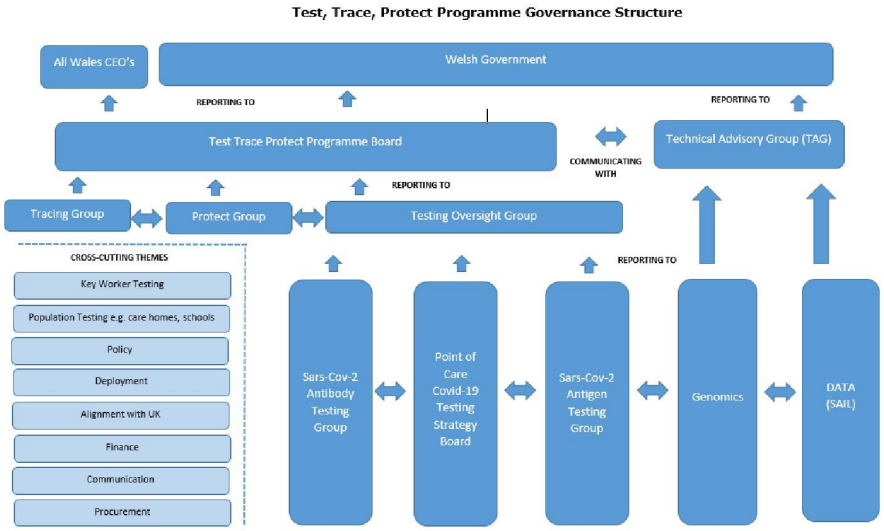
31. The TTP Testing Strategy sub-Group was stood down in September 2021. I do not know why this sub-group was stood down.

Testing Clinical Advisory & Prioritisation Group (TCAP)

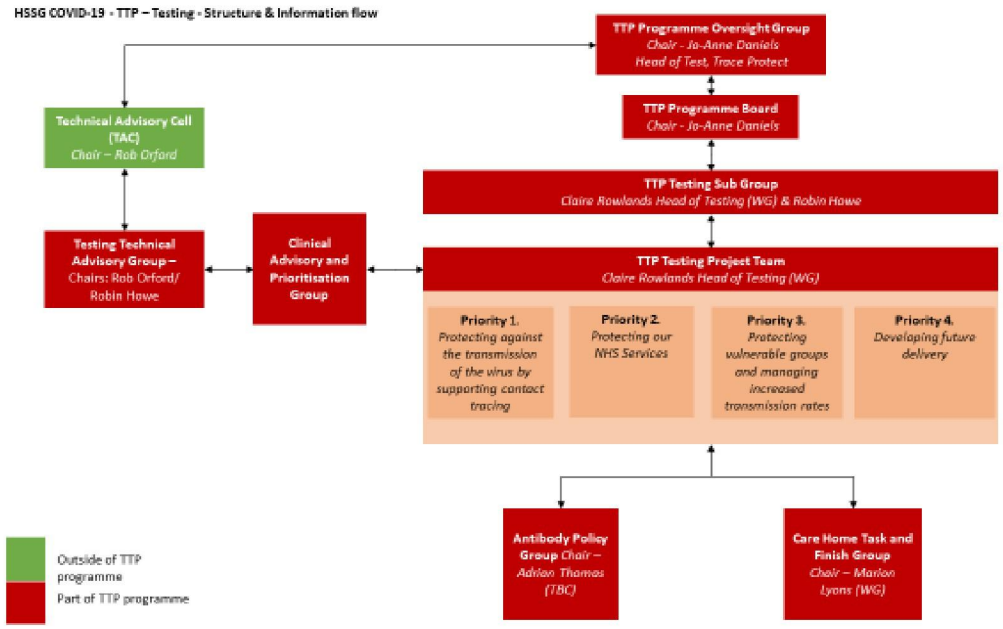
32. The TCAP was established in October 2020 to provide clinical expertise into the national Covid-19 Testing Programme. The Terms of Reference can be found at [EXHIBIT RH/14 INQ000583098] The group included clinical representatives from primary and secondary care alongside Welsh Government Policy Leads, Public Health Wales, and Scientific advisors.
33. My role was to give science and clinical input and explain some of the scientific and operational aspects of testing.
34. I do not have a record of the key decisions or advice given by this group. I believe the group was stood down in August 2023.
35. I am/was not aware of a formalised entity called the All-Wales Covid-19 Testing Network.
36. The governance structure within the TTP programme underwent a number of changes over the course of the pandemic.
37. On 20th May 2020, the TTP Programme governance structure was described as per the organogram below, as taken from the Terms of Reference for the TTP Testing Group. **EXHIBIT RH/9 INQ000583133]**



