

# Review of five London hospital fires and their management

JANUARY 2008 – FEBRUARY 2009

REPORT

**EMERGENCY**

Preparedness

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FOREWORD

**A National Health Service facility is seen as a secure place to seek treatment and support, often when individuals are feeling vulnerable and in need.**

Although the utmost care is given to ensure our sites are safe and resilient, they are at risk of the same disruptive challenges as any other large complex building.

2008/09 saw a number of significant fires at NHS sites in London which required the evacuation of part or whole of the building. Any evacuation of a large commercial building is difficult – coping with a facility as complex as an NHS site, complete with sick and recovering patients, staff and visitors presents further challenges.

The events of 2008/09 proved that with good teamwork, leadership and planning, a safe, successful evacuation of a healthcare facility is achievable. It is imperative that we have tried and tested full site evacuation plans for every NHS organisation in the capital.

London’s experiences during 2008/09 demonstrate the critical importance of being prepared for emergencies - this report shares our lessons learned to support colleagues in the wider NHS when developing local plans.

The lessons identified from the five events detailed in this report are clearly laid out in Appendix 2 to provide an easy checklist for planners and managers across the health service (see page 40).

This report will help to inform the ongoing development of the Department of Health guidance – planning for the evacuation and shelter of people in healthcare settings.

I hope that you find this information useful and wish you well in your preparations.

Ruth Carnall  
Chief Executive  
NHS London

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2. INTRODUCTION

Hospitals and other healthcare facilities are traditionally seen as places of sanctuary and safety by the general public.<sup>1</sup> However, these institutions are not immune from disruptive challenges and disaster which present a unique set of challenges when responding to incidents, including the increased and continuing needs of their occupants during a time of crisis.<sup>3</sup>

Hospitals are well prepared for major external incidents and events which cause a surge in patient numbers. However circumstances resulting in internal hazards such as fire, escape of gases or dangerous substances, utility failure, serious flooding, and non-structural or structural damage may necessitate the evacuation of a hospital or healthcare facility, either as a whole or part.<sup>2</sup> These events are arguably more disruptive than external incidents, as they put increased stress on hospitals that traditionally operate at full capacity.

The short and long term consequences from hospital failure not only include loss of life, financial implications and challenges in providing health services, particularly if facilities require rebuilding following the event, but also cause intangible far-reaching effects on the community through loss of their ‘safe haven’.<sup>1;2</sup>

In the UK particular hazards which may result in hospital evacuation include flooding, with 7% of hospitals and 9% of healthcare facilities in the UK situated in known moderate to high risk flood areas.<sup>4</sup> In addition, over the past two years at least five London hospitals have resulted in substantial disruption or evacuation in response to fire. Furthermore all healthcare facilities maintain plans for horizontal fire evacuation however not many consider complete site evacuation.

Fires in hospitals may be particularly worrying, not only from flames and heat generated, but also smoke which can travel long distances inside buildings aided by air conditioning systems. The type of smoke or products of combustion generated will vary from the type of fire (blazing or smouldering) to the sort of material being burnt such as the building, the roofing, or hospital plastics or waste to more specific material such as hospital gases, drugs or even radioactive sources. The need to understand the hazards and risks under these circumstances requires understanding by hospital staff and planners, plus support from experts including those at the Health Protection Agency (HPA).

This report provides an evaluation of the five London hospital fire incidents giving real life evidence of the challenges encountered. Each scenario provides a unique perspective from five different events and healthcare settings. These comprise a substantial fire at a leading cancer hospital, a large inner London teaching acute hospital, a major children’s hospital, a medium secure mental health facility and a large outer London acute hospital. The accounts highlight issues relating to substantial evacuation of hospitals and how they may be overcome. Of the five events described, no significant adverse health affect was reported during or post the fires in any of the patients evacuated. This report aims to collate lessons identified from each of the different events in a sequential and logical manner.

This report has been produced at the request of NHS London’s emergency preparedness team, to facilitate the sharing of information with other hospitals and healthcare facilities. In addition the work will contribute to the Department of Health (DH) and their guidance on sheltering and evacuation of health sector settings<sup>5</sup>

This report does not contain information with regards to the cause of each fire; this is subject to individual fire investigation reports.

In order to create a data collection tool a search of the literature was carried out looking for examples of tools used to assess hospital evacuations. The benchmarking tool developed by Schultz and colleagues following the Northridge earthquake in California was identified.<sup>3</sup>

Consent to use and adapt the tool was obtained from Professor Kristi Koenig, Professor of Emergency Medicine at the University of California Irvine. The tool was modified, tailoring it towards general hospital evacuations and the UK (Appendix 1).

Five London hospital fire events were identified by the emergency preparedness team at NHS London as those with the greatest amount to offer in terms of experiences and lessons. Senior staff who were actively involved in the actual events were identified by NHS London at the Royal Marsden Hospital, University College London Hospital, Great Ormond Street Hospital, the Chase Farm site of Barnet, Enfield and Haringey Mental Health Trust, and Northwick Park Hospital. They were interviewed using semi structured questions based on the adapted questionnaire. Respondents were also encouraged to talk freely about what they felt had gone well, and what they would do differently.

Operational aspects of the evacuation events were analysed to identify both common challenges experienced by all the facilities and those specific to each individual hospital.

The results from each interview are presented giving:

- an overview of each hospital
- a description of the event
- an outline of the issues of concern and lessons identified

A consolidation of the lessons are outlined at the end of the results in Appendix 2.

IDENTIFY

Five London hospital fire events were identified by the emergency preparedness team at NHS London as those with the greatest amount to offer in terms of experiences and lessons.

Fire incidents in five hospitals are presented below and are summarised in table 1.

Table 1: Summary of the events outlining type of facility and evacuation.

Hospital name	Type of hospital	Date of fire	Type of evacuation
1▶ Royal Marsden Hospital	Specialist cancer hospital	Wednesday, 2nd January 2008	Complete evacuation
2▶ University College Hospital	London teaching hospital	Friday, 25th July 2008	Part closure and service diversion
3▶ Great Ormond Street Hospital	Paediatric tertiary referral centre	Monday, 29th September 2008	Partial evacuation
4▶ North London Forensic Service, Camlet 3, BEHMHT, Chase Farm Hospital site	District general hospital site, shared by three trusts (Barnet & Chase Farm Hospital Trust, BEHMHT and NHS Enfield) and one of only six medium secure psychiatric units in the UK	Wednesday, 15th October 2008	Complete evacuation
5▶ Northwick Park Hospital	District general hospital	Wednesday, 11th February 2009	Partial evacuation



2nd January 2008

# ROYAL MARSDEN

### 5.1 Event 1: The Royal Marsden Hospital fire, Wednesday 2nd January 2008

#### 5.1.1 Context

The Royal Marsden Hospital (RMH), located in the London Borough of Kensington and Chelsea, is a world renowned cancer centre housing approximately 240 beds. It forms part of The Royal Marsden NHS Foundation Trust along with a second site in Surrey. The RMH treats over 40,000 patients per year. It is a leader in cancer research and treatment together with its partner the Institute for Cancer Research (ICR). It is located next door to the Royal Brompton Hospital (RBH) which also has a world renowned reputation for the diagnosis and treatment of heart and lung disease. Chelsea and Westminster NHS Foundation Trust Hospital, a large acute teaching hospital with an emergency department is a short walk away.

#### 5.1.2 The event

Fire broke out in the roof of the RMH on Wednesday 2nd January 2008 at 1300 hours.<sup>6</sup> The timing was significant as it coincided with the seasonal holiday period and reduced levels of services. At the time of the

incident there were 78 inpatients and approximately 120 outpatients on site. Next door in the RBH several wards had been closed over the Christmas and New Year period.

When the fire started, three patients were in the operating theatres and six patients were in intensive care. The fire necessitated the complete evacuation of all patients, staff, and visitors from the building, an unusual situation which is often not considered in major incident plans. The evacuation was successfully completed in 28 minutes. Over 150 emergency services personnel were involved in the response.

The Intensive Care Unit (ICU) was one of the first areas to evacuate as smoke rapidly filled the area. Patients were moved either to the RBH or St Paul's church, which is 100m north of the hospital and provided a temporary shelter and triage centre. Patients transferred to RBH were cared for by RMH staff, and all were either discharged or returned to the RMH within seven days. The patients transferred to St Paul's church were either admitted to RBH or discharged on the day of the fire. Normal services resumed at RMH three days later but full site recovery will not be complete until January 2010.





## 5.2 Issues and lessons identified from The Royal Marsden Hospital fire

### 5.2.1 Communication

Communication challenges were noted, particularly during the early part of the incident. Difficulty was found when communicating internally and externally. As the safe evacuation of patients was uppermost in the minds of the staff, external communication about our bed numbers was not as quick as may have been. This may have been in part due to the speed with which The Royal Marsden was forced to evacuate, but it is important that supporting hospitals receive as much information as early as possible to allow them to prepare their response.

Mobile telephones were used extensively for communication between staff in RMH and RBH and other external organisations. This relied on the fact that many people had numbers for other organisations and members of staff programmed into their telephones, allowing a quicker response. It is important to pre-plan a communication strategy for such incidents. RMH suffered a loss to the telephone system due to the effects of the fire. The use of runners was restricted due to the seat of the fire and the presence of large amounts of smoke moving quickly throughout the building. A suggested solution to internal communications would be a hand held radio system.

