University Hospitals Bristol and Weston NHS Foundation Trust

Summary of the investigation into the outbreak of hospital acquired COVID-19 infection at Weston General Hospital in May 2020

1. Purpose

1.1. To present a summary of the findings and recommendations from the Root Cause Analysis (RCA) Investigation into the outbreak of Covid-19 at Weston General Hospital in May 2020.

2. Context

2.1. The Weston General Hospital Site was closed to new attendances on the 25 May 2020. The decision was made on the basis of an increasing number of patients with a diagnosis of Covid-19 in Weston General Hospital, evidence of hospital acquired Covid-19 infection (HACI) and an increasing incidence in the North Somerset population. This decision was made by the University Hospitals Bristol and Weston NHS Foundation Trust (UHBW) executive team based on advice from Public Health England (PHE) and with the support of regional healthcare partners.

2.2. As per NHS England and PHE policy a multi-stakeholder outbreak control team was convened to ensure actions were put in place to minimise risk to patients and staff and facilitate a safe reopening of the site. This occurred on 18 June 2020.

2.3. In an effort to understand and learn from the events leading up to the closure, the Medical Director and Chief Nurse commissioned a serious incident investigation to determine

a) The root cause(s) of hospital acquired Covid-19 at Weston General Hospital

b) Whether there was a missed opportunity to detect an outbreak at an earlier stage and if so the root cause(s) of this.

2.4. The investigation team was led by one of the Deputy Medical Directors and covered the period of 5 May to 24 May 2020. Data from multiple sources was collected and analysed and information on patient and staff Covid-19 testing shared with Public Health England, who conducted a parallel descriptive epidemiological and genetic analysis to look for routes of transmission in a hospital setting.

2.5. Four broad themes were considered by the investigation team

1. Estate and bed configuration
2. Infection Prevention and Control and Bed Management Policy and Practice
3. Staff movement and incidence of symptomatic and asymptomatic Covid-19
4. Reporting, line of sight and escalation processes

2.6. The outbreak occurred in the context of a rapidly evolving global pandemic, with the UK government and the NHS adopting a major incident command and control response. Operational guidance, reporting requirements and understanding of the infectivity of Covid-19 changed during the month of May and whilst UHBW was one of the first organisations to declare a hospital outbreak, it is clear that Hospital Acquired Covid-19 infection is a common occurrence (estimated by one recent report to be in the order of 25% of all inpatient Covid-19 cases).

2.7. The full Root Cause Analysis report has been reviewed and approved by the Chief Nurse and Medical Director in line with the Trust's policy. The full report has been circulated to the Board for information.

3. RCA Key Findings

3.1. The investigation has identified the following eight key findings following its review into the care of 126 patients who had Covid-19 at Weston General Hospital in the period of the RCA.

3.1.1. Of the 126, 93 patients received a positive coronavirus Polymerase Chain Reaction (PCR) result (indicating current infection) during this time period. The remaining 33 patients were already in-patients and had confirmed coronavirus infection as of the 5 May 2020.

3.1.2. 39 of the 126 patients who were treated for Covid-19 have died at Weston General Hospital. In addition there were 7 deaths identified outside the RCA time period.

3.1.3. Of the 126 patients, 57 had a positive result >7 days after admission (indicating probable or definite Hospital Acquired Covid-19 infection according to standard definitions). 24 of these patients subsequently died.

3.1.4. 130 staff with symptoms consistent with Covid-19 disease were tested and 50 of these were positive.

3.1.5. 2311 asymptomatic staff members were screened for coronavirus infection, 81 of these were positive.

3.1.6. There is evidence that supports hospital acquired coronavirus infection (positive test >7 days after admission) in 57 of the 126 cases investigated in this RCA.

3.1.7. There is evidence that supports the transmission of coronavirus between patients who were geographically co-located (i.e. they were in the same bay or same ward).

3.1.8. There is evidence that staff moved between ward areas managing Covid-19 positive and Covid-19 negative areas which could also have been a route of transmission of hospital acquired Covid-19.

4. Identified Root Cause

4.1. The root causes of hospital acquired Covid-19 were found to be focused on four key areas:

The Hospital Estate

4.2. The ward configuration and sub-optimal side room provision within Weston General Hospital, led to an increased risk of patients with undiagnosed coronavirus infection being nursed in areas where patient to patient transmission remained possible, despite other infection prevention and control measures in place.