38. On 30th May 2020, the TTP programme governance structure was described as per the organogram shown below, as taken from the Terms of Reference of the SARS-CoV-2 Antibody Testing Group. **[EXHIBIT RH/9 INQ000583133]**



39. In November 2020, the governance structure for the testing element of TTP was described as per the organogram shown below as taken from the Terms of Reference for the TCAP. **[EXHIBIT RH/14 INQ000583098]**



Data and modelling

40. I had limited involvement in data and modelling. Consequently, I am unable to confirm or comment on the extent to which such data and modelling had an impact on the development of the TTP system.
41. I had access to all SARS-CoV-2 laboratory testing data across NHS Wales, and data on tests performed on Welsh residents in the UK Lighthouse Laboratory Network.
42. Data from NHS Wales laboratory testing included result details and basic demographics, but metadata regarding the indication for testing or the cohort of individual tested was limited by the manual or electronic test requesting systems and the ability of requestors to record such information. Metadata from the UK Lighthouse Laboratories was extremely limited.
43. At various times there was a need to be able to understand the numbers of a cohort of individuals who were tested (e.g. different key workers by geography) or the positivity rates for different cohorts (e.g. asymptomatic immunocompromised individuals). However, the lack of granularity and reliability in the metadata collected and stored meant that this was not possible with high confidence.
44. Modelling information was presented at the TAG, but I had no involvement in the development of the models. I did not use information from the disease models to inform the advice that I gave in relation to TTP.
45. I am/was unaware of how well the modelling outputs were understood by policy makers.
46. I developed a very simple model in Microsoft Excel with a colleague to show the potential impact of different sensitivities and specificities on the numbers of true and false positives and negatives at different disease prevalences. This was used frequently in testing strategy discussions to explain the potential effectiveness of different use cases and strategies in terms of identifying cases or monitoring infectivity. I think Welsh Government colleagues and others found this simple model helpful. An example of the use of the model is given in a paper discussing options for asymptomatic testing of social care staff that was presented to the Social Care Testing and Infection Control Group in January 2022. [EXHIBIT RH/15 INQ000583099]
47. I am not aware of how data and modelling was utilised to better understand potential equalities and vulnerabilities issues and how best to mitigate those issues in relation to TTP.
48. I had little involvement in how data was used for modelling and am therefore unable to comment on the quality and/or robustness of the surveillance data used to track the virus.

49. I advised in various contexts that individuals with a positive Lateral Flow Test should take a laboratory PCR test. This was primarily to maximise the potential for a sample to be submitted through the genomics platform for surveillance purposes.

50. I gave verbal scientific advice to decision makers during formal and informal meetings, through email discussion, through papers submitted to various TTP groups by myself, or via VT-TAG/TAG, or via formal advice notes from Public Health Wales to the Chief Medical Officer (Wales).

51. It felt there was unequal access to information (compared to colleagues in England) or to emerging policy. There was sometimes very short notice that England was planning to change a policy and then there was a need to establish the potential scientific basis for any potential changes and to prepare to react rather than influence the decision.

52. There was limited membership of SAGE available for TAG and I did not have access to SAGE meetings. I did have access to some SAGE papers.

53. I do not know what involvement colleagues from TAG had in SAGE meetings, or the degree of challenge they gave.

54. Personally, I found it disadvantageous that I was not a member of SAGE, as described below. I particularly experienced a challenge due to lack of access to SAGE meetings when there were discussions regarding the shortening of self isolation periods in December 2021/January 2022.

55. At this time UKHSA modelling was presented to SAGE to show the impact of different durations of isolation and different testing strategies. I and VT-TAG colleagues were asked for similar work to support potential shortening of self-isolation. Unfortunately, the papers that could be accessed from SAGE did not give sufficient detail to reproduce the models and analysis. A de novo model had to be constructed which gave qualitatively similar outputs but was different in detail. Attendance at SAGE would have enabled clarification and challenge of the UKHSA model and potentially saved resource and time in the construction of a de novo model.

