



## Two halves make a whole: Both first responders and experts are needed for the management and identification of the dead in large disasters



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### ABSTRACT

Catastrophic natural disasters are a regular global issue claiming thousands of lives and having severe and long lasting consequences for communities. Along with the rescue and care of survivors and the provision of basic services, managing the dead in a proper and dignified manner is one of the three pillars of disaster response. Since the 2004 Indian Ocean Tsunami, progress to facilitate better coordination in the management of the dead has been made. Two guidelines contributing to this positive trend are the Interpol DVI Guide, and the “Management of the Dead after Disasters – A Field Manual for First Responders”. The former is aimed at forensic specialists and emergency services, the latter at untrained first responders confronted with the management of the dead when specialist forensic services are not available. This paper sets out the complementarity of the two publications, illustrating that ideally, both first responders and experts are needed to properly manage and identify the dead following large disasters.

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“ . . . any man’s death diminishes me  
because I am involved in mankind;  
And therefore never send to know  
for whom the bell tolls;  
it tolls for thee . . . .”

### 1. Introduction

These words by Donne are a reminder of our shared humanity: what affects an individual affects the community; what affects one of us affects us all. Each individual can practice humanitarian action, and this extends to helping to take care of those who have died. Catastrophic events resulting in mass fatalities occur frequently and have international effects. Developing countries are particularly prone to such disasters and they typically lack well-equipped forensic services [1]. World-wide, between 1900 and 2004, there were 77 known tropical storms and cyclones causing over 1000 deaths each. 50 of these occurred in the developing countries of the Asia-Pacific region, and 16 in the Caribbean and Central America [2]. Between 1980 and

2000 tropical cyclones were responsible for an average of 11 800 deaths a year [2]. Developed countries such as Japan and the USA, although prone to tropical cyclones, rarely see deaths in such numbers. One notable exception was Hurricane Katrina in the United States in 2005, which killed 1836 people [3]. Similar patterns can be observed for earthquakes: between 1980 and 2002, India experienced 14 major earthquakes, killing 32 117 people, while the United States during the same period experienced 143 deaths resulting from 18 major quakes [3]. The link between a country’s lower socio-economic status and greater numbers of deaths from natural disasters has been widely recognized. The ability of wealthier countries to invest in preparedness and mitigation strategies such as warning systems, building codes and reinforcements, and the proper training of search and rescue professionals partly explain this link [4]. Table 1 summarizes all natural catastrophes since 2004 with a death toll greater than 5000 (The table does not include casualties from armed conflict, which have seen hundreds of thousand of civilians killed, or epidemics).

Understandably, public attention subsequent to a disaster is mainly focused on efforts to provide emergency relief: the rescue and care for survivors and the provision of essential services. With these, the proper and dignified management of the dead is regarded as the third pillar of the humanitarian response. Under International Humanitarian Law (IHL), the dead from armed conflict are recognized as a distinct category of victim, and as such

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**Table 1**  
Natural catastrophes since 2004 with a death toll greater than 5000.

Catastrophe	Death toll
Indian Ocean Tsunami, 2004	226 408 [5]
Earthquake, Kashmir, Pakistan, 2005	73 338 [6]
Earthquake, Java, Indonesia, 2006	5749 [7]
Cyclone Nargis, Myanmar, 2008	138 366 [8]
Earthquake, Eastern Sichuan, China, 2008	87 476 [9]
Earthquake, Haiti, 2010	>137 000 [10]
Earthquake and Tsunami, Japan, 2011	15 891 [11]
Typhoon Haiyan, Philippines, 2013	>6300 [12]
Earthquake, Nepal, 2015	ca. 8700 [13]

their personal dignity must be protected [14–16]. From a humanitarian perspective, the proper management of the deceased following large disasters is of equally great importance, however the body of International Disaster Response Law (IDRL) is slowly evolving and is yet to address the matter of management of the dead [17,18]. The correct identification and subsequent return of the remains to their next of kin is a crucial aspect of addressing the psycho-social needs of the bereaved and in some cases of an entire community. This enables the remains to be laid to rest according to the family's cultural and religious practices. If families remain unaware of the fate of their missing loved ones, they are at risk from the so-called "Zeigarnik effect", a failure for them to "find closure" and move on with their lives [18–20]. In addition to this psychological significance, a positive identification can be a prerequisite for a formal documentation of death, without which the next of kin may not be able to claim life insurance, re-marry or may find themselves in lengthy legal disputes [21].