The Number and Configuration of Beds

4.3. The size and configuration of the available beds at Weston General Hospital precluded optimal segregation of symptomatic patients once the hospital reached a critical mass of coronavirus positive patients.

Staffing

4.4. There is evidence to support the contribution of relatively high levels of staff vacancy (and the use of temporary staff) and small team size to the movement of staff between Covid-19 positive and Covid-19 negative areas, which may have contributed to the transmission of Covid-19 between patients on geographically isolated wards.

Incidence of Asymptomatic Patients and Staff

4.5. The incidence of asymptomatic Covid-19 seen in both patients and staff provides a risk of transmission within a hospital environment which it is difficult to fully mitigate.

5. Further Contributory Causes

5.1. There are a number of additional contributory causes to the Trust's ability to detect and take action on rising numbers of hospital acquired infection. These include:

Data Surveillance

5.2. The Trust was collecting data, as required by NHSE/I, and was reported this data through its Silver command meeting. Silver command is part of the command and control structure implemented to support the Trust's response to Covid-19.

5.3. Analysis of a broader set of data through this investigation, knowing an outbreak had evolved at Weston General Hospital, suggests an emerging pattern of potential Hospital Acquired Infection cases in the 7-10 days leading up to the outbreak being formally declared.

5.4. National guidance around Hospital Acquired Covid-19 Infection was not available until 18 May 2020.

5.5. Aggregation of data across the various Trust sites also masked the ability to identify the impact of changes in infection data for inpatients at the Weston General Hospital site.

Governance

5.6. The emergence of the Covid-19 pandemic following the merger of Weston Area Health NHS Trust and University Hospitals Bristol NHS Foundation Trust, on 1 April 2020, tested the new UHBW governance structures, particularly around Infection Prevent and Control (IPC) and bed management. Staff at Weston General Hospital were used to working as an independent organisation; unfamiliar new team structures reduced the confident escalation of concerns regarding hospital acquired infection, and hindered the ability of senior leaders within UHBW to assess the significance (or not) of generated reports.

Local Outbreak

5.7. The development of a local outbreak of hospital acquired Covid-19 infection on Sandford Ward during the week commencing 11 May 2020 was not effectively escalated to the UHBW Director of Infection Prevention and Control.

5.8. Whilst there is evidence to suggest that a discussion may have taken place between the UHBW Director of Infection Prevention and Control and the Weston Divisional senior nursing team, it did not trigger a full response as per the Outbreak Policy used at Weston General Hospital at the time.

5.9. There is evidence that correct local steps to control the infection outbreak were taken, however there was a missed opportunity for a more strategic assessment of the emerging pattern of coronavirus infection at the Weston General Hospital site following the local ward based outbreak.

6. RCA Recommendations and Action Plan Summary

6.1. The RCA makes 13 recommendations to ensure that a similar outbreak does not occur. The action plan status as of 8 September 2020 is as follows:

Recommendation	Action	Status and Summary of Progress
Recommendation 1 The ward and bed configuration at Weston General Hospital should be revised to ensure compliance with current NHSE/I and PHE guidance issued 14 May 2020, and last updated 21 August 2020, on having a 2 metre recommended distance between beds where patients who may have coronavirus infection are cared for.	Bed spacing at 2m or greater in all Weston General Hospital in-patient areas	Completed The ward reconfigurations have all been adjusted to meet national guidance.
Recommendation 2 In-patient facilities and the emergency department (ED) on the Weston General Hospital site should be zoned in accordance with NHS England Covid-19 guidance issued 14 May 2020 (and any subsequent updates) and a clear written SOP described to support the clinical site team to make consistent patient flow and bed management decisions.	Zoning of hospital areas in Weston General Hospital and written SOP to assist bed management decisions enabling better separation of COVID-19 positive and	Completed The hospital has been clearly zoned as per national guidance and an SOP has been approved and implemented to support bed management decisions
Recommendation 3 Access to rapid turnaround Covid-19 testing should be prioritised for the Weston General Hospital site to support bed management decisions and minimise patient moves in the context of the size of the estate.	Implementation of rapid patient testing to minimise the number of patients requiring an amber pathway (waiting for results) and ward moves	Completed Rapid access testing now available at Weston General Hospital.