56. Two members of VT-TAG were observers at NERVTAG; Dr Rachel Jones, Clinical Lead for Virology, Public Health Wales, and Dr Catherine Moore, Consultant Clinical Scientist, Wales Specialist Virology Centre.

57. Dr Jones joined as an observer in April/May 2020, and Dr Moore took over in June/July 2020.

58. I think it was helpful to have observers on NERVTAG to have exposure to wider discussions in that group regarding potential developments in the pandemic and diagnostics.

59. I understand from my colleagues, that as observers, they did not get access to all papers and were not able/encouraged to speak in meetings.

60. One of my roles was to explain scientific and microbiological issues pertaining to testing to non-specialist colleagues. In general, I felt that decision makers understood the issues.

TTP Strategy

61. My primary input to the development of the TTP programme announced on 5th May 2020 was through the Public Health Wales Public Health Protection Response Plan, published on 29th April 2020. **[EXHIBIT RH/16 INQ000115701]** I substantially prepared section 2.5 on sampling and testing. This laid out the key priorities for testing anticipated at that time: *"Within the overall objectives of a Testing Strategy there are key priorities for utilising the available capacity for testing both now and as the capacity increases. This includes:*

- *Individual patient diagnosis, care and management*
- *Healthcare/ Social care management including Infection, Prevention and Control•*
- *Public Health actions including risk assessment, outbreak control (contact tracing)*
- *Population surveillance (to inform policy and actions)*
- *Business continuity (notably critical worker service delivery)"*

62. The Response Plan also recommended roles and responsibilities for the various stakeholders involved in sampling and testing.

63. I think that the recommendations in the Response Plan regarding sampling and testing were substantially adopted.

64. In considering the development of the testing strategy for Wales, I thought that the principle for controlling the progression of the pandemic was to limit the contact between infectious individuals and susceptible individuals. Even in lockdown, there was limited contact between individuals. Testing was initially used to identify infected/infectious individuals who were symptomatic to emphasise the need for self-isolation, but also, through contact tracing to identify individuals who may be incubating the infection or in the pre-symptomatic infectious period in order to isolate them and thereby reduce onward transmission.

65. Early in the pandemic, it was determined that testing could identify individuals who were not infected with SARS-CoV-2, and therefore could have relaxation of isolation. Initially this meant that symptomatic key workers were tested, and on the basis of their result could continue to attend work.

66. As additional testing capacity became available, testing of asymptomatic individuals was introduced. This was initially in summer of 2020 with the regular testing of social care workers to confirm that they were not infected/infectious. Later, particularly with the widespread availability of Lateral Flow tests, the use of testing to confirm non-infectivity was used in many contexts to allow relaxation of restrictions to mixing.

67. Throughout the pandemic there was testing performed on more conventional clinical grounds to aid in the management of individual patients presenting to secondary care.

68. I gave regular advice along these lines throughout the pandemic. For example, I synthesised my thoughts in advice given on 24th December 2020. [EXHIBIT RH/17a INQ000582331, EXHIBIT RH/17b INQ000581515]. This was largely reflected in the subsequent Welsh Government Testing Strategy published on 28th January 2021. [EXHIBIT RH/18 INQ000227387] This described the different indications for testing as, Test to diagnose, Test to safeguard, Test to find, Test to maintain, and Test to enable.

69. The advice that I gave was primarily about how to use testing and how to interpret results. I was involved operationally in delivery of testing capacity within NHS Wales, primarily through the Public Health Wales network, and with the delivery and roll-out of variant testing.

70. I gave input into the various Welsh Government Testing Strategies. My input increased after the strategy of April 2020. Input was verbal in meetings and review of draft documents. In some cases, as noted above, I wrote papers with advice for testing strategies. [EXHIBIT RH/17a INQ000582331, EXHIBIT RH/17b INQ000581515]

71. I am not aware of giving input into "Leading Wales out of the coronavirus pandemic: A framework for recovery".

72. I believe 'The National Covid-19 Testing Plan' was a UK government concept. I was not involved in this.

73. I was not involved in the development of the UK five testing pillars announced on 2nd April 2020.

74. I was not involved in the inception of the Community Testing Programme. I supported indirectly through explanations of testing technologies and how they could be used. When Welsh Government announced the Community Testing Programme, local partnerships were invited to bid for support. I was asked to assist with assessment of the bids. As far as I am aware, there were only 3 applications received. I do not have a record of the outcomes.