Signs were also placed around the periphery cordon of the hospital to provide updates on the situation and to inform staff arriving for duty where to report to. Although a simple solution, this was important in maintaining communications with staff, patients, relatives and the emergency services.

On subsequent days the Chief Nurse and the Medical Director held morning and afternoon briefings for staff at the beginning of each shift.

### 5.2.2 Command and control

The decision to evacuate the hospital was made within minutes of the fire starting, by the Chief Executive Officer (CEO) in conjunction with the Chief Nurse and Medical Director. The CEO felt it was her personal responsibility to make sure that everyone had been evacuated safely. This is an important point for senior staff in a similar position to consider and plan how patients and staff will be accounted for.

The importance of a trained 'loggist' recording accurate timings of events and decisions was recognised during The Royal Marsden incident. It is extremely difficult during a major incident to keep accurate documentation of timings of meetings, decisions and actions. This is however vitally important for subsequent investigations, and a designated loggist takes the pressure off senior staff.

### 5.2.3 Patient evacuation

The RMH provides an example of a very unusual situation where complete evacuation of a hospital was required. This included evacuation of the ICU and operating theatres, including one patient who was undergoing extensive surgery.



The full evacuation was completed in 28 minutes due to fantastic staff teamwork and leadership.

The incident evolved so rapidly that staff did not have chance to formally declare a major incident until after the evacuation had been completed. Patients who were evacuated to the RBH next door were able to continue receiving specialist cancer care from RMH staff.

The evacuation process was facilitated through excellent pre-planning and the presence of ski sheets available under each bed. However, there were issues with the revolving doors at the entrance/exit to the hospital which were too narrow to accommodate the width of the mattress on which some patients were placed. This issue has since been addressed, but highlights the importance of real exercises, and simulated patient evacuations to allow the identification and correction of similar practical problems before a real incident. It is important that evacuation routes are continually assessed in such circumstances to ensure they remain suitable, particularly as hospitals and healthcare facilities often have ongoing building and maintenance works.

### 5.2.4 Critical care

The critical care unit filled with smoke within 4-5 minutes of the start of the fire and was one of the first areas to be evacuated. The evacuation of intensive care units is challenging and is often left to individual clinical staff to decide what equipment is necessary to take, and what acceptable risks are, when quickly transferring patients. Local evacuation plans existed and were well used during this event.

The neighbouring RBH sheltered all the critical care unit patients

and staff. It was noted that initial communication was difficult and the receiving unit did not have as much information on the number or type of patients as they would ideally have wanted. Patient notes were an issue as some were taken with individual patients, some were easily retrieved and some were lost to the fire. A particularly important point of note is that for those patients without notes or identification, there was no way of clarifying documented resuscitation status or medication regime.

## EVACUATION

The RMH provides an example of a very unusual situation where complete evacuation of a hospital was required. The full evacuation was completed in 28 minutes due to fantastic staff teamwork and leadership.



### 5.2.5 Major incident plan

As with most hospitals, prior to the fire the RMH major incident plan did not incorporate the possibility of a complete site evacuation. It had always been assumed that the building would be compartmentalised and a horizontal evacuation would suffice. This has since been rectified with a plan for complete evacuation now in place.

The RMH have also identified two separate control rooms for future incidents, one located inside and one outside the main hospital building. This is particularly important in the event that the internal room is damaged or inaccessible, a possibility which was previously not considered.

### 5.2.6 Psychological effects

As expected, evacuated staff arriving with patients at the RBH were 'shaken' in the rush to move patients from the RMH to a safe environment. In addition staff arriving with patients at other receiving units were working in unfamiliar environments and acknowledge it as being stressful. Consideration should be given to the psychological effects on the medical and nursing staff and the necessity for time to debrief and gather their thoughts. Staff may need further interventions following the event. They should be fully supported if they feel they can't continue to provide appropriate care for their patients and it should not be assumed that staff will feel capable to continue working safely. Long-term care for staff should be considered in any major incident plan and hospital evacuation is no exception.

### 5.2.7 Pharmacy

The RMH is a specialist hospital and therefore has patients who require specialist drugs. In addition, many patients receive strong opioid painkillers which require careful control. On the day of the fire several patients had attended for chemotherapy. The RMH pharmacy had to ensure the continuous provision of medicines for the evacuated patients.

Staff at the RMH telephoned the Chief Pharmacist at the RBH to support those evacuated to St. Paul's church. Controlled drugs were sent across from RBH to the church under strict supervision.

Staff from the RBH and RMH were paired up to assess each patient individually to ascertain their medication and what would be needed urgently. Due to the nature of their illness many of the patients knew their medication doses and timings, making this aspect of the evacuation much easier. Had it been any other type of hospital evacuated this would have not necessarily have been the case. The pharmacy staff then treated the church as a ward,

creating a controlled drug register, with new drug charts for each patient. Further supplies of controlled drugs were brought over from the Harefield hospital, the sister hospital to RBH. Pharmacy staff entered the Marsden pharmacy escorted by the fire brigade to collect specialist drugs.

The system of pairing staff from different hospitals worked extremely well, and teams continued sweeping RBH wards into the evening, repeatedly trying to pre-empt problems. Treating the church as a ward area was a success – staff know how to act on a ward. They reverted back to the policies and procedures that were familiar and comfortable. This made the church into a more familiar environment enabling staff to continue working.

Slight challenges arose when patients were admitted to the RBH later that evening and nurses who were used to working from different policies and procedures, such as single nurse administration, began working alongside each other.

Teamwork was again mentioned as a critical factor in the successful provision of pharmaceutical services to patients. All pharmacy staff were willing to stay late, working outside their usual 9 to 5 routine. The pharmacist on-call overnight did not need to be contacted, proving that the system set up during the day had worked.

### 5.2.8 Sheltering

Hospitals rarely consider complete evacuations in their major incident plans and as a consequence suitable triage and sheltering areas outside the hospital building may not be already identified. The use of a local church has been described as 'inspirational'. However this relied on the fact that a member of hospital staff knew the chaplain and could contact him on the day of the fire to gain access to the church. The importance of working towards 'worst case scenarios', identifying and assessing the suitability of potential sheltering sites cannot be underestimated. Planning needs to identify the staff required in these areas in order to continue medical care for sheltered patients. It is also important that the other emergency services are made aware of potential evacuation shelter locations.

## PLANNING

The importance of working towards 'worst case scenarios', identifying and assessing the suitability of potential sheltering sites cannot be underestimated.







25th July 2008

# UNIVERSITY COLLEGE LONDON

## 5.3 Event 2: University College London Hospital fire, Friday 25th July 2008

### 5.3.1 Context

University College London Hospitals NHS Foundation Trust (UCLH) is a large acute trust with approximately 1,000 inpatient beds split across a range of facilities with a mixture of old and new buildings. University College Hospital inpatient tower, situated on the Euston Road in central London, is one of the new buildings and has approximately 580 inpatient beds. The Trust provides a variety of specialist services to the community, including tertiary cardiac, neurology and a tropical medicine centres. The Rosenheim building affected by the fire is used mainly for outpatient clinics, oncology and paediatrics, but also houses other services including medical physics and the sperm bank. Some of these services have since moved out of the building into newer facilities.

The fire occurred in the middle of the night when no patients were in the building. The Elizabeth Garrett Anderson (EGA) building houses the maternity and neonatal services and is connected to the Rosenheim building by underground tunnels. It was therefore affected by the smell and smoke from the fire, and damage to underground structures including IT networks, cabling, oxygen and air supplies occurred.

### 5.3.2 The event

The fire started in the basement of the Rosenheim building at 03:00 on Friday 25th July.<sup>7</sup> A major internal incident was called allowing a measured response to the incident. Within 90 minutes of the initial situation assessment bronze, silver and gold commanders from UCLH had agreed to attend the hospital.

The London Fire Brigade (LFB) attended the incident promptly and the fire was extinguished by 06:00. UCLH contacted the London Ambulance Service (LAS) and agreed a blue light divert for ambulances attending the emergency department. This meant that emergency ambulances were initially redirected to other local emergency departments allowing for a designated assessment area in the UCLH emergency department for women attending in labour. A triage midwife was stationed at the front of the EGA building to redirect patients to the assessment area in the emergency department. Patients were not evacuated during this incident, outpatient clinics were not cancelled and only three emergency caesarean sections were diverted to neighbouring hospitals. By lunchtime the emergency department at UCLH was once again accepting blue light ambulances.

The main disruption to the hospital came from fire damage to structures passing under the Rosenheim buildings. This included IT networks, cabling and the pathology pneumatic tube system which is vitally important for transferring samples to the laboratory.



## 5.4 Issues and lessons identified from the University College London Hospital fire

### 5.4.1 Emergency departments

Although patients did not require evacuation, the emergency department played an important role in providing a suitable environment for the rapid assessment of patients in labour, some of whom had the potential to be unwell. The majority of emergency departments have resuscitation areas, with facilities to ventilate and care for critically ill patients, and could potentially provide a temporary safe area where critical patients could be sheltered should rapid evacuation be required.

An issue can arise for facilities that do not have emergency departments on site. It is important that consideration be given in major incident planning to where shelter can be provided to critically ill or ventilated patients, should they need to be evacuated.

### 5.4.2 Other agencies

When evacuating patients to other facilities, most patients will be transported by either hospital transport or the local ambulance services such as the LAS. Co-ordination between the statutory ambulance service and the private hospital transport provider is essential. Provision should be made in the hospital transport provider contract to ensure that in such an event the provider falls under the command of the statutory ambulance service. It is possible to obtain additional ambulance support from the voluntary sector, however these arrangements should also fall under the command of the local ambulance service to ensure co-ordination of effort.