Recommendation	Action	Status and Summary of Progress
Recommendation 4 All in-patients should be tested for coronavirus infection on admission (and at appropriate further intervals guided by local Director of Infection Prevention and Control) to enable rapid identification and isolation of asymptomatic patients with hospital onset COVID-19 and early detection of both community and hospital acquired COVID-19 cases. This is in line with the guidance issued 14 May 2020	Weekly patient testing and clear oversight of data.	Completed All inpatients are tested on admission and then on a weekly basis routinely. The results of patient testing are reported through the daily situation report. (see rec. 13)
Recommendation 5 A clear plan should be developed to describe how UHBW will manage patient flow during future COVID-19 epidemics, with consideration to the size of the current Weston General Hospital estate (and any practical changes to side room provision etc.) and the maximum number of possible or confirmed Covid-19 positive patients that can be accommodated without compromising patient care.	Agree COVID escalation plans which describe actions to be taken by UHBW and the BNSSG system in response to increasing numbers of COVID-19 patients at Weston General Hospital *(Note this actions addresses recommendation 5 and 6)*	On track The Deputy Chief Operating Officer and Clinical Operations Lead are developing an Escalation Policy for UHBW adult beds. This will be taken through Trust processes for approval and will link with wider system plans.
Recommendation 6 UHBW should ensure that its internal Covid-19 escalation plans form part of a wider BNSSG system escalation plan. This plan should ensure early recognition of an increased risk of Hospital Acquired Covid-19 Infection due to increased Covid-19 incidence (in the community or healthcare setting) and describe appropriate mitigating actions at a system level.		

Recommendation	Action	Status and Summary of Progress
Recommendation 7 The mitigations, controls and score of the current estates risk regarding airflow at Weston General Hospital should be reviewed in light of the current PHE guidance and the context of endemic coronavirus infection.	Ensure adequate controls and mitigations are in place for Weston General Hospital airflow risk on Estates Risk Register	On track Airflow handling is part of the Trust's backlog maintenance plans at Weston General Hospital and funding has been agreed as part of the capital allocation to address maintenance issues. Updated Public Health England guidance does not recommend enhanced ward area ventilation above standard infection control precautions.
Recommendation 8 Staffing models should be reviewed to ensure that as far as possible unnecessary staff movement (both substantive and temporary) between Covid-19 positive and negative zones is prevented.	Review Weston General Hospital Staffing models, rotas and temporary staffing policies to ensure staff movement between COVID positive and negative areas is minimised and risks articulated	On track Safe staffing arrangements to minimise staff movement between areas housing confirmed Covid-19 negative patients and those with positive tests or those awaiting testing were agreed by the Outbreak Control Team prior to reopening (see rec 2). Staffing of clinical areas is kept under regular review by the Weston divisional senior management team in the context of hospital Covid-19 infection incidence. The division has been asked to describe the risk of staffing vacancies in the face of any rise in incidence of COVID infection at Weston General Hospital including relevance mitigations and controls. This risk will sit on the divisional or Silver Covid-19 group risk register according to its current scoring.

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Recommendation 9 The Weston site bed management team should be supported to develop a clear and robust decision making and accountability framework, and improved documentation for recording bed movement decisions (including those made for IPC reasons).	Provide support and training for Weston Bed management team to enable them to describe and agree a process of accountability for consistent bed management and a single record of decision making	On track On a fixed term basis a Band 8a Lead Clinical Site Manager from Bristol is supporting Weston team with development of processes. Recruitment into this post will ensure continuity of cover and alignment of approach across the two sites. As part of the merger the process has begun to integrate the two CSM teams which is due to be completed by the end of October 2020.
Recommendation 10 All UHBW staff should be reminded of the importance of correct PPE use, handwashing and social distancing measures whilst in the workplace, particularly when working in small teams across multiple clinical areas. Governance systems and processes across UHBW should provide assurance of compliance with national and local IPC and cleaning policies.	Continue to provide clear messages and lines of communication to staff about COVID related IPC measures.	Completed Targeted training on Infection Prevention and Control precautions and PPE use was provided ahead pf the re-opening of Weston General Hospital Trust wide Covid-19 operational updates informed by issues discussed at the UHBW Covid-19 Silver meetings
	Ensure that UHBW has robust assurance about cleaning and IPC practice within inpatient areas.	Completed Assurance on appropriate environmental Infection Prevention and Control (IPC) controls was received by the outbreak control team from the UHBW IPC lead nurse ahead of the Weston General Hospital reopening Environmental and IPC audits have been recommenced at all sites and are monitored through normal divisional and corporate governance processes as well as enhanced