75. There were many different uses of the term Mass Testing throughout the pandemic. I was not involved in Moonshot, or the development of the UK Mass Testing programme which emerged from Moonshot.

76. I had some involvement with Mass Testing through the establishment of the Merthyr Tydfil whole borough testing pilot for which I was part of the development team and gave advice on testing technologies, interpretation of results, and how PCR testing could be incorporated to enable the capture of potential genomic information. The pilot was performed to evaluate the operational aspects of such an approach and the potential benefits in terms of controlling the local spread of disease. Welsh Government performed an analysis of the efficacy of the pilot in terms of preventing cases and cost which was presented at the Joint Biosecurity Centre in March 2021. Following the findings of the Merthyr pilot, Welsh Government announced the Community Testing Programme, which encouraged local partnerships to bid for resource to support local mass testing projects.

77. I was involved in discussions and gave advice on the prioritisation of testing throughout the pandemic. In the early phase this was generally verbal input into discussions around key worker testing. Later, prioritisation was embedded within the various testing strategies published by Welsh Government, into which I had input. From October 2020, I was a member of the Testing Clinical Advisory and Prioritisation Group, which gave more formalised prioritisation input into the testing strategies.

78. I was responsible for the delivery of the majority of NHS laboratory testing in Wales, and as such responsible for the provision of adequate capacity. Throughout 2020, Public Health Wales developed its capacity for testing using a number of different programmes across the laboratory network in order to give adequate surge capacity.

79. I was not involved in the use of 'Prevention and Response' plans.

Capacity

80. There was a significant focus on laboratory testing capacity, particularly during 2020.

81. From February 2020, it became increasingly clear that we would need to develop high testing capacity. At the same time, it became clear that there were high worldwide demands for testing resources, and therefore pressures on the global supply chain.

82. I advised Welsh Government on developing laboratory testing capacity across the Public Health Wales Network and the NHS in Wales. I shared capacity plans and the options for further capacity development. Public Health Wales then submitted business cases for additional platforms and consumables, and later in 2020, a business case for additional staffing to support improved turnaround times, and resilience, and a business case for the development of an additional high-throughput laboratory.

83. Throughout 2020, Public Health Wales worked to maximise laboratory testing capacity. There was however, limited external input regarding the projected numbers of tests required. A paper was received from Welsh Government on 1st April 2020 that suggested a potential need for 1,200 to 4,700 tests/day for symptomatic key workers plus an estimated 2,200 tests for symptomatic hospital admissions. [EXHIBIT RH/19A **INQ000605503** n the Public Health Wales Health Protection Response Plan. [EXHIBIT RH/19 INQ000182417] I projected a daily capacity requirement for PCR tests ranging between 7,310 to 19,730 tests depending on testing policy decisions and disease prevalence. As far as I am aware there were no additional estimates of capacity requirements shared when the testing of additional cohorts (e.g., hospital discharges to care homes) were discussed.

84. I had limited collaboration with UK government and other devolved nations on the development of testing capacity.

Lighthouse Laboratory Network

85. I was not involved in the establishment of the UK Lighthouse Laboratory Network. Welsh Government made the decision to engage with the Lighthouse Laboratory Network and decided which cohorts of testing should be directed through the Network. I gave advice to Welsh Government regarding the cohorts that should be directed through NHS Laboratory testing, which included clinical testing from secondary care and social care.

86. I was aware that there were pressures on the Lighthouse Laboratory Network at various times that impacted the turnaround times for tests. There were some situations where Health Boards preferentially used the Public Health Wales testing infrastructure rather than the Lighthouse Laboratories. For example, Welsh Government advice was that routine testing from Care Homes should be directed through the Lighthouse Laboratories, but Aneurin Bevan University Health Board seemed to systematically direct such testing through the Public Health Wales Laboratories.