### 5.4.3 Communications

Although clinical services at UCLH were minimally disrupted, communication systems were affected, not just at the time of the incident but for several weeks after the fire.

During the incident telephone systems in the EGA which had failed were replaced by mobile telephones which also provided a temporary system for crash bleeps to alert medical and nursing staff when patients are critically unwell and need rapid and urgent assessment. The use of mobile telephones facilitated the provision of communication for clinical and nursing management in preventing deterioration of patients.

Communications with the pathology labs are also vital for the smooth functioning of a large acute hospital trust and a dedicated telephone line was identified so that midwives could contact pathology for results. UCLH has improved their telecommunications (mixture of VoIP and analogue phones) and IT resilience (second data centre based off site). In addition UCLH are purchasing additional hand-held radios for the trust which will be ready and waiting in the event of a future major incident affecting the usual lines of communication.

### 5.4.4 Transport of specimens

It is necessary to have an efficient system for transporting specimens to the laboratory and also for the timely and prompt

delivery of results to medical staff. Many hospitals use pneumatic tube systems to transport their pathology samples. These function very efficiently, with one major advantage being that individual pods can be sent at any time. Staff therefore do not need to delay sending samples.

In this incident the pneumatic tube system was disrupted by the fire and a replacement courier system was activated providing a continuous transport of samples between the hospital and laboratory. The protocol for the failure of the tube system was simply put into action but it took eight weeks for the system to be repaired.

### 5.4.5 Major internal incident

UCLH called an internal incident as opposed to activating their full major incident plan. Since the Rosenheim fire a separate internal incident cascade system has been developed. The internal incident response action card is now included in the Major Incident Policy as the first action card. As stated this allows a more measured response to an incident which in an area such as London may have benefits in reducing disruption to other facilities which may be put on standby unnecessarily. The evacuation and sheltering plans were rewritten to incorporate both vertical and horizontal evacuation, and consider in more detail suitable areas to shelter patients if required.

## COMMUNICATIONS

Although clinical services at UCLH were minimally disrupted, communication systems were affected, not just at the time of the incident but for several weeks after the fire.

UCLH are purchasing additional hand-held radios for the trust which will be ready and waiting in case of a future major incident affecting the usual lines of communication.

## RESPONSE

The evacuation and sheltering plans were rewritten to incorporate both vertical and horizontal evacuation, and consider in more detail suitable areas to shelter patients if required.





29th September 2008

# GREAT ORMOND STREET

### 5.5 Event 3: Great Ormond Street Hospital fire, Monday 29th September 2008

#### 5.5.1 Context

Great Ormond Street Hospital (GOSH) is a world renowned paediatric tertiary referral hospital in Bloomsbury, central London, providing the widest range of specialist children's healthcare in the UK. Together with its sister unit, University College of London's Institute of Child Health (ICH), it is a world leader in pioneering paediatric research. It has approximately 335 inpatient beds, plus various family and parent accommodation. GOSH provides a diverse range of specialist services including cardiac, neurosciences, nephrology, oncology and intensive care as well as housing ICH laboratories.

#### 5.5.2 The event

At 08:30 on Monday 29th September a fire alarm was activated on the fifth floor cardiac wing.<sup>8</sup> Smoke began to spread into neighbouring wards resulting in the evacuation of 23 children with cardiac or respiratory

conditions. This commenced within 2 minutes. The LFB were on the scene within 6 minutes of the smoke alarm sounding.

At 08:40 an oxygen cylinder exploded in a side room, causing the ceiling to collapse. Later, four firefighters were treated for minor affects from smoke inhalation. Evacuation continued with the initial movement of children to local safe areas of the hospital. Some were subsequently evacuated to alternative places of safety within the hospital site, including the parents hotel across the road. Many of these children had specialist equipment such as drips, infusions and non-invasive ventilators that made their evacuation challenging.

As a consequence of fighting the fire water soon leaked to the floors below causing the entire block, including wards, radiology, ICH labs and the admissions unit to be evacuated. The major incident plan was enacted and all elective surgeries were cancelled, and emergency NHS services diverted. Most of the block was reopened within 1 to 2 days of the incident. The ward affected by the fire and subsequent explosion reopened six months later.





## 5.6 Issues and lessons identified from the Great Ormond Street Hospital fire

### 5.6.1 Communications

The event occurred at the start of the working day which enabled staff, patients and their relatives, where possible, to be held off site for their safety in a nearby garden square.

GOSH used e-mail to communicate the incident throughout the hospital. The advantage of this was that staff with BlackBerries had access to their e-mail and could pick up details of the incident and inform those waiting outside. One problem identified with BlackBerries was that Microsoft Word attachments could not be opened in some cases so information could not always be extracted.

Communication worked well during the incident at GOSH. Mobile telephones were most commonly used along with e-mail. Hand-held radios were used, but staff not used to using them tended to use them like mobile telephones which became confusing.

During the post incident staff briefing, members of staff from areas of the hospital not directly involved in the incident had concerns regarding the level of communication they received – some staff members were unaware that there was an ongoing incident. This was partly because the incident was very localised and did not affect all buildings. For this reason it was not felt that there was a special need to inform all members of staff throughout the hospital at that point in time using communication means other than e-mail cascades. Communication between staff involved in managing the incident was good.

### 5.6.2 Command and control

The major incident plan worked well. The on-call duty manager, on-call executive and the medical lead followed the plan to the letter. This discipline helped prevent further problems and allowed complete co-ordination of effort.

The control room had to be moved from the location highlighted in the plan as this was inaccessible following the fire and explosion. Plans have been modified to include an alternative control room location. Another critically important aspect of the plan that worked well was the lock down of the hospital. This meant that staff, visitors and patients who were not already within the building were prevented from entering the site. This helped with assessment of the situation allowing control to be maintained and prevented further safety issues from occurring.

Another particular strength of the GOSH plan was the identification of a designated loggist, recording each action within silver command.

### 5.6.3 Emergency plan

A number of changes have been made to the major incident plan since the incident. Additional control room sites have been



identified and a vertical evacuation plan has been added. Shelter sites were previously not identified and the success of using the parents hotel site has now been included.

This evacuation did not require further resources from outside GOSH but consideration is being made to identify other agencies such as UCLH and the National Hospital for Neurological Diseases, Queen Square together with Camden Council.

## CONTROL ROOM

The control room had to be moved from the location highlighted in the plan, as this was inaccessible following the fire and explosion. Plans have been modified to include an alternative control room location.

### 5.6.4 Managing the media

GOSH have a designated press team who facilitated media handling during the evacuation. Police and externally contracted security staff at each entrance kept the media out of the building and all enquiries went through the press office.

### 5.6.5 Patient movement

The major incident plan recommends horizontal evacuation of patients in the first instance. Due to the effects of the fire, smoke and water it was not possible to horizontally evacuate all patients, therefore vertical evacuation commenced. Patients with the most complex equipment had been moved horizontally into the neighbouring buildings before the ceiling collapsed. This was fortunate as vertical evacuation of patients with special cardiac equipment would have been very challenging. Other staff stayed and sorted children's medical equipment before they were moved vertically, with staff and parents carrying the children down stairs. This allowed smoother transfer of patients whilst also minimising the risk of death.

Children were evacuated to different areas of the hospital including the parents hotel across the road. This has now been identified as a good site to use in future evacuations. One particular issue identified during the movement of children was notes were left behind on the ward and electronic records were not kept. In addition, when children were moved to different areas of the hospital they were not tracked and staff had to telephone other areas to locate them. This was particularly important when informing parents where their children were.





## TRAINING

Prior to the incident, training had been held for key staff including tabletop simulations. This training was enhanced when ward sisters attended an evacuation training exercise at Heathrow airport.

Staff and parents minimised mixing of infectious and immuno-compromised patients as much as possible, but this was difficult with the facilities available. This assisted in the sorting of patients with different medical complaints and the new plan attempts to make this process smoother.

One particular challenge associated with the cancellation of elective surgery was that those parents and children evacuated from the admissions unit were allowed to go home – however, in the rush to evacuate, they had appropriately left their bags and keys in the building so could not return home. Eventually, staff accompanied by firefighters returned to the building, where it was safe to do so, and collected belongings so families and staff could return home.

### 5.6.6 Staff

Staff involved in the GOSH fire managed the incident with great control. On the ward where the incident occurred staff made the decision to evacuate within minutes. They were disciplined when moving patients from the ward, avoiding panic and making sure that essential equipment was managed and children were safe before moving. There is a very high staff to patient ratio at GOSH, with staff caring for the same children for prolonged periods of time, initially facilitating the movement of patients. Following the incident some staff found it hard to find their patients in order to care for them, which temporarily increased anxiety.

Staff at GOSH worked very hard to reassure families who were outside the hospital. This included grieving parents wishing to access mortuary services or parents whose children were in the paediatric intensive care unit (PICU). Staff worked hard to reunite families during the incident, wherever safe and possible.

After the event, staff were offered one-to-one and group debriefing sessions with a confidential professional debriefing service. In addition a whole staff meeting was held a week later. This was well attended by all departments of the hospital, however it was subsequently felt that a separate session should have been offered for those directly involved in the incident as it was difficult to hear their viewpoint with so many attendees.

