ANNEX A

REGULATION 28: REPORT TO PREVENT FUTURE DEATHS (1)

*NOTE: This form is to be used **after** an inquest.*

	REGULATION 28 REPORT TO PREVENT FUTURE DEATHS **Re: Mr. Steven John Welch who died on 29 December 2017 at Southmead Hospital Bristol.** **THIS REPORT IS BEING SENT TO:** **1. His Honour Judge Mark Lucraft QC, Chief Coroner for England and Wales;** **2. Mr. Jason Killens, Chief Executive Welsh Ambulance Service Trust;** **3. Ms. Allison Williams, Chief Executive, Cwm Taf University Health Board;** **4. Mr. Kamal Asaad, Medical Director, Cwm Taf University Health Board;** **5. Mr. Len Richards, Chief Executive, Cardiff and Vale University Local Health Board;** **6. Dr. Graham Shortland, Medical Director, Cardiff and Vale University Local Health Board;** **7. [redacted] Director of Legal & Risk Service NWSSP; and** **8. [redacted]**
1	**CORONER** I am Sarah-Jane Richards, Assistant Coroner, for the coroner area of South Wales Central
2	**CORONER'S LEGAL POWERS** I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.
3	**INVESTIGATION and INQUEST** On the 25th January, 2018 an investigation was commenced into the death of Mr. Steven John Welch aged 45 years. The investigation concluded at the end of the inquest on the 20th July 2018 having identified several omissions in the healthcare provided to the deceased prior to his transfer 'out of area' to Southmead Hospital, Bristol, England some of which have a relevance to Regulation 28 and prevention of future deaths. The medical cause of death was 1a - Pulmonary embolism; 1b - Deep vein thrombosis; and 1c Subarachnoid haemorrhage due to ruptured cerebral artery aneurysm. The conclusion of the inquest was a narrative determination.
4	**CIRCUMSTANCES OF THE DEATH** Mr. Steven Welch reported having suffered a fall several days prior to being found on 26 December 2017, in a 'rousable' but immobile condition at home by his father, [redacted] The Welsh Ambulance Service Team (WAST) received 999 calls from Mr. Graeme Welch at 12.09, 12.47 and 13.10 hrs on 26 December 2017. A separate Regulation 28 has been provided in respect of delays in transferring Mr. Welch from home to the Royal Gwent Hospital (RGH) on 26 December and again when transferring Mr. Welch from the RGH to University Hospital of Wales, Cardiff (UHW) on 27 December 2017.

During this time, Steven Welch's condition deteriorated. Mr. Welch was admitted to the Accident & Emergency Department RGH at 15.18 hrs whereupon he was triaged as a collapsed adult with a history of sustaining a head injury a few days previously, unconsciousness and, as a yellow category, should have been seen by a clinician within an hour according to Manchester triage guidelines. This did not occur.

Witness evidence at inquest reported high A&E demand at the RGH throughout 26 December, 2017 with most of Mr. Welch's care being nurse practitioner led. It was a nurse practitioner who at 18.45 hrs undertook an assessment of Mr. Welch as he was laying on a trolley. This was 3 hrs 30 mins after admission. He was noted to have a reduced level of consciousness (Glasgow Coma Score of 11/15 from 15/15 on admission) and he was not responding. A CT scan of head and x-ray of ankle and foot were requested. He was found to have suffered a fracture of his right fibula which was treated by the trauma team with a back-slab. At 20.00 hrs a CT scan of head was undertaken.

The RGH does not support a neurosurgical team instead UHW Cardiff is the tertiary neurosurgical centre for the RGH. Mr. Welch's CT scans were reviewed by the neurosurgical team at UHW and a subarachnoid haemorrhage was diagnosed. A CT angiogram was requested. Mr. Welch should have been transferred immediately to Cardiff for monitoring of intracranial pressure, interventionist radiology and vascular coiling to reduce the risk of a further bleed. However, for reasons unknown to the inquest, UHW had received resignations of its interventionist radiologists and in consequence, all patients requiring this form of treatment were sent out of area to Southmead Hospital, Bristol.