The importance of the dignified treatment and identification of remains is a universally accepted principle. The realities in large disasters, the context being addressed in this article, make it difficult to give effect to this principle: these are situations which overwhelm local capacities [22] and where basic services are often destroyed and where the authorities' ability to access the victims may be very difficult or even impossible.

Therefore the aim of this paper is to outline:

- the background to the development of practical guidance to manage the dead in large disasters,
- the complementarity of two main guidelines relevant to this task: the Interpol DVI Guide and the Manual for Management of the Dead after Disasters,
- the most crucial steps in the management of the dead after large disasters, in particular highlighting the crucial role played by first responders and
- what has been learnt from experience in management of the dead in large disasters over the last ten years.

### 1.1. The need for practical guidance to manage the dead in large disasters

One catastrophe in particular demonstrated the need for practical guidance on the management of deceased from large disasters and their identification: the Indian Ocean Tsunami, which struck on 26 December 2004, and killed approximately 220 000 people. Victims included 160 000 in Indonesia, 35 000 in Sri Lanka, 16 000 in India, 8195 in Thailand (about 2400 of which were nationals of other countries), as well as people in the Maldives, Malaysia, Myanmar, Bangladesh, Somalia, Kenya, Tanzania, the Seychelles and Singapore. No standard approach to managing the dead in such numbers existed at the time.

In Thailand alone, the tsunami killed individuals from 41 different countries. Many countries thus deployed their national

DVI teams to Thailand. This international operation was brought together under the Thai Tsunami Victim Identification (TTVI) process, however, by the time it was established, on January 13th 2005, 1151 bodies had already been released based on visual recognition [23]. This enormous international DVI operation, which involved 2000 personnel from 31 countries finished 13 months later on 26th February 2006. 1168 Thai nationals and 1841 non-Thai individuals were identified, with 508 bodies remaining unidentified. The identification of approximately 3000 individuals contrasted starkly with the responses elsewhere. In Aceh (Indonesia), and Sri Lanka authorities were completely overwhelmed by the number of deceased, leading to approximately 160 000 and 35 000 bodies respectively being buried in mass graves. In a subsequent review of the DVI operation, in the framework of the "Interpol Tsunami Evaluation Group", Interpol published 69 recommendations and concluded: "the present thinking for a massive death toll situation is not fit for purpose in delivering on principles of forensic identification and the South East Asian Tsunami of 2004 tells us it is in urgent need of revision" [24].

Without question, the Interpol DVI Guidelines have been invaluable since their launch in 1984. They filled an important gap: the absence of any systematic guidelines and standards on identifying the dead after a disaster of even a modest size. Most organized forensic services around the world, whether in well resourced or other contexts, have benefitted from them. A good example of the DVI Guide's continued and essential relevance is the central role it played in the response to the "Black Saturday" bushfires in Victoria, Australia in 2009, which killed 173 individuals. It took 3 months to complete the identifications in a well-resourced system with full governmental and community support [25]. However, when the number of dead exceeds a few hundred, the difficulties of mounting a full DVI operation begin to compound. This is particularly the case in contexts with limited forensic services, or when basic infrastructure is also impacted by the disaster, and/or as the scale of the disaster totally overwhelms the capacities to respond. Following the Indian Ocean Tsunami, as Interpol itself concluded, it became evident that another solution was needed.

Thus, in May 2005, the Pan American Health Organization (PAHO), the World Health Organization (WHO) and the International Committee of the Red Cross (ICRC) organized an expert meeting on lessons learned from the management of the dead, which was held in Lima, Peru. The meeting identified the need for, and began work on, practical and easy-to-follow guidelines for non-expert first responders, frequently members of the affected community, who are usually the first on site in the immediate aftermath of a disaster, prior to the arrival of forensic expertise. This is, in fact, the crucial time to manage the remains correctly and preserve information facilitating a future identification [26–28]. The result was the first edition of the "Management of Dead Bodies After Disasters: A Field Manual for First Responders" [29]. Since 2006, the MDB Manual has frequently been used as a basis for disaster planning and preparing for large disasters, even in countries with well-developed forensic services [27]. A decade after its first release, the Manual has been updated taking into account lessons learned from events such as the 2013 Typhoon Haiyan in the Philippines, 2014/2015 Ebola outbreak in West Africa and the 2015 earthquake in Nepal [30]. The second edition was launched in November 2016 [26,27].

### 2. The complementarity of the Interpol 'DVI Guide' and the WHO/ICRC Manual for the 'Management of Dead Bodies after Disasters'

The most important thing to understand about these two documents is that they complement each other. Table 2 sets out

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