### 5.6.7 Training

Prior to the incident training, including tabletop simulations, had been held for key staff. This training was enhanced when ward sisters attended an evacuation training exercise at Heathrow airport. Patient safety walk arounds, run by the senior executives, now include questions for staff and parents on fire safety and the evacuation plan.



15th October 2008

# CHASE FARM SITE

### **5.7 Event 4: The Chase Farm Hospital site of Barnet, Enfield and Haringey Mental Health NHS Trust fire – medium secure psychiatric unit, Wednesday 15th October 2008**

#### **5.7.1 Context**

The Chase Farm Hospital site in North London hosts the services of three NHS trusts; Barnet & Chase Farm Hospital Trust, NHS London provider arm community services and Barnet, Enfield and Haringey Mental Health NHS Trust (BEHMHT). The part of the hospital site affected by the fire was Camlet 3, a medium secure psychiatric service, managed by BEHMHT, with an inpatient capacity of 70 inpatients. There are 151 forensic inpatient beds in total. The patient population is comprised of referrals who are subject to criminal justice processes and suffering from mental illnesses. The majority are held under a Ministry of Justice order which can only be removed via a judicial

tribunal process. It is the second largest medium secure unit in London, and one of only six in the country. It is almost always at full capacity. The building involved in the fire was constructed in 2004, and has three floors.

#### **5.7.2 Event**

Around 18.35 on 15th October 2008, the fire alarms sounded in Camlet 3.<sup>9</sup> At the same time the Borough Director of Mental Health Services noticed the roof of the building was alight. The LFB arrived within 10 minutes. The fire spread rapidly and patients were initially moved to the opposite end of the building within minutes of the fire being discovered. A major incident was declared within one hour, and a second evacuation of further patients to alternate premises was completed within 90 minutes.

The fire continued throughout the night, requiring 20 fire appliances and over 100 firefighters to gain control. It was extinguished by around 08.00 the following day.

## 5.8 Issues and lessons identified from the Barnet, Enfield and Haringey Mental Health NHS Trust fire

### 5.8.1 Major incident plan

The major incident plan for the hospital was activated within a short period of the alarms sounding and the fire being discovered. This provided the psychiatric unit with support from an incident team from the acute hospital. They came equipped with tabards, which were vital in identifying people as the incident progressed.

When activating the major incident plan, staff were telephoned individually to alert them to the situation. This was time consuming at the start of an incident, when a lot of information was being collected and decisions being made in a short space of time. It is important that there is a rapid and effective cascade system for contacting essential staff so that the process happens with as minimal interference as possible.

### 5.8.2 Evacuation of psychiatric units and contingency plans

The evacuation and sheltering of psychiatric unit patients raises different challenges in comparison to that of a general hospital. The unit involved on the Chase Farm site housed patients detained under a Ministry of Justice order. The major incident plans for such facilities often only consider horizontal evacuation as standard procedure. Some of the patients at Camlet 3 had

to be evacuated to an appropriate shelter, outside the normal level of security, maintaining an environment consistent with the Ministry of Justice order. Prior to the fire, there were no alternative plans outlining where these patients could take shelter outside the primary building. Staff began telephoning other secure units but there were no clear pathways to follow. Ultimately the final decision would have involved the Ministry of Justice and may have resulted in patients returning to prison or police custody if suitable facilities could not be found. In this situation the BEHMHMT team were able to shelter the patients in a nearby gymnasium and the main mental health unit building (general psychiatry) with the support of the police to ensure the facility was secure to the standard required for these patients. This temporary measure provided the vital stop gap between evacuation and the transfer to suitable interim long term facilities.

It is important that major incident plans consider alternative shelter sites for a particularly vulnerable group of patients. These concerns are not limited to patients detained under a Ministry of Justice order as in this incident at the Chase Farm site, but also include patients detained under the Mental Health Act. These patients, particularly when acutely unwell, can require intensive nursing and medical input and may well need a high level of supervision to keep them safe and settled during an emergency evacuation. Where possible, clear alternative pathways such as off site evacuation should be identified for the evacuation, sheltering and safe staffing of mental health facilities during a major incident.

### 5.8.3 Electricity supply

One of the consequences of the fire was the interruption of electricity to the burning building and adjacent perimeter areas, which was turned off for safety reasons. This also resulted in the loss of the lights to the car park, where most of the response team were situated. In the middle of the night staff had to pick their way in the dark through fire hoses and debris. Support was provided from the media who eventually illuminated the area with arc lights, but preplanning could have prevented this situation.

### 5.8.4 Staff

NHS teamwork was vitally important in the successful management of the incident. Staff acted as necessary, doing what was asked of them without question, and were keen to assist by whatever means possible. There were some difficulties obtaining staff later in the incident and there were no contingency plans in place for the provision of additional staff. However some members of staff saw the incident on television and arrived to help.

Distress to staff was later discussed as an issue which had not previously been considered. Staff lost important personal belongings in the fire, and the effect of such an incident on staff must not be underestimated.

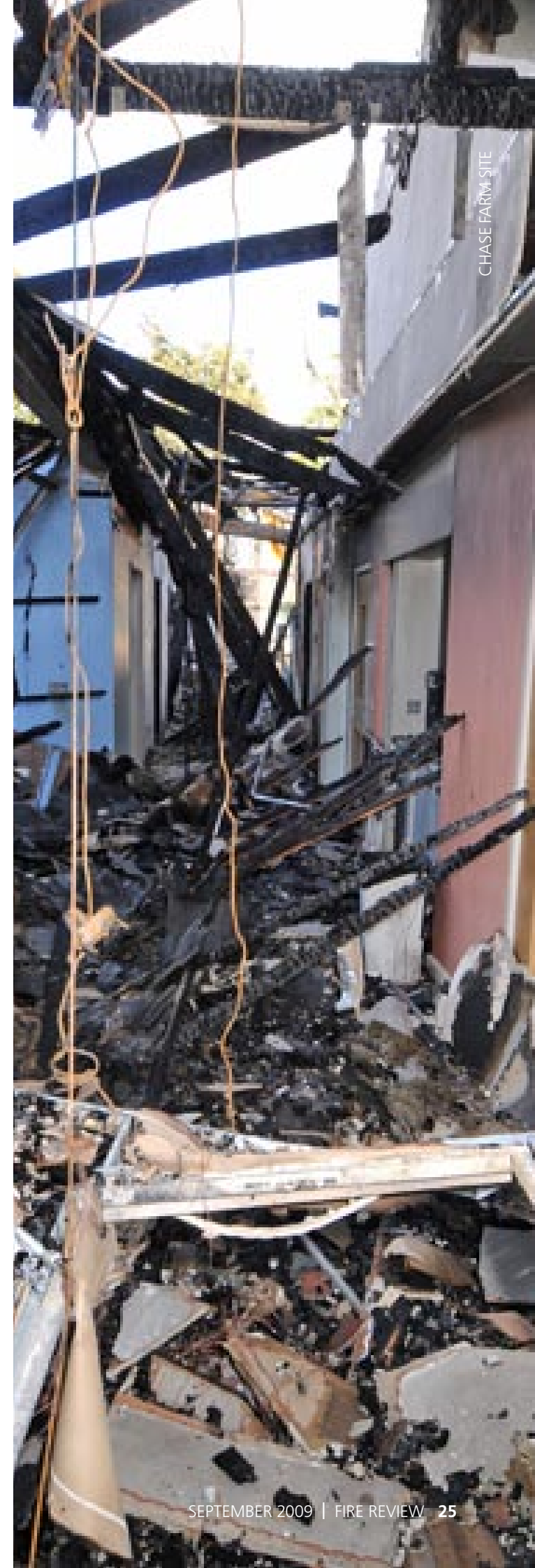
### 5.8.5 Media communications

One of the biggest issues at the Chase Farm site incident was the involvement and control of the media, particularly due to the nature of the patients involved. The media interest continued throughout the night.

TV and radio teams gained access to the site despite the police cordons, due to multiple entrances. Each news team wanted individual statements, and unfortunately joint statements with the fire and police services were not issued, which would have significantly decreased the workload.

## MEDIA

One of the biggest issues at the Chase Farm site incident was the involvement and control of the media, particularly due to the nature of the patients involved. The media interest continued throughout the night.





One of the incident managers inadvertently became the press officer for the incident. Although prior media training was described as being helpful, BEHMHMT staff at the Chase Farm site stated they felt that they would have appreciated more support with managing the media response. A more robust media approach is clearly required, and it was suggested that a potential solution would be for NHS London to provide a press officer at the site for any major incident attracting significant amounts of media interest. This support had been afforded to the GOSH event when they requested it. An on-call communication system for BEHMHMT would also been of benefit. Medical staff are rarely comfortable providing media statements and in the stress of an incident would undoubtedly be grateful with assistance in handling the presence of the media.

#### 5.8.6 Communications

Mobile telephones were the main form of communication during the incident at the BEHMHMT incident. These were in constant use which created the issue of keeping them charged throughout the prolonged incident. The importance of having emergency back up communication systems cannot be underestimated.

#### 5.8.7 Reaction to the incident

It was clear when talking to the staff at BEHMHMT that prior to the incident the possibility of the complete evacuation of a medium secure psychiatric unit was considered low.

One positive response to the fire was that within a short space of time the other five medium secure units in the country ran tabletop exercises on how their hospital would react to a similar situation.