87. There was limited interaction between the Lighthouse Laboratory Network and the existing laboratory infrastructure in Wales. However, co-location of the new Public Health Wales high throughput laboratory and the Newport Lighthouse Laboratory on the Imperial Park 5 site facilitated collaboration that enabled transfer of positive samples in to the Public Health Wales genomics programme.

88. In March 2021, Public Health Wales identified a high rate of positive results coming from the Immensa Laboratory in the DHSC's in England's testing network which suggested a high false-positive rate and potential laboratory issues. This was communicated by Public

Health Wales to the Director of Laboratories, at NHS Test and Trace in England. **[EXHIBIT RH/20 INQ000509401, EXHIBIT RH/21 INQ000509404]** Subsequently, in October 2021, an issue with the Immensa laboratory reporting high false-negative rates was identified and announced, and testing operations were suspended at the Wolverhampton laboratory pending a further investigation by the UKHSA. [**EXHIBIT RH/22 INQ000509406]**

89. I was not aware of inequitable access to the Lighthouse Laboratory resource between devolved nations.

National Testing Programme

90. I was not involved with the UK National Testing Programme.

Supply of tests

91. I was not involved in the supply of LFD tests in Wales.
92. I was responsible for the majority of Laboratory testing for SARS-CoV-2 in Wales, including PCR testing, and supported the rest of testing in NHS Wales. We developed rapid testing facilities in 16 acute Hospitals and medium and high-throughput testing in local and regional laboratories in order to give equitable access across Wales.
93. Priority groups for testing were identified by requestors.
94. Funding for testing was provided by Welsh Government. I was not aware of any issues associated with funding.
95. The supply of tests was challenging in the early months of 2020, due to the fragility of the Global supply chain. After June 2020, although supply could be fragile, there were no major issues.
96. Colleagues within the Welsh Centre for Specialist Virology determined the appropriate molecular targets for testing.

Sampling sites

97. In February/March 2020 I was involved in developing initial advice to Health Boards regarding the requirements for sampling sites. After this time, I was not involved in the specification of sampling sites.
98. As part of the work to increase laboratory testing capacity, I was clear that there should be access to local testing in acute hospitals across Wales to provide an equitable service to all of the population of Wales. This led to the establishment of rapid testing facilities across the 9 existing laboratories across Wales in May/June/July 2020. In August 2020, a business

case was submitted to and approved by the Welsh Government. [EXHIBIT RH/23 INQ000056277] The case supported extension of rapid (<4 hours) testing capacity for COVID-19 to all acute hospitals with new rapid-testing 'Hot' Labs (Llandough Hospital, Prince Phillip Hospital, Morriston Hospital, Prince Charles Hospital, Princess of Wales Hospital and The Grange Hospital).

Testing technologies and strategies

99. Throughout the pandemic I gave extensive advice on the characteristics of different tests and technologies and how they could be employed.
100. With regards to tests for the presence of SARS-CoV-2, I advised on the use of tests based on the sensitivity/specificity of the test, time-to-result, platform capacity, operator useability.
101. In most cases, nucleic acid amplification tests (NAATs) such as PCR had the best sensitivity and specificity and were most appropriate for clinical diagnosis of disease where high sensitivity was important.
102. The NAAT- based tests available included those that were very rapid, taking 20 minutes to an hour to give a result, which were suitable for use in Emergency Departments or 'Hot' labs. These platforms typically had very limited throughput, with some testing a single sample, and some able to test 12 or more in parallel. Other NAAT-based tests were available that had very high throughput capacity (up to 5,000 tests/day) and had a time-to-result of around 4 hours. These platforms were appropriately deployed in Local and Central laboratories for testing that required a high sensitivity.
103. Lateral Flow Devices (LFDs) and related devices detected viral antigens rather than RNA. They typically had high specificity, but significantly lower sensitivity compared to PCR. It was recognised very early that LFDs detected people with a higher viral load who were, by inference, those who were most infectious. Therefore, they were used in many cases as a test to exclude infectivity, rather than for identification of infection.
104. Examples of the advice that I gave, taking account of the different characteristics of different testing technologies are the testing recommendations that I submitted to Welsh Government on 24th December 2020 [EXHIBIT RH/17b INQ000581515] or the Advice note to CMO (Wales) submitted by Public Health Wales on 16th September 2021. [EXHIBIT RH/24 INQ000453402]
105. I did not give advice relating to the R number of Reproduction period, with respect to testing strategies. I am not aware that these factors impacted testing strategies.

