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Abbreviations:
ACLS, Advanced Cardiac Life Support; AREU, Regional Emergency Agency; BLS, Basic Life Support; EDC, Emergency Dispatch Center; EMS, Emergency Medical System; EMT, Emergency Medical Technician; MCI, Mass Casualty Incident; METHANE, **M**ajor incident declared, **E**xact location, **T**ype of incident, **H**azards, **A**ccess, **N**umber and type of casualties, **E**mergency services present and required; START, Simple Triage and Rapid Treatment.

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Prehospital Mass Casualty Incident Response to a Fire in a Nursing Home in Milan, Italy: Actions Taken and Shortcomings

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Abstract

On July 7, 2023, at 1:21 AM, a fire was declared in a retirement home in Milan, Italy. The number of casualties (n = 87) according to the Simple Triage and Rapid Treatment (START) triage system was categorized as 65 green, 14 yellow, 2 red, and 6 black; 75% were women, and the mean age was 85.1 years (± 9). Most patients were unable to walk. A total of 30 basic life support (BLS) ambulances, 3 advanced cardiac life support (ACLS) teams on fast cars, 2 buses, and 1 coordination team were deployed. A scoop and run approach was adopted with patients being transported to 15 health care facilities. The event was terminated at 5:43 AM. Though the local mass casualty incident (MCI) response plan was correctly applied, the evacuation of the building was difficult due to the age and comorbidities of the patients. START failed to correctly identify patients categorized as minor. Communication problems arose on site that led to the late evacuation of critical patients.

On July 7, 2023, Milan, Italy, at 1:21 AM, 86°F, serene weather: The Milan emergency dispatch center (EDC) received a call from the fire department reporting smoke (no flames) in a nursing home.[1] At 1:36 AM, the first basic life support (BLS) ambulance arrived providing an initial report: fire in a 3-floor single building hosting disability patients; thick black smoke coming from the first floor; 40 people potentially affected; access for emergency medical services still not secured. Shortly afterward (1:37 AM), an incoming call to the EDC came directly from a host of the affected facility; the subject coughed and complained of shortness of breath because of the thick smoke and referred to be trapped on the first floor of the building.

Narrative

In the Province of Lombardy, Italy, the Regional Emergency Agency (AREU) is in charge of the emergency medical system (EMS). The local prehospital mass casualty incident (MCI) plan of Milan establishes 1 level of warning, state of alert, and 2 levels of response, state of emergency, and state of MCI. These states are based on the presence or suspected presence of casualties, the source of the information (first-hand vs not first-hand), and the risk of escalation of the event. Once an MCI is declared, the immediate response is categorized into 5 color levels, depending on the number and severity of the casualties (Table 1). The plan dictates that the first advanced cardiac life support (ACLS) team on the scene (composed of a medical officer, an emergency nurse, and an emergency technician) acts as the first responder. In Italy, there are no emergency medical technician (EMT) paramedics; physicians provide the highest level of prehospital care. In the meantime, the coordination team with the medical branch director, triage officer, and transport officer is assembled and reaches the incident location, and the first-responder team is usually in charge of performing the reconnaissance and dimensioning of the event, holding

Table 1. MCI categories and first response according to the local prehospital MCI plan of Milan, Italy

White	Green	Yellow	Red	Multi-site
MCI category				
Up to **10** casualties but with **high media profile**	**11 to 20** casualties or **3 to 4** yellow/red codes	**21 to 50** casualties or **5 to 10** yellow/red codes	More than **50** casualties or more than **10** yellow/red codes	**Two or more** MCI concurrent events
Upgrade criteria				
If **3 to 4** yellow/red codes upgrade to **green category** If **5 to 10** yellow/red codes upgrade to **yellow category**	If **5 to 10** yellow/red codes upgrade to **yellow category** If more than **10** yellow/red codes upgrade to **red category**	If more than **10** yellow/red codes upgrade to **red category**		
Minimum number and type of ambulances as first response				
1 BLS ambulance	**4** BLS ambulances	**7** BLS ambulances	**11** BLS ambulances	To be tailored
1 ACLS team	**2** ACLS teams	**3** ACLS teams	**4** ACLS teams	
	Consider on-site coordination team	**On-site coordination team**	**On-site coordination team**	**On-site coordination team**

ACLS, Advanced Cardiac Life Support; BLS, Basic Life Support; MCI, Mass Casualty Incident.

communications with the EDC and establishing the command-and-control post together with the head of the police and fire brigades. Moreover, it is expected to identify access and egress routes for ambulances, perform Simple Triage and Rapid Treatment (START) triage, define casualty collection areas for each triage category, decide whether an advanced medical post is needed, and set transportation priorities.