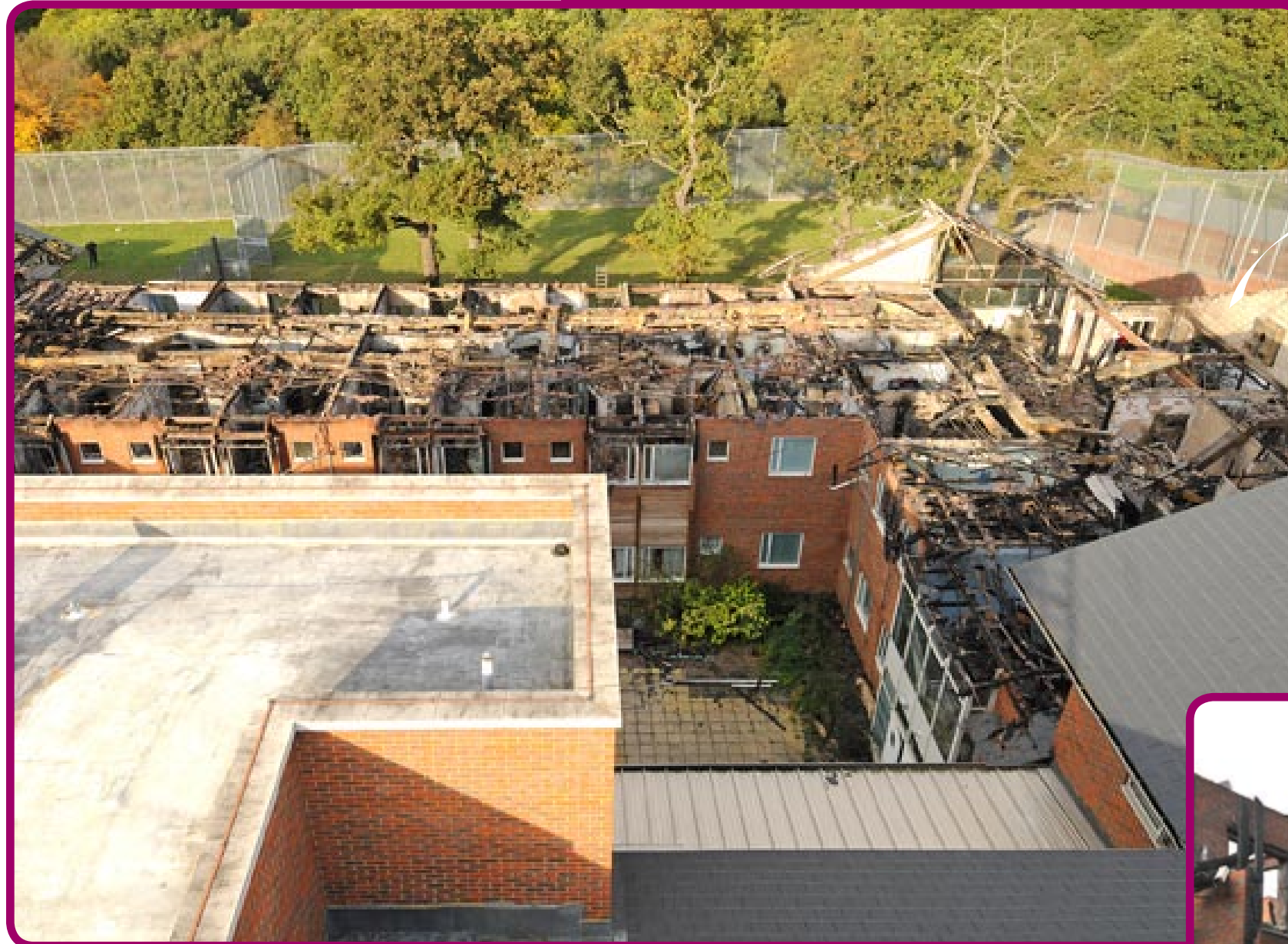
The fire has also resulted in major changes in the way staff respond to fire alarms at BEHMHMT. In a busy hospital building it is not unusual to hear fire alarms sound either intermittently or continuously. Rightly or wrongly these are often ignored, and staff continue with their daily work. It was noted that at BEHMHMT staff now respond differently to any fire alarm, and are much more aware of evacuation routes and muster points. They are no longer complacent when they hear fire alarms, as personal experience has shown them that real fires can and do occur in hospital facilities.

## STAFF

NHS teamwork was vitally important in the successful management of the incident. Staff acted as necessary, doing what was asked of them, without question, and were keen to assist by whatever means possible.

## REACTION

One positive response to the fire was that within a short space of time the other five medium secure units in the country ran tabletop exercises on how their hospital would react to a similar situation.



11th February 2009

# NORTHWICK PARK

### 5.10 Issues and lessons identified in the Northwick Park Hospital fire

#### 5.9.1 Context

Northwick Park Hospital (NPH) is a 600 inpatient district general hospital in North West London. It occupies the same site as St Marks' Hospital (SMH) – a world renowned tertiary referral centre for gastrointestinal (GI) surgery and medicine. Along with Central Middlesex Hospital (CMH) in Harlesden, SMH and NPH make up North West London Hospitals NHS Trust with approximately 800 beds. The trust serves a population of 500,000 in the Brent and Harrow areas.

NPH provides a wide range of acute general services including cardiology, gastrointestinal medicine, respiratory medicine, infectious diseases, elderly care and an intensive care unit. It also houses a maternity unit and a spectrum of surgical and paediatric services, including a neo-natal intensive care unit. In addition NPH provides a range of outpatient services including renal dialysis and chemotherapy, as well as regional OMFS and rehabilitation services. Facilities for private patients are located on site, and there is a clinical trials unit housing volunteers.

#### 5.9.2 The event

During the early afternoon of Wednesday 11th February 2009, a fire broke out in an electrical plant room requiring the partial evacuation of the hospital.<sup>10</sup> The room is situated underneath one wing of the main ward block. The hospital was running at over 95% bed occupancy,

including critical care areas. As fire alarms sounded at 14.35, smoke was already escaping over the fire doors and funnelling up the side of the ten storey building, past several patient areas. The effect of seeing the smoke plumes caused anxiety in a number of clinical areas. Smoke also spread through vertical service ducts and across landings into parts of two other wings in the ward block.

An internal major incident was declared within 15 minutes of the fire alarms activating and staff had already commenced horizontal evacuation of certain clinical areas as a response to smoke. Shortly afterwards, an evacuation decision was made for all levels in St Mark's, which is situated next to NPH with connecting corridors; no inpatients were involved. The major incident response was also extended to include CMH, and all GP referrals and paediatric patients were transferred to this site.

The LFB gained control of the fire by 17.20 the same day. There were however continuing implications on the heating, electrical, and water supply to the hospital. This, coupled with the large amount of smoke that had entered clinical areas, left several sections of the building unusable. Normal services at NPH resumed gradually over the subsequent weekend. However theatre capacity was reduced and elective, children's and rehabilitation inpatient beds were displaced to CMH and Willesden Hospitals where they remained for several months after the fire, while a new substation was built. This became fully operational again when temporary generators were removed from the site at the end of May 2009.



## 5.10 Issues and lessons identified following the Northwick Park Hospital fire

### 5.10.1 Command and control

A fire that occurred in a neighbouring university the previous year meant that the management staff at NPH had 'learnt a lot about command and control'. For this incident they clearly identified one chief from the outset, making it clear to other staff who they could approach when decisions needed to be made. They also identified the need to use tabards for internal major incidents, which enable the easy identification of individuals in a busy control room in the heat of an incident. There was a need for an operational decision maker and a clinical decision maker so that assessments of the needs of patients could be made in an informed manner.

### 5.10.2 Communications

Communication was felt to be one of the key areas for concern during the response to the fire. The first hour of communications between staff, different command levels and emergency services was described as one of the hardest. One particular factor highlighted was that hospital management did not have a clear idea of the exact responsibilities of other agencies involved, and clarification was needed on the day about who the key decision makers were within the emergency services, as the Trust received mixed messages. To improve these links hospital staff subsequently became involved in LFB and LAS training to bring this information back into senior team.

The cascade of the declaration of a major incident to hospital staff can also breakdown. It is particularly important to keep up to date contact lists of those who need to be alerted in the event of an incident. Equally important is to make sure switchboard have an efficient method of cascading this information and that there is a backup alternative. Northwick Park found themselves in the situation of holding out of date contact numbers and having to call people individually on their mobile telephones. This was obviously time consuming, particularly around the start of the incident.

A third issue identified was the naming of levels and areas in the hospital. The maintenance teams referred to blocks of the building differently to other hospital staff. Many hospitals also have confusing methods of naming floors/wards e.g. level 1 may not actually be the first floor. It is important that this is clarified early with emergency services particularly when they may need to search for missing persons and give complex directions to each other. Maps to the whole site should be stored securely at the entrance to the site for the use of the emergency services. These should be A3 sized and laminated.

### 5.10.3 Training

Important changes were made in staff training after the incident. Fire training at Northwick Park Hospital has been completely updated. Approximately one hundred staff have subsequently been trained as fire wardens. Each department has their own departmental training, including medical staff. They have also run several tabletop exercises going over other incidents since the fire to refine policy.

### 5.10.4 Major incident plan

There have been subsequent drives to improve staff knowledge of Northwick Park's major incident and internal incident plans. On the day of the fire the incident response was coordinated by one of the EPO's who knew the major incident plan in detail and could work closely with the Chief Executive. Subsequently the major incident action cards have been updated to include more detail allowing somebody with less experience to manage a similar incident, at least in the initial stages.