106. Test results from all tests in NHS Wales laboratories were entered into the WLIMS (all-Wales Laboratory Information Management System). This meant that results could be deployed to downstream systems for clinical, Health Protection or surveillance purposes. I advised that Point of Care platforms should be interfaced into the WLIMS so that there could be similar flow of information.

107. I contributed advice on the use of antibody testing through the T-TAG/VT-TAG in July 2020 [EXHIBIT RH/25 INQ000311855] and May 2021 [EXHIBIT RH/26 INQ000312964]. This highlighted that antibody testing could be used to show evidence of previous infection or immunisation but could not determine immunity. The advice also clarified that tests for antibodies against the Spike protein would be positive following natural infection or immunisation, but tests for antibodies against the Nucleoprotein would only be positive after natural infection.

108. I supported, but had limited input into, the development Genomic testing programme.

109. I advised Welsh Government on the benefits of developing and rolling-out reflex variant testing across the Public Health Wales laboratory network to give more rapid and complete information on the emergence and spread of variants.

110. I had limited input into the development or interpretation of wastewater testing.

111. I regularly gave advice on the characteristics SARS-CoV-2 infection, in meetings, emails, and within more general advice. A key document produced by the T-TAG/VT-TAG was a briefing paper on the infectivity of COVID-19 which was published on 1st November 2020. [EXHIBIT RH/27 INQ000056318]

112. I do not think my advice regarding testing strategies materially altered as my basic understanding of the characteristics of infection did not materially change during the pandemic.

113. The testing strategies adopted were designed to protect the population from the 4 main harms from COVID. They focused on identifying infected individuals for their personal benefit in terms of treatment, identifying infected individuals to enable measures to reduce the likelihood of their transmitting to others, or the testing of individuals to confirm that they were non-infectious to protect vulnerable individuals, or enable relaxation of restrictions. A significant challenge across all strategies was the volume of testing required and, particularly for laboratory-based testing, the turnaround time for results. Capacity and turnaround times improved throughout 2020, supported by investment from Welsh Government.

114. Compliance with testing was an issue that potentially compromised the effectiveness of some strategies, notably Test to Safeguard. For example, in January 2022, there was concern that the compliance with asymptomatic testing by social care workers may be less than 70%. I wrote an SBAR that modelled the impact of different testing strategies on the risk of infectious staff attending work. [EXHIBIT RH/15 INQ000583099]
115. I led the Public Health Wales Infection Division which delivered or coordinated laboratory-based testing across NHS Wales. Throughout, we endeavoured to maximise capacity through a blend of different platforms to provide resilience.
116. Performance of the laboratory testing elements of TTP was regularly monitored, particularly with respect to throughput and turnround times. Weekly testing SitReps were produced between April 2020 and August 2021 as the system was being developed and optimised.[EXHIBIT RH/28 INQ000583109]
117. I did not give advice on and was not involved in other forms of symptom tracking technologies, such as the Zoe app, or other technologies including AI.

Targets

118. I was not aware of any demand-based target for test capacity at any time during the pandemic. In the first months in 2020, the perceived requirement, particularly after the statement of the WHO Director General on 16th March 2020 to "Test, Test, Test", was to maximise testing capacity. I believe that the 'target' of 5000 tests per day was not a demand-determined target, but rather an anticipated capacity shared informally with Welsh Government officials in mid-March 2020.
119. As noted above, the only projections of potential demand that I am aware of were within the Public Health Wales Health Protection Response Plan. [EXHIBIT RH/19 INQ000182417] In this, I projected a daily capacity requirement for PCR tests ranging between 7,310 to 19,730 tests. This wide range was dependent on testing policy decisions and disease prevalence.
120. It was predictable that there would be supply chain issues for a new test required at unprecedented volumes in a context of global travel restrictions and lockdowns across the world. It is difficult to know how such issues could be avoided, although a more robust test manufacturing base in the UK would have helped.

Community testing

121. In late January/early February 2020 I was involved in giving advice to Health Boards regarding community testing and the concept of Coronavirus Testing Units (CTU's).