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		oversight through the UHBW Covid Bronze IPC cell.
Recommendation 11 That the existing and new members of the IPC team at both Weston General Hospital and Bristol Hospitals are supported to establish relationships and ways of working that allow effective oversight and escalation of all areas of UHBW. Roles and responsibilities as outlined in the current UHBW Infection Control Policy should be reinforced to ensure ward to board assurance through the Director of Infection Prevention and Control and Chief Nurse.	Support newly appointed UHBW IPC nursing lead to develop IPC team and ensure standard approach to outbreak surveillance and escalation across all Trust sites	On track The newly appointed IPC lead nurse is due in post imminently and will be supported by the Director of Infection Prevention and Control and corporate senior nursing team.
	Ensure the vacant role of lead infection control doctor at Weston General Hospital is appointed to	On track The role is currently out to advert. Interim cover is in place.
Recommendation 12 That the significant data/learning opportunities generated on the transmission of coronavirus infection between patients at Weston General Hospital is shared with the wider healthcare community to inform planning at a regional and national level.	Share relevant Investigation data with Public Health England	Completed Data and Public Health England (PHE) preliminary findings were shared at a meeting on 17 July 2020 and final PHE report shared with the Trust on 21/08/20
	Share RCA findings with system partners	On track To be shared after the RCA has been presented to the Board of Directors
Recommendation 13 That COVID-19 related operation and IPC related data are reported separately for the Weston and Bristol sites of UHBW and that there is a mechanism for	Ensure that data on COVID incidence in UHBW staff and patients are monitored by senior expert clinicians so that evidence of further outbreaks	Completed Data is reported in the daily situation report and monitored by the Executive Team. The data is considered at the weekly Top Team meeting

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interrogating this data, looking for patterns and trends and effectively escalating concerns within the UHBW operational management structure. For COVID-19 (as opposed to other healthcare associated infections) specific data should be subject to separate reporting within the daily situation report to Silver command, and then flowing into business as usual reporting data for the Trust.	can be detected early and escalated to the relevant operational group	and/or Executive Team meeting. Any anomalies are then escalated for further review.
	UHBW should use the NHSE/I COVID IPC board assurance framework to ensure that there is Board level oversight of the actions the Trust has taken to mitigate the effects of the COVID Pandemic	<u>Completed</u> Infection Prevention and Control Board Assurance Framework (IPC BAF) has been completed and externally assessed by Care Quality Commission during an engagement call on 2 July 2020. The CQC confirmed the outcome of the meeting in a Summary Record document dated 9 July 2020 which states “We have found that the board is assured that the trust has effective infection prevention and control measures in place.” The IPC BAF was discussed at the Quality and Outcomes Committee on 25 June 2020.

6.2. An action plan which addresses all 13 recommendations has been developed and is part of the RCA. The full action plan will be shared with the Board, as part of the RCA, and will be subject to more detailed review by the Quality and Outcomes Committee on 24 September 2020. The Clinical Quality Group will oversee completion of the action plan, with weekly review at the Weston Covid Outbreak Coordinating Group.

7. Harm Panel Reviews, Duty of Candour and Ongoing Support

7.1. The Trust has undertaken a review of all of the deaths identified in section 3.1. A Harm Panel review is a review of the care provided to a patient and was undertaken by five members of senior medical and nursing staff, not involved in the provision of care at Weston General Hospital.

7.2. The Harm Panel focused on deaths involving patients where probable or definite Hospital Acquired Covid-19 infection was identified inside and outside for the RCA period. As per section 3.1.3, the Trust has identified 24 patients who died following probable or definite hospital acquired coronavirus infection during the RCA period, and a further seven patients were identified who met the criteria for review outside of the RCA period.

7.3. Through the Harm Panel review process, the Trust has identified 18 patients who may have sadly died due to Healthcare Associated Infection. A Deputy Medical Director has telephoned the families of the 18 patients to advise them of this outcome from the Harm Panel review and undertake a Duty of Candour[1] conversation. Each family will also receive a follow up letter inviting them to contribute questions or concerns to an individual serious incident investigation. The outcome of these separate investigations will be shared with the families.

7.4. A dedicated contact line has been setup to answer questions from families of those patients who died or who may have acquired Covid-19 whilst under the care of the Trust.

William Oldfield — **Carolyn Mills**

Medical Director — **Chief Nurse**

10 September 2020

[1] The Duty of Candour is a statutory (legal) duty to be open and honest with patients (or 'service users'), or their families, when something goes wrong that appears to have caused or could lead to significant harm in the future. It applies to all health and social care organisations registered with the regulator, the Care Quality Commission (CQC) in England.