At first, the state of emergency was declared; however, after the first report from the scene, the response was rapidly upgraded to the state of yellow category incident (1:44 AM) (see Table 1). The first ACLS team reached the incident at 1:49 AM and provided a second report at 1:53 AM, confirming the MCI and informing that the fire was controlled. The first and second floors were totally immersed in smoke; since most casualties were unable to walk, most of them had to be evacuated 1-by-1 by fire brigades. Only 6 patients had been moved out to the ground floor at that time; of these, 3 were in cardiac arrest (START black), 1 unconscious (START red), and 2 awake but unable to stand (START yellow). At least 50 patients were confirmed to still be trapped inside. In view of the number of patients in the building, at 2:05 AM, the response was upgraded to the state of red category incident.

As per the local prehospital MCI plan, the initial response consisted of 7 BLS and 3 ACLS fast cars; however, in consideration of the high number of patients with a pre-event disability, the other 3 EDCs in Lombardy were also alerted to provide support. An additional pool of 23 BLS ambulances and 2 buses from the public transport service was made available. A coordination team was on site at 2:28 AM. By 2:30 AM, 15 health facilities, 8 of which were tertiary care hospitals, within a radius of 21 km, had been alerted, declared their surge capacity, and were ready to receive patients. A scoop and run approach was adopted by the scene EMS. Only basic airway management and oxygen supply were performed before evacuation. The first patient (red code) was evacuated at 2:44 AM. The first media report was released by AREU at 6:30 AM.

Once access was considered safe, the evacuation of the building was carried out by fire brigades in conjunction with the police, BLS teams, and the health personnel of the facility. By 4:45 AM, all smoke-affected areas of the facility had been cleared of patients. The number of casualties amounted to 87 categorized by the START triage system as 65 green, 14 yellow, 2 red, and 6 black; 75% were women, and the mean age was 85.1 years (± 9). Smoke inhalation was most of the chief complaints. Two black codes were charred. No other casualties presented with burns. Given the unique nature of the MCI, those patients whose health conditions before and after were referred by the health personnel of the affected facility as 'unchanged" were categorized as green. All patients were hospitalized. The last patient was evacuated from the scene at 5:37 AM. The MCI was terminated at 5:43 AM. Investigations to determine the cause of the fire are still ongoing as of July 31, 2023.

Discussion

Altogether, the local MCI plan was satisfactory applied according to individual action cards. In reference to published key performance indicators,[2–4] the MCI was rapidly declared considering the level of preparedness and the additional preventive resources needed. This was possible due to a close collaboration with neighboring EDCs. Health facilities were also timely alerted. As per the local procedure, the first BLS team on the scene provided a good quality report following the METHANE communication model (Major Incident Declared, Exact location, Type of incident, Hazards, Access, Number and type of casualties, Emergency services present and required) that led to a step up from the emergency state to the yellow incident state. Moreover, communication with fire brigades and police chiefs on the scene was key to expedite the evacuation of frail, older patients from the building.

However, this event posed several challenges to the prehospital response of the EMS in Milan. First, at the time of the first call, it was difficult to size the event; second, it occurred during nighttime, when less personnel were present in the nursing home and all the hosts were sleeping inside; third, even though the fire was rapidly tamed, the smoke invaded the first and second floors of the building in a rapid fashion; fourth, the fact that most patients presented with a fragile pre-event health condition was a dramatic drawback at the medical and logistical levels. From the evacuation standpoint, no patient could walk unaided, and most of them were even confined to a wheelchair; this led to a race against the clock to get each of them out before it was too late, resulting in a tremendous physical and psychological burden for rescue teams.

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Once outside, performing START[5] turned difficult; minor codes couldn't be rapidly identified. Moreover, most patients were also unable to obey commands due to pre-existing neurological disorders. Of note, this represents a common shortcoming among endorsed field triage systems.[6] Finally, the building was declared uninhabitable; therefore, also, green codes required hospitalization even after mild smoke inhalation due to comorbidities.

In consideration of the urban setting[7] and the great number of fragile patients, the level of ambition was set to basic medical care and fast evacuation. However, the first red code was evacuated with delay according to the goals published in the MCI response literature.[2–4] This might be due in part to a delayed decision at the scene, regarding which medical teams had to carry out the evacuation of patients from the building in collaboration with firefighters and which ones were assigned to perform evacuation from the incident location to the hospitals. With hindsight, establishing an advanced medical post may have allowed a more rapid assessment and priority transportation of the red and yellow patients.

Finally, the communication flow from the scene to the EDCs presented issues; according to the local MCI plan, the first medical officer (then replaced by the medical branch director) and the transport officer are responsible for the communications with the EDC. However, some BLS teams made outgoing calls to the EDC instead of referring to on-site incident management. This created some confusion during the first phase of the on-site incident management process.

This nursing home fire showed that MCI management principles and individual action cards must be applied. However, the response must take into consideration the nuances of every case. The local MCI response plan did not contemplate the management of such a great number of fragile patients. While the coordination and good resource management skills of incident responders were key to mitigate the consequences, improvements to the local MCI plan are warranted. Also, further measures to guarantee a better communication flow on the scene must be implemented.

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Competing interests. None.

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