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Burns Centre and fire services: What information can be exchanged to manage the burn patient?

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ABSTRACT

Aim: To describe the experience of using a “Burns Extrication Form” at a regional Burns Centre. Communication between the fire services and burns team previously has been regarded as poor. Significant information is collected by the fire services at the scene and this can aid the management of the patient.

Methods: The Burns Extrication Form was devised to provide a clear framework of communication between the two services. Information regarding time frames, exposure to heat & smoke, fire loading (potential severity of a fire in a given space by measuring amount of combustible material in confined space), building construction, chemicals involved is passed to the medical team through this form through a National Health Service mailbox. Also, treatment provided by the fire service was documented. All data collected by this form was collated for the purpose of this study. Data ranging from 2014 to 2017 was included in this descriptive study.

Results: The patient journey following contact by fire services shows that out of the 598 persons who were involved in a fire only 92 (15%) attended the Accident and Emergency (A&E) department at the Queen Elizabeth Hospital. Signs of smoke inhalation, singed nose hair and coughing were found in 190 (32%) patients; the fire service administered oxygen to 106 (18%) of these patients although this may have been initiated by Ambulance crews who were on scene prior to the Fire Crew. The remaining 506 (85%) may have not attended A&E at UHB or may have attended another A&E in the West Midlands base on the location of the incident and clinical needs. Of the 92 patients who attended the A&E at UHB 48 (52%) were admitted to the Burns Centre in the hospital. Nine (19%) of these patients had smoke inhalation and three of these patients were managed by intubation. Birmingham North and Black Country North had the highest incidence of burns incidents, 120 and 103 respectively. Whilst, the lowest numbers were found in Birmingham South and Coventry and Solihull with 65 and 61 respectively. Additional results are described in the study.

Conclusion: Data provided by the Fire Extrication forms helps us to assess the magnitude of fire-related injury across the West Midlands. The fire services have been shown to provide important first aid as one of the first responders at the scene. Their value in assessing the environment in and patient status helps clinicians further down the patient's journey.

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1. Introduction

The interface between the fire service and burns is not often discussed. This interface is important as UK firefighters are in an ideal position for the early assessment and treatment of burns. Information regarding the patient and circumstances of the injury can help predict the severity of the burn and guide treatment. The fire services in England responded to 529,000 incidents in 2015/16, a 7% increase from 2014/15. Of these, 71% were fire-related incidents. These resulted in 303 fire-related fatalities and 7661 casualties, rendering fires an important cause of injuries in England [1]. The elderly population are more prone to fire-related fatality with a fatality rate of 11.6 people per million for those ages 65 to 79, compared to the total average fatality rate of 5.5 people per million.

It was recognized that this crucial information is readily available to the Fire Service but had never previously been available to the medical teams. Anecdotal evidence suggested that often, all that was passed across was 'rescued by fire service' as no other information has been available. Fire-fighters attending burns incidents were unknowingly holding significant information that could be shared with the medical teams that could have further enhanced patient care. This was the starting point for the 'Burns Extrication Project'.

An Innovative project between University Hospital Birmingham (UHB) Burns team and the West Midlands Fire Service (WMFS) has tried to bridge this gap with the development of the Fire Extrication Project.

To address this issue, UHB & WMFS, created a simple reporting system, The Burns Extrication Form. The system ensures the crucial information requested/required by medical teams at UHB about the mechanism of injury is available quickly and efficiently. Information such as time frames, exposure to heat & smoke, fire loading (potential severity of a fire in a given space), building construction, chemicals involved is passed to the medical teams. Once gathered by the Fire Service the information is sent directly to the hospital and in most cases even before the patient arrives. A National Health Service (NHS) mailbox, 'Fire brigade alert', has been set up to receive the information in a secure manner. The NHS mailbox is provided to all members of the multi-disciplinary team working throughout the United Kingdom which allows secure exchange of information. The form is depicted in Appendix A.

This information regarding the conditions of the patient, proportion of the building and room on fire, and items involved in the fire can provide important predictors for airway burns and carbon monoxide poisoning, which is critical for effective burns management. Inhalation injuries are one of the major causes of deaths [2]. The groups most at risk are the elderly population as mentioned before, those injured in the confined spaces found in dwellings. This is also linked with social deprivation [3,4,5]. Physical findings such as facial injury, singed nasal hairs, soot, carbonaceous sputum and loss of consciousness will also aid the diagnosis of inhalation injury and therefore help guide treatment. These criteria can be fed into the burns department by the fire services team at the scene before the patient arriving at the burns centre [6]. This

Table 1 – Burns data on patients admitted to Burns department.

	TBSA (%)			Length of stay (days)			Extrication method			Visible injuries?			
	%Room on fire	%Building on fire	House ventilated?	Double glazing?	Position found in by fire service	Condition	Location	Self	Fire service	Other	Burns	Laceration	Smoke inhalation
Average	13	18	14	14	Lying	Unconscious	Care home	34	8	2	2	43	4
Median	5.75	6	20	20	Sitting	Conscious	Garage	7	14	44	0	1	1
Range	94.5	187	Yes/No	Yes/No	Standing	Regained consciousness with treatment	Hostel	4	22	1	0	9	9
0%	12	12	Yes	Yes									
1-10%	14	17	No	No									
11-20%	3	1											
21-30%	1	0											
31-40%	0	1											
41-50%	1	0											
51-60%	0	0											
61-70%	0	1											
71-80%	0	0											
81-90%	0	0											
91-100%	6	1											

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