Variants

122. I was aware from early in the pandemic, through extrapolation from other respiratory viruses, that the development of variants was likely and may cause issues with altered transmission and disease dynamics. This was one reason noted in the Public Health Wales Health Protection Response Plan of May 2020 [EXHIBIT RH/19 INQ000182417] for the need to perform genomic testing.

123. As new Variants of Concern emerged with increased transmissibility, I advised Welsh Government to support Public Health Wales in establishing reflex variant assays and subsequently rolling them out across the network.

124. In January 2020, as SARS-CoV-2 started to spread outside China, I did not have specific knowledge about asymptomatic transmission but assumed that SARS-CoV-2 would act similarly to other viruses transmitted via the respiratory route (e.g. influenza, measles, chicken pox), in that infected individuals would be infectious for a number of days prior to the development of overt symptoms. So, I expected that infected patients may be infectious for a period of 1-2 days prior to the recognition of symptoms and then be at peak infectivity for the first few days of symptoms before infectivity waned.

125. Asymptomatic transmission received significant attention throughout the pandemic, but I do not think that it was clearly defined or described. From an operational perspective, I am not clear that there was a need to define asymptomatic transmission more rigidly, but rather that there should be an appreciation that there would be individuals who were infectious who were pre-symptomatic (i.e., in the couple of days prior to the development of symptoms), or pauci-symptomatic (i.e., had few symptoms), or had atypical symptoms (i.e., not the triad of new continuous cough or fever or loss of/ change in smell or taste), or potentially had no symptoms. Although asymptomatic transmission was identified as a significant driver for the spread of COVID, I think that the number of individuals who had absolutely no symptoms during their episode of infection and infectivity was probably relatively low. However, from an operational perspective, the concepts of asymptomatic transmission and asymptomatic testing were useful as it supported the benefit of testing individuals who did not have the typical COVID symptoms.

126. I am not sure that I gave any advice to decision makers regarding asymptomatic transmission, but I did give advice regarding testing of asymptomatic individuals.

127. In the initial phases of the pandemic, testing was focused on symptomatic individuals. This was partly because of limitations in sampling and testing capacity, but also because the

prevalence of disease was low in the general population and the prevalence in asymptomatic members of the general population was extremely low.

128. As prevalence increased, there was a potential benefit in testing certain cohorts of asymptomatic individuals to reduce the risk of transmission to vulnerable groups. For this reason, routine testing of asymptomatic care home staff was introduced in Summer 2020. I had reservations about testing this group with the very sensitive PCR test, as I was concerned that the test might detect individuals with low levels of virus after an infection who were not infectious and unnecessarily exclude them from work. This issue was addressed by the introduction of a 90-day rule that recommended that asymptomatic individuals should be exempt from routine re-testing within a period of 90 days from their initial illness onset or test date.
129. When LFDs became available, and it was recognised that their reduced overall sensitivity was lower than PCR and seemingly they provided a more appropriate testing method for the assessment of infectivity, I supported their introduction into asymptomatic testing.
130. I gave consistent advice regarding testing in all sectors and settings, as described in the various Welsh Government Testing strategies.

Tracing

131. I did not give advice or have any involvement with tracing in Wales.
132. I did not give advice or have any involvement in relation to the Contact Tracing Digital Platform and use of the NHS app in Wales.

Cooperation and coordination

133. I had little involvement in the coordination of testing across the Four Nations. This was done by colleagues in Welsh Government. I think my only advice was to suggest that samples from Welsh residents entering the Lighthouse Laboratory system should be preferentially routed to the Lighthouse Laboratory at IP5 in Newport in order that positive samples could be captured and routed through the Public Health Wales genomics programme.
134. In so far as I was aware, there was good engagement between Welsh Government, Local Resilience Fora, Local Authorities and Healthcare bodies in Wales both at the strategic policy and operational levels.

Isolation

135. I gave advice particularly on what was known about the dynamics of infectivity of SARS-CoV-2 [EXHIBIT RH/27 INQ000056318] and the potential role of testing in determining isolation periods for infected individuals and their contacts.

136. It was recognised that the infectivity of infected individuals was greatest in the 2 days prior to symptom onset and for the 5 days after symptom onset, after which infectivity waned and most individuals would be non-infectious by 14 days post symptom onset. This led to the initial guidance for cases to self-isolate for 14 days.