There were problems early in the response as up-to-date hospital floor plans were not readily available to fire teams or those managing the hospital response. This has since been corrected but is an important point to highlight to other facilities, particularly as building and renovation work is a continual process for many establishments.

### 5.10.5 Patient and staff tracking

There was no system in place for the tracking of patients. Patient tracking was carried out by physically sending individuals into the patient sheltering areas to complete a roll call. This took approximately 90 minutes to complete.

Tracking of staff provided its own set of challenges. Staff in charge of wards and treatment areas were initially requested to bring rotas so that staff could be accounted for. It was however difficult to ascertain if all staff were safe, particularly with bank and research staff. New plans are now in place for the person in charge to keep track of their own areas.

### 5.10.6 Teamwork

The goodwill of NHS staff is never more apparent than in a crisis. The teamwork shown by staff was phenomenal and contributed directly to the success of the evacuation. Staff were flexible and accommodating, many offering to stay on past their contracted hours. Many available staff, from other areas were reassigned to wards. Other staff were directed to CMH to help cope with the increased workload. Even former employees contacted switchboard offering to help.

Since the incident a staff questionnaire has been compiled looking at each individual's home circumstances and responsibilities. This information is now held on a database so that should such a scenario ever occur again senior staff will have a clear idea of exactly who may be available at short notice to assist.

### 5.10.7 Patient evacuation

The fire at NPH necessitated partial evacuation of the hospital. 123 patients were evacuated in 23 minutes by a variety of methods. This included a 20 bed rehabilitation unit housing young brain injured and immobile patients, and a coronary care unit. ITU were ready with a transfer team by each bed but did not have to evacuate. No staff or patients died. It was noted however that a full evacuation would have been more challenging due to lack of essential equipment e.g. ski sheets under every bed. It is also important that staff are trained and comfortable in using such equipment. Their first experience of using such equipment should not be in the heat of the moment whilst trying to evacuate patients during a real incident. A full hospital evacuation is

sometimes considered an impossible occurrence – as proved by events at Northwick Park, it is a real possibility and incident plans should reflect these extreme circumstances.

Quite correctly, LFB made it clear that they were "just there to fight the fire." For approximately one hour, the decision on whether or not to undertake a full evacuation was deliberated and left to hospital incident managers, with advice from the LFB who were struggling to control the fire. This was understandably a difficult decision for managers to make and it is important that they are supported fully in whatever decision they come to.

Staff were aware of evacuation routes due to their fire training but on the day it was found that a number of routes were partially obstructed by chairs and clutter. It is critical that these areas are regularly checked and cleared as required by law and improved monitoring and security have been put in place. A number of illicit smoking areas were identified and these have been removed, and staff reminded of the disciplinary and legal issues involved in failing to observe the Trust's strict no smoking policy, which bans smoking in the grounds as well as on the premises.

## TEAMWORK

The teamwork shown by staff was phenomenal and contributed directly to the success of the evacuation. Staff were flexible and accommodating, many offering to stay on past their contracted hours. Many available staff, from other areas were reassigned to wards. Even former employees contacted switchboard offering to help.



6. DISCUSSION

These five hospital fires were very disruptive events for patients, their visitors and staff. The incredible teamwork displayed by all NHS staff involved with emergency service responders allowed the successful management of each event without harm to any patient or staff member. Careful analysis of these hospital events provides excellent examples of planning and response whilst also highlighting lessons pertinent to every NHS facility.

This study is the first example of a published case series analysing hospital evacuations in the UK. Four of the fires resulted in the evacuation of patients, staff and visitors either to other areas of the hospital or to an entirely different location whilst the fifth caused disruption of critical services. These events occurred in five very different types of hospital – a large district general hospital, a teaching hospital, a specialist cancer centre, a tertiary referral paediatric centre, and a Ministry of Justice medium secure mental health facility, within one of the busiest cities in the world, London. It is remarkable that despite the diversity in nature, location and age of these facilities, all were vulnerable to fire and experienced similar challenges in dealing with evacuation.

A semi-structured interview technique was used to collect data. This was based on the questionnaire in Appendix 1 which was the first adaptation of a tool developed by Schultz et al for use in earthquakes. The interviews allowed documentation of the hospital evacuation events with analysis of hospital preparedness before, during and after evacuations. It was found that the questionnaire covered most aspects of hospital evacuation in adequate detail, providing a framework around which our interviewees could talk through the evacuation and share their own experiences.

A comprehensive list of lessons identified is contained in Appendix 2, along with possible solutions. It was apparent that there were a number of issues experienced by each of the five hospitals. These included communication, command and control structure, staff training and planning for evacuation. Other issues are included and relate to patient transport and sheltering sites. Some challenges were specific to the institution involved – such

as maintaining security of patients on a forensic ward (Camlet 3, the Chase Farm site of BEHMHT) and providing highly specialised care to cancer (RMH) or paediatric (GOSH) patients.

Fire events can cause significant health protection issues arising from products of combustion generated. Potentially the risks do not only affect those inside each hospital but may also impact upon responders and members of the public present outside. Fortunately none of these events raised significant health protection issues but all raised issues about how to obtain information about what material was burning. It remains clear that the need to understand the hazards and risks under these circumstances requires knowledgeable understanding of these risks by hospital staff and planners and support from experts including those at the Health Protection Agency.

This study has demonstrated the complex nature of hospital evacuation and the need for comprehensive planning. However it is crucially important that training of all staff accompanies the development of such plans. This is essential in ensuring the success of evacuation plans allowing patients to be moved safely and efficiently whilst also minimising the distress experienced by members of staff in an incredibly stressful situation. To ensure the success of plans and training is the need to carry out practical simulations. This will allow problems and gaps to be identified in advance of a real situation which warrants an evacuation. Simulations and training will also strengthen the skills of staff who may be required to decide on whether or not evacuation is appropriate.

Once plans have been developed they need to be assessed against real life case studies such as those described by this study. The challenges identified must be channelled into developing policy and need to be shared between all healthcare facilities.

Another essential aspect of planning is to understand why evacuations happen so that the need for subsequent evacuations can be minimised. This will be important when ensuring that hospitals and facilities built in the future take into account structural systems for evacuation.

The Department of Health have developed guidance on evacuation and sheltering for health sector settings<sup>6</sup> This includes an outline of aspects which must be covered by an evacuation plan including training and sheltering, this report may assist this process.

In conclusion, this study has highlighted the importance of analysing each case of hospital evacuation to identify issues of concern as vital good practice. In addition it is important to highlight the generosity and openness shown by each member of NHS staff interviewed regarding each hospital fire. This study also outlines opportunities for allied agencies including the Health Protection Agency to contribute to the process of assessment and evaluation of hospital evacuations highlighting the supportive role that can be provided to NHS partners during such incidents.

Finally this report emphasises the importance of incorporating information obtained from analysed cases into overarching guidance from the Department of Health. This work also feeds into the WHO campaign for safer hospitals and the Global Disaster Risk Reduction campaign for safer hospitals by 2015<sup>1,11</sup>

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APPENDIX 1

Questionnaire for the fire incident data collection.  
Adapted from Schultz et al, with their help and consent.

I. HOSPITAL DEMOGRAPHIC INFORMATION

- 1. How many beds did your hospital have at the time of the fire?
- 2. How many patients were in the hospital at that time?
- 3. How many levels does your hospital have?
- 4. How many lifts does your hospital have?
- 5. How many staircases does your hospital have?
- 6. Does your facility have special care facilities (ICU, CCU, PICU, etc)?  
If so, what are the units' capacities and how many patients were in these units at the time of the fire?

Unit	Capacity	No. of patients

- 7. What year was construction completed on the hospital?
- 8. What role does the hospital fill in the community? (eg trauma/paediatric/DGH)
- 9. At the time of the incident were there any major staffing issues?

II. MAJOR INCIDENT PLAN CHARACTERISTICS

- 10. Does your major incident plan address horizontal and vertical evacuation within your hospital?  
☐ Yes, this is covered in the plan.  
☐ No, but this is written up as a procedure separate from the plan.  
☐ No, the issue isn't addressed.
- 11. Does your major incident plan address patient evacuation out of your hospital?  
☐ Yes, this is covered in the plan.  
☐ No, but this is written up as a procedure separate from the plan.  
☐ No, the issue isn't addressed.
- 12. With respect to the development of your major incident/evacuation plan or critiques of your plan, which other agencies have been involved?  
☐ London Ambulance Service      ☐ PCT  
☐ Fire Brigade      ☐ SHA  
☐ Police      ☐ Other eg Voluntary organisations – St John/WRVS/EA
- 13. Do you have a shelter plan for evacuated patients?

III. IMPACT OF THE FIRE

- 14. Please indicate specific fire consequences for your hospital.  
☐ Loss of electric power?      ☐ Loss of medical gases (oxygen, etc)?  
☐ Approximately how many hours?      ☐ Equipment, supplies, or records inaccessible?  
☐ Were backup generators available?      ☐ Loss of telephone or other communication capacity – what was used instead?  
☐ Structural damage to hospital?        
☐ Non-structural damage to hospital?        
☐ Hazardous chemical incidents?      ☐ Broken windows, fallen shelves?  
☐ Loss of water?      ☐ Other (specify):  
☐ Natural gas leaks without fires?

15. Overall, taking into account all types of damage, how would you rate the impact of the fire on the hospital's ability to function? Each member of the group should record the number which reflects their view and list their job title next to their response.