The neurosurgical team at Cardiff advised that in the absence of UHW being able to provide the specialist radiology required, RGH should arrange admission directly with Southmead Hospital. The neurosurgery team at Southmead Hospital agreed in principle to accept Mr. Welch subject to the review of the CT scans undertaken at the RGH.

The inquest heard that commissioning of software required for transfer of radiology images is Wales based, thus while images could be transferred between Welsh hospitals for neurosurgical review they could not be sent across the border for review by non-Welsh hospitals. This is a serious commissioning omission as neuroimaging transfer between hospitals nationally and internationally has been available for approximately 20 years. Southmead Hospital reasonably insisted upon receipt and review of neuro-radiology before accepting Mr. Welch as a patient. Had RGH had electronic transfer technology to 'out of Wales' hospitals, Mr. Welch's neuro-images could have been reviewed within minutes of being sent electronically to Bristol. Had this been the case, Mr. Welch could have been transferred to Southmead Hospital on the evening of 26 December 2017 when vascular coiling remained an option. Instead, the CT images were to be printed and faxed to Southmead for review. However the only printer available had run out of ink and there were no spare ink cartridges available. Eventually, the images were sent electronically to Prince Charles Hospital, Merthyr Tydfil where they were printed and dispatched by taxi to Southmead Hospital.

Throughout this delay, Mr. Welch's condition further deteriorated. The A&E nurse practitioner responsible for Mr. Welch at the RGH repeatedly requested Mr. Welch's transfer to UHW which unlike the RGH, supported a neuro-surgical team which could monitor intracranial pressure and undertake emergency surgical intervention if required.

At 05.00 on 27 December 2017, Mr. Welch was admitted to UHW where he was diagnosed as suffering from hydrocephalus, subarachnoid haemorrhage, anterior communicating artery aneurysm and a fluctuating GCS of 10-14/15. He was referred to the neurosurgical team for emergency external ventricular drain insertion and continuous cerebrospinal fluid drainage in order to reduce cranial pressure. He suffered two seizures. He was intubated by the anaesthetic team for safe transfer to Southmead Hospital at 4pm on 27 December 2017 for further endovascular management.

	Upon arrival at Southmead Hospital Mr. Welch was considered too unwell to undergo prophylactic vascular coiling. His cardiac function was causing great risk to his life. He had received a pulmonary embolism risk assessment on 27 December 2017 and provided anti-embolism stockings. In spite of supportive treatment Mr. Welch continued to deteriorate and died. Post mortem findings confirmed that Mr. Welch had not suffered a further cerebral bleed and that the cause of death was a pulmonary embolism most likely originating from a deep vein thrombosis of the left leg. It is accepted that the delays in providing neurosurgery at UHW and the provision of CT images for review by Southmead Hospital did not cause the death of Mr. Welch and the extent to which they contributed to the death, if any, is unclear. However, rapid diagnosis and treatment of cerebral bleeds and reduction of increased cranial pressure invariably increases the likelihood of survival and for this reason, the Cwm Taff and Cardiff and Vale University Local Health Boards, are invited through this Regulation 28 to address the following concerns arising from Mr. Steven Welch's treatment on 26/27 December prior to being transferred out of area to Southmead Hospital: i) Failure by the RGH to provide a timely assessment upon A&E admission including head CT scans of a man who was known to have suffered a head injury; ii) Knowing that neurosurgical cover is provided to RGH patients by UWH why UHW delayed admitting Mr. Welch and performing essential neuro-surgery when it was always the case that the Southmead neurosurgical team could have denied the admission of Mr. Welch to their facilities upon reviewing his radiology; iii) Failure by Cwm Taff Health Board through its tertiary UHW (Cardiff and Vale University Local Health Board) to have access to interventionist radiologists within Wales at the time (and one only at the time of inquest) thereby having to send patients who have suffered cerebral bleeds and who require interventionist radiology, out of area for treatment; iv) Failure by Cwm Taff and Cardiff and Vale University Local Health Boards to have software in place in 2017 permissive of radiological review by hospitals and specialist centres out of Wales; and v) Related to iv) above, in the absence of an ability to transfer radiological images electronically from Cwm Taf Health Board and Cardiff and Vale University Local Health Board hospitals to hospitals and specialist centres out of Wales, why the RGH did not ensure a printer was always maintained to print and fax images for external review and for a back-up to be available at all times in case of technical failure. No patient transfer should be delayed and life put at risk as a result of a printer not having ink in its cartridge. vi) Whether or not concerns rightly raised by Advanced Nurse Practitioner, [redacted] (RGH) and [redacted] Consultant in Emergency Medicine and Pre-hospital Emergency Medicine through an incident report to UHW have been acted upon and feedback provided in each case.
5	**CORONER'S CONCERNS** During the course of the inquest the evidence revealed matters giving rise to concern. In my opinion there is a risk that future deaths will occur unless action is taken. In the circumstances it is my statutory duty to report to you. The **MATTERS OF CONCERN** are as follows. – At inquest, the errors in assessing the urgency of the need for medical assistance and the delay in providing that assistance were considered unlikely to have contributed to Steven Welch's death. However, it was acknowledged that such errors could cause or