137. The incubation period was typically 5-6 days but could be up to 12-14 days. This led to initial guidance that contacts should self-isolate for 14 days.

138. It was recognised that the duration of the self-isolation periods for cases and contacts, would have impact on social and economic activity, availability of key workforce, and, in some cases, compliance. There was therefore frequent re-evaluation of whether self-isolation periods could be safely shortened. This occurred across the UK, and proposed changes in England often precipitated further review in Wales.

139. I was involved in discussions and drafting of CMO advice notes, particularly regarding the use of testing to mitigate reduced self-isolation:

    139.1. CMO Advice Note No 18: Exemptions to self-isolation guidance for vaccinated individuals (22 July 2021). [EXHIBIT RH/29 INQ000056317] This suggested that critical workers who had been vaccinated could avoid self-isolation as a COVID contact through serial testing.

    139.2. CMO Advice Note No 24: Reduction in isolation period supported by LFD testing for cases of COVID-19 (24 December 2021). [EXHIBIT RH/30 INQ000056315] This supported introduction of a policy that would allow individuals to be released from self-isolation after Day 7 if they have had a negative Lateral Flow Test on Day 6 and Day 7.

    139.3. CMO Advice Note No. 26: Reduction in isolation period supported by LFD testing for cases of COVID-19 (20 January 2022). [EXHIBIT RH/31 INQ000311957] This was supportive of a policy of sequential daily LFD testing on Days 5 and 6 of isolation and release for any individuals having 2 negative LFD results.

140. I was not involved in public health messaging or international comparisons in respect of isolation.

Border testing

141. I had limited input to discussions about international travel, although I did input into advice around arrangements for pre-travel testing. **[EXHIBIT RH/32 INQ000583114]**

Public messaging and adherence

142. I did not advise upon and was not involved in the development of public messaging.

Enforcement

143. I was not involved in the development of Regulations or enforcement.

Inequalities

144. I was not involved in specific work on inequalities.
145. The testing capacity across Wales was developed to minimise any geographical inequalities in terms of testing availability and turnaround times. Following the expansion of testing capacity to acute hospitals across Wales at the end of 2020, equity in terms of testing turnaround times was achieved.
146. Some individuals, particularly vulnerable children, had challenges with taking the normal throat swabs required for testing, and colleagues in Welsh Specialist Virology Centre developed buccal swab testing to improve this situation.

Lessons learned

147. I have not been involved in review of the effectiveness of the TTP system across Wales.
148. I am not aware of any retrospective review of the testing elements of TTP.
149. I think there would be benefit in a review of the optimal use of testing in a future pandemic. Early in the pandemic, the WHO Director-General, in his opening remarks to the media briefing on COVID-19 on 16th March 2020 said, "We have a simple message for all countries: test, test, test. Test every suspected case. If they test positive, isolate them and find out who they have been in close contact with up to 2 days before they developed symptoms, and test those people too." This statement seemed to land with decision makers and set a direction of travel for the development of testing capacity and incidentally put immediate pressure on the developing supply chain.
150. When TTP was being initially discussed, Public Health Wales advocated contact tracing to commence on the basis of symptom onset rather than test result, but this was assessed as being not practicable.

151. I think that further consideration could be given to different strategies for contact tracing in future pandemics. The use of testing, and a positive test, as the initial step prior to starting contact tracing is not only very resource intensive but also introduces an inherent delay of 1-2 days between symptom onset, and the initiation of contact tracing.
152. In my opinion, testing may have been better focused on testing for 'clinical' purposes (symptomatic individuals presenting to hospital, or in closed settings), and for the purposes of excluding infectivity in specific groups or situations (e.g., asymptomatic hospital and care home workers, asymptomatic admissions to hospitals or care homes). I think that the effort to test and identify as many infected/infectious individuals in the community as possible, diverted testing resource away from testing that would have been potentially more beneficial.
153. The most tangible legacy from the pandemic for laboratory diagnostics has been the establishment of rapid 'hot' labs in six acute Hospitals, meaning that there is now access to rapid molecular testing in the sixteen acute Hospitals of Wales. In addition, Public Health Wales has maintained the new laboratory at Imperial Park 5, Newport as a high-volume Virology testing site.

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: PD

Dated: ____2nd May 2025____