1	2	3	4	5
No impact		Some impact		Significant impact

- 16. Were patient evacuations:  
☐ Within the hospital to safe areas?      How many?  
☐ To other acute care hospitals?      How many?  
☐ Discharged to home?      How many?  
☐ To Nursing homes?      How many?  
☐ To other facilities (please specify)?      How many?

- 17. Were multiple evacuations or movements needed?  
☐ Yes, some patients moved once inside the hospital were moved again due to changes in building safety, equipment availability, staff availability, medical concerns, or other reasons.  
☐ Yes, same patients moved inside the hospital had to be subsequently relocated to another hospital or facility, or discharged  
☐ Yes, different areas were evacuated at different times, so different patients were moved at different times  
☐ No, a single area was targeted and evacuated and no other movements of the same or different patients was needed

- 18. Did your emergency facility continue to accept and treat patients while you were evacuating (ambulance patients, walk-in patients, etc)? Please consider A+E and primary care facilities eg OOH/walk in centres.  
☐ Yes  
☐ Yes, but with some restrictions – please expand  
☐ No

- 19. Did your hospital require extra supplies of any medical equipment/blankets/food/water?  
☐ No    ☐ Yes

If yes from where were these obtained?

- 20. Did the fire require rearranging of any staff shifts/allocations and how was this decided?

IV. HOSPITAL DECISION-MAKING AND INCIDENT COMMAND

- 21. After the outbreak of the fire, approximately when was your hospital's written major incident plan officially activated?  
☐ No official activation      ☐ <6 hours  
☐ <15 minutes      ☐ <24 hours  
☐ <1 hour      ☐ >24 hours
- 22. Who is authorized by the major incident plan to activate it? TITLE:  
  
Who actually activated the plan? TITLE:  
  
Is a person specified as an ALTERNATE in the plan to activate it?
- 23. Does the written plan, itself, specify criteria on which to base the decision to activate the major incident plan?  
☐ Yes, the principle criteria are:  
☐ city, county or region emergency declaration  
☐ environmental conditions  
☐ hospital conditions  
☐ other:  
☐ Yes, but criteria are not precise; the assessment is left to the decision-maker.  
☐ No criteria are written into the plan (skip to Question #28).

24. At the time the plan was activated, do you believe conditions justified its activation in terms of the written criteria?

☐ Yes

☐ No, activation was based on incomplete information.

☐ No, activation was based on incorrect damage assessment.

☐ No, official activated the plan as a precautionary measure.

☐ No. Specify other: .....

25. Was a damage assessment conducted at your hospital during the fire?

☐ Yes, by hospital staff.

How many hours after major incident plan activation did this occur?

☐ Yes, by city or regional inspectors.

How many hours after major incident plan activation did this occur?

☐ Yes, by a private inspector paid by hospital.

How many hours after major incident plan activation did this occur?

☐ No, staff handled obvious problems to return functionality.

☐ No, no assessment was needed.

26. Approximately how long passed before the evacuation decision was made? .....

27. Who made the final decision to evacuate patients? TITLE: .....

28. Is this the same person assigned that responsibility in your written plan?

☐ Yes

☐ No, it was a person specified as an alternate.

☐ No, it was a person not mentioned in the plan.

☐ No, evacuation is mentioned in the plan but no person is assigned the responsibility.

☐ No, evacuation is not addressed in the plan.

29. On what criteria were decisions to evacuate patients based?

☐ Proximity to fire

☐ Medical condition of patients?

☐ Structural damage to patient areas?

☐ Loss of water supply?

☐ Loss of electricity/insufficient power?

☐ Natural gas leak or other hazardous chemical incident?

☐ Medical care delivery adequacy (loss of supplies, oxygen, staff shortages, etc.)?

☐ Smoke

☐ Other: .....

30. Were any problems or delays encountered in obtaining the information needed to make the evacuation decision?

☐ Yes, the extent of building damage was not clear.

☐ Yes, communication systems did not function adequately.

☐ Yes, accurate time estimates for restoration of power, water, etc were difficult to obtain.

☐ Yes, other – please specify: .....

☐ No

31. Overall, what factors governed the decision to evacuate patients to another medical facility rather than move them within your own?

☐ Proximity to smoke/fire

☐ Medical condition of the patient.

☐ Loss of or reduced medical service capacity (unavailability of equipment, medicines, medical gasses, etc.).

☐ Shortage of staff to deliver care.

☐ Loss of electricity/water/sewer capacity.

☐ Structural damage to critical areas of the hospital.

☐ Non-structural damage to critical areas of the hospital.

☐ Concern with further structural or other damage due to smoke/fire

☐ Hospital was at capacity so moving patients elsewhere was the only option.

☐ Other: .....

V. MOVEMENT OF PATIENTS WITHIN THE FACILITY

32. With regard to any evacuation efforts, what triage strategy was used to determine movement priority?

☐ Standard medical concerns.

☐ Some combination of the above.

☐ Patient location in area of danger – due to fire/smoke.

☐ What?

☐ Patient location in area without electricity/water.

☐ Other: .....

33. Any patients triaged as unsalvageable? .....

34. Were any of the specialist units evacuated? If so, how many patients were moved? Describe any problems.

Unit	No. of patients evacuated	Problems
.....		
.....		
.....		
.....		

35. Did you identify any morbidity or mortality associated with the evacuation process?

.....

36. With regard to physical movement of patients, how was this accomplished? Indicate all that apply.

☐ Nurses

☐ Other staff

☐ Physicians

☐ Volunteers

☐ Orderlies

☐ Other: .....

37. How was patient movement accomplished?

☐ Walking patient to destination?

☐ Carried?

☐ Moving patient in bed?

☐ Evacuation slide?

☐ Moving patient in wheelchair?

☐ Other: .....

☐ Moving patient on trolley?

38. Were evacuation routes posted or otherwise part of evacuation planning?

☐ Yes, and none were blocked.

☐ Yes, but some blocked (or too dark, etc) so rerouting was needed.

☐ No, routes not established in advance, but no movement problems arose.

☐ No, routes not established in advance and this resulted in some delay of movement.

39. Did evacuations involve the use of stairways and lifts?

☐ Yes, both used.

☐ Yes, stairways were used exclusively because lifts not working.

☐ Yes, stairways used exclusively because it was deemed not prudent (too risky) to use lifts, even though they worked.

☐ No, movements were confined to a single level (horizontal).

40. Overall, were any special impediments to movement encountered in the process of moving patients within your hospital?

☐ Yes, shortage of personnel to move patients.

☐ Yes, lifts didn’t function or could not be used safely.

☐ Yes, stairways were blocked, damaged, dark, or otherwise Impassable.

☐ Yes, not enough stairways to move patients quickly.

☐ Yes, not enough lifts to move patients quickly.

☐ Yes, hallways, doorways impassable due to fire or fire damage.

☐ Yes, shortage of equipment on (in) which to move patients.

☐ Yes, equipment, medical records, medications moved with patients slowed the process down.

☐ Yes, tracking patients moved within the hospital was difficult.

☐ Yes, other: .....

41. What changes in procedure, equipment, or hospital layout could make future movements of patients within the hospital go more smoothly and quickly?

.....



42. Who managed the media response to the event? .....
43. Was this person pre designated or assigned on the day? .....

VI. MOVEMENT OF PATIENTS TO OTHER FACILITIES

44. Once the need to move patients to other medical facilities was determined, how were alternate facilities chosen?
- ☐ Facilities that were geographically closest.
  - ☐ Facilities known to have specialized equipment or capacity.
  - ☐ Facilities thought to have space to take patients.
  - ☐ Contacts were made with facilities thought to be outside the impact area.
  - ☐ Other: .....
45. Were they contacted before transfer? Was this discussed in the major incident plan? .....
46. Would additional concurrent information about the status of surrounding hospitals have been helpful? .....
47. When patients were transferred to other medical facilities, how were they actually moved? Indicate all that apply.
- |  |   |
|--|---|
| <input type="checkbox"/> Ambulances                              | <input type="checkbox"/> Personal vehicles        |
| <input type="checkbox"/> Public safety vehicles (police, fire)   | <input type="checkbox"/> Buses obtained privately |
| <input type="checkbox"/> Public buses                            | <input type="checkbox"/> Helicopters              |
| <input type="checkbox"/> Hospital-owned vehicles (non-emergency) | <input type="checkbox"/> Other. What? .....       |
48. How was transportation arranged?
- ☐ Prearranged in the major incident plan.
  - ☐ Not prearranged in major incident plan.
  - ☐ Hospital staff was aided by outside agency. Who? .....
  - ☐ Transportation arranged by agency designated in major incident plan.
  - ☐ Transportation arranged by agency not designated in major incident plan.
49. Were medical records, equipment and/or medications moved with patients transferred to other medical facilities?
- |  |   |
|--|---|
| <input type="checkbox"/> Yes, as required in our major incident plan.        | <input type="checkbox"/> No, but it is required in our major incident plan.     |
| <input type="checkbox"/> Yes, but isn't required in our major incident plan. | <input type="checkbox"/> No, but it is not required in our major incident plan. |
50. Were any special problems encountered in patients evacuated to another medical facility?
- ☐ Long delays were involved while patients waited for transport.
  - ☐ Extra personnel were needed to oversee patients waiting for transport.
  - ☐ Medical supervision was needed for patients awaiting transport and during transport.
  - ☐ Movement of equipment, medical records and/or medications with patients slowed the process down.
  - ☐ Shortage of equipment on (in) which to move patients.
  - ☐ Shortage of vehicles for transport slowed process down.
  - ☐ Problems in tracking patients who were relocated off site.
  - ☐ Other: .....
51. Overall, what changes in procedure, equipment, or hospital layout would make future evacuations of patients to other medical facilities go more smoothly and quickly? .....
52. Emergency procedures and strategies are almost always described in written major incident plans, but almost always some portion of the actual response must be improvised by staff. Please estimate the proportion of your response to the fire event that had to be improvised by staff. Each member of the group should record the number which reflects their view and list their job title next to their response.