	contribute to the death of others where a subarachnoid haemorrhage had been sustained and for this reason, the Cwm Taf University Health Board is invited through this Regulation 28 to consider the following: i) Provision of rapid A&E review of a patient with a reported head injury and reducing or fluctuating Glasgow Coma Score even at times of public holidays; ii) Rapid transfer to a hospital or specialist centre providing neurosurgical diagnosis and treatment when such facilities are unavailable within the admitting hospital; iii) Failure by the Cardiff and Vale University Local Health Board to have any interventionist radiologists in employment at the time thereby failing to provide tertiary support to the RGH and necessitating its patients to be sent out of area to England for treatment with inevitable delay; iv) Failure by the Cwm Taf Health Board and Vale University Local Health Board to have computer software in place to enable electronic transfer of radiology to hospitals and specialist centres out of Wales for review and consultation.
6	**ACTION SHOULD BE TAKEN** In my opinion action should be taken to prevent future deaths and I believe the Royal Glamorgan Hospital and its Health Board and the University Hospital of Wales and its Health Board, have the power to take such action in the areas of: i) ensuring its A&E Department is appropriately staffed and facilitated at all times including statutory holidays; ii) that all Cwm Taf Health Board and Cardiff and Vale University Local Health Board hospitals have the benefit of software which enables radiology to be sent to hospitals and specialist centres out of Wales for review; iii) that as the University Hospital of Wales and the teaching hospital for Cardiff - the capital city of Wales - interventionist radiology is restored as an area of specialism at the level required for its catchment population; and iv) in the event the Cardiff and Vale University Local Health Board is unable to provide facilities to hospitals run by other Health Boards (as was the case here) that those hospitals are notified of such unavailability (whether temporary or permanent) and alternative access to specialist healthcare treatment is advised.
7	**YOUR RESPONSE** You are under a duty to respond to this report within 56 days of the date of this report, namely by 5th October 2018. I, the Coroner, may extend the period. Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed.
8	**COPIES and PUBLICATION** I have sent a copy of this report to the following: His Honour Judge Mark Lucraft QC, Chief Coroner for England and Wales; Mr. Jason Killens, Chief Executive Welsh Ambulance Service Trust; Ms. Allison Williams, Chief Executive Cwm Taf University Health Board; Mr. Kamal Asaad, Medical Director, Cwm Taf University Health Board; Mr. Len Richards, Chief Executive, Cardiff and Vale University Local Health Board; Dr. Graham Shortland, Medical Director, Cardiff and Vale University Local Health Board; [redacted], Director of Legal & Risk Service NWSSP; and [redacted], father of the deceased. I am also under a duty to send the Chief Coroner a copy of your response.

	The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest. You may make representations to me, the coroner, at the time of your response, about the release or the publication of your response by the Chief Coroner.	
9	**7th August 2018**	**SIGNED:**  **Dr. Sarah-Jane Richards** **HM Assistant Coroner**