1	2	3	4	5
Most issues not addressed in plan	Some issues not addressed		Covered virtually everything	

VII. HOSPITAL RECOVERY (LESSONS IDENTIFIED)

53. Since the fire, has your hospital held meetings to critique the overall response? (answers opposite page)

- ☐ Yes
- ☐ Yes, and we have begun making specific changes to adapt the major incident plan to our experiences.
- ☐ Specify which changes: .....
- ☐ No, but these are planned.
- ☐ No

54. Overall, please rate the extent to which you believe that your written major incident plan adequately handled the contingencies you faced in the fire event. Each member of the group should record the number which reflects their view and list their job title next to their response.
- |                                   |                                 |   |                              |   |
|-----------------------------------|---------------------------------|---|------------------------------|---|
| 1                                 | 2                               | 3 | 4                            | 5 |
| Most issues not addressed in plan | Some issues not address in plan |   | Covered virtually everything |   |
55. Please indicate any special problems or issues that arose in the fire response that WERE NOT anticipated in your written plan.
- ☐ Reduced communications capacity with entities outside the hospital.
  - ☐ Reduced communications capacity within the hospital.
  - ☐ Patient tracking issues.
  - ☐ Management of volunteers (medical/non-medical).
  - ☐ Availability of hospital physicians and staff.
  - ☐ Emergency credentialing of volunteers.
  - ☐ Availability of information on hospital damage assessment.
  - ☐ Availability/accuracy of information on the demand for hospital service within your community.
  - ☐ Accuracy of information disseminated by the media.
  - ☐ Unclear/undefined responsibility for decisions regarding hospital or patient management during the fire.
  - ☐ Hospital personnel/decision-makers not clear on major incident procedures specified in written plan.
  - ☐ Inadequate availability of equipment, supplies, and medications.
  - ☐ Building/structural damage to hospital itself.
  - ☐ Limitations due to unavailability of internal evacuation routes (routes blocked for structural reasons, loss of power).
  - ☐ Limitations due to influx of emergency patients.
  - ☐ Hazardous chemical spills.
  - ☐ Lack of access to architectural drawings of the facility.
  - ☐ Other: .....
56. Please indicate the single most important UNANTICIPATED PROBLEM that could have had negative consequences for either patient care or movement. ....
57. Please indicate what CHANGES have been made in your written major incident plan as a function of the fire.
- ☐ Disaster drills focusing on fire events.
  - ☐ Rapid structural damage assessment of the hospital structures.
  - ☐ Multiple alternate modes of communications (mobile telephone, radio, message relay through other agencies).
  - ☐ Emergency staffing supplementation.
  - ☐ On-site clean-up of hazardous chemical spills.
  - ☐ New/modified mutual aid agreements with other medical facilities covering patients, equipment, etc.
  - ☐ Acquiring medical transport rapidly in the event external patient evacuation is needed.
  - ☐ Modification of patient tracking systems.
  - ☐ Clarify lines of hospital management authority.
  - ☐ Clarify responsibility for medical decisions impacting patients.
  - ☐ Other: .....
58. Since the fire, has the hospital instituted any specific mitigation or prevention measures?
- ☐ Structural bracing or improvements are in progress or completed.
  - ☐ Specific training programs for staff have been implemented.
  - ☐ Alternate storage practices for equipment, medical supplies, records, hazardous chemicals have been devised.
  - ☐ Mutual aid agreements.
  - ☐ Other: .....
59. Since the fire, you have had time to reflect on the experience and your hospital's performance. In light of all this, could you please tell us what you believe is the SINGLE MOST IMPORTANT LESSON YOU IDENTIFIED? .....

# APPENDIX 2

## Lessons identified and possible solutions

No	Issue	Solutions
Planning		
1	Those organisations that had comprehensive fire plans found this to be of substantial benefit to their response	Every NHS organisation develop and maintain a full site evacuation plan.
2	Site floor plans for fire fighters and rescuers	A fire service box in the reception to all NHS buildings – to contain full site maps (A3 [no bigger or smaller] laminated), floor plans, location of most vulnerable patients, locations of potential chemical and radiation hazards. Numbering of floors consistent with level in building. Consider numbering wards not naming.
3	Insurance cover amounts	Review insurance arrangements and ensure payouts are consistent with expectations and needs.
Command and control		
4	A need for clear command and control structures	Clear definition of command and control for internal incidents including full evacuation. Ensure all roles have action cards available.
5	Incident commanders clearly visible	Tabards – bright tabards with key roles to be available and worn.
6	Command compatibility	Ensure command structure is compatible with emergency services and it is recognised and understood with local partners.
7	Decision making	Plans must be explicit in stating that in the event of a fire or security event it is not the responsibility of the emergency services to decide to evacuate an NHS facility – this is the absolute responsibility of the NHS organisations management.
8	Documentation	Ensure that the role of loggist(s) is included in the command and control arrangements.
9	Control resilience	Ensure an alternative incident control room off site for resilience.
10	Recovery	Ensure a recover team is identified and planned for – this team should be active during the acute phase of the incident.
Communication		
11	Loss of internal and external communications	Hand-held radios throughout the building at all key locations (training and familiarity required). Mobile telephones with key numbers stored (need for charging both prior and during incident). Email – this worked well with GOSH with many key staff having BlackBerry. Runners – in some events these are not possible or safe.
12	Communication with external organisations and other NHS facilities	Early communication with partner NHS and external organisations is vital. This MUST be a defined role in the plan with all key telephone numbers. Remember to communicate early with the Health Protection Agency for advice on smoke and products of combustion and other, chemical and radiation issues.
13	Communicating with staff, relatives and patients	Flip charts – the Marsden used a number of flip charts on the cordon to keep staff, relatives and patients update. Websites – these are a good place to post information and direct people too – consideration must be given to how this could be updated off site. Text – text systems are available for staff providing numbers have been collected beforehand – this is useful for all incidents and internal continuity incidents.
14	Patient notes	Ensure a robust mechanism of evacuating patient notes with patients, including electronic notes where appropriate.
15	Evacuation routes	Regular review of exit routes including live tests to ensure space to evacuate patients in beds, mattresses/ski sheets and wheel chairs.
16	Evacuation equipment	All beds to have ski sheets under the mattress. Evacuation chairs at each stairway.

No	Issue	Solutions
Communication continued		
17	Patient tracking	Ensure a mechanism for tracking patient movements – dedicated command role with action card and tabard.
18	Clinical triage	Consider who and how evacuated patients will be triaged at point of exit for appropriate onward allocation.
19	Ambulance transport	Ensure that relevant requirements and command arrangements are written into private ambulance transport contracts for use in an emergency.
20	Patient shelter	Consider an off site shelter location to hold patients in the initial stages of an evacuation.
21	Critical care patients	Consider detailed planning around the evacuation of critical care patients. Ensure that the patient shelter location has sufficient power points to maintain vital critical care equipment.
22	Mental health Patients	Planning required for managing mental health patients, especially those requiring specific security and pharmaceutical measures.
23	Immuno suppressed patients	Consider the sheltering of Immuno suppressed patients – not in the same location as other known infectious patients.
24	Pharmaceuticals	Consider how medications can be obtained from alternative organisations when planning non NHS facilities for patient shelters.
25	Onward inter-hospital bed allocation	Consider how beds can be found in other facilities for onward transfer.
26	Post incident	Ensure the long term psychological needs of evacuated patients is considered and planned for.
Staff		
27	Staff evacuation	It has been acknowledged that tracking staff during an evacuation is a challenge, however each organisation has a duty of care to know which staff are working within the building at any one time, including contractors. Staff lists are required during any fire evacuation and must be available at short notice.
28	Post incident	Do not assume that all staff will be able to continue working following the acute phase of an evacuation. Ensure systems are in place to support staff post incident.
Media		
29	Media strategy	Ensure the organisational incident media strategy encompasses full site evacuation. Consider ‘buddy’ system with other organisations for managing the media – especially around denial of premises.
30	Managing the media	DO NOT underestimate the volume of media interest in a full site evacuation event Consider a ‘buddy’ system with other organisations to share/utilise other communications team. Consider support from SHA communications teams.
31	Spokesperson	Ensure a dedicated and defined role of media ‘spokesperson’ – who is not involved in managing the event (ensure an action card).
Post event		
32	Recovery plan	Ensure a pre-determined recovery plan – as part of the organisations business continuity plan and full site evacuation plan.
33	Debriefing	Ensure a debriefing plan in place in advance – to include ‘hot’ debrief, internal debrief and multi agency debrief.
34	Event report	Ensure planning for a post incident report to be written and shared.
Training and exercising		
35	Staff familiarity	Ensure regular staff fire and evacuation training.
36	Command familiarity	Ensure regular fire and evacuation training with key incident decision makers.
37	Equipment	Ensure regular staff training in ski sheets and evacuation stair chairs.
38	Evacuation routes	Ensure staff are familiar with all evacuation routes which must be live tested on a regular basis.





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