



A new disaster victim identification management strategy targeting “near identification-threshold” cases: Experiences from the Boxing Day tsunami



Kirsty Wright^{a,*}, Amy Mundorff^b, Janet Chaseling^c, Alexander Forrest^{a,d},
Christopher Maguire^e, Denis I. Crane^{a,f}

^a School of Natural Sciences, Griffith University, 170 Kessels Road, Nathan, Queensland 4111, Australia

^b Department of Anthropology, The University of Tennessee, 250 South Stadium Hall, Knoxville, TN 37996, USA

^c School of Environment, Griffith University, 170 Kessels Road, Nathan, Queensland 4111, Australia

^d Queensland Health Pathology and Scientific Services, 39 Kessels Road, Coopers Plains, Queensland 4108, Australia

^e District of Columbia Department of Forensic Science, Washington, DC 20024, USA

^f The Eskitis Institute for Drug Discovery, Griffith University, 46 Don Young Road, Nathan, Queensland 4111, Australia

ARTICLE INFO

Article history:

Received 10 December 2014

Received in revised form 23 February 2015

Accepted 10 March 2015

Available online 18 March 2015

Keywords:

Boxing Day tsunami

Disaster victim identification (DVI)

Forensic biology

Dental age estimation

Fingerprinting

Thai Tsunami Victim Information (TTVI) operation

ABSTRACT

The international disaster victim identification (DVI) response to the Boxing Day tsunami, led by the Royal Thai Police in Phuket, Thailand, was one of the largest and most complex in DVI history. Referred to as the Thai Tsunami Victim Identification operation, the group comprised a multi-national, multi-agency, and multi-disciplinary team. The traditional DVI approach proved successful in identifying a large number of victims quickly. However, the team struggled to identify certain victims due to incomplete or poor quality ante-mortem and post-mortem data. In response to these challenges, a new ‘near-threshold’ DVI management strategy was implemented to target presumptive identifications and improve operational efficiency. The strategy was implemented by the DNA Team, therefore DNA kinship matches that just failed to reach the reporting threshold of 99.9% were prioritized, however the same approach could be taken by targeting, for example, cases with partial fingerprint matches. The presumptive DNA identifications were progressively filtered through the Investigation, Dental and Fingerprint Teams to add additional information necessary to either strengthen or conclusively exclude the identification. Over a five-month period 111 victims from ten countries were identified using this targeted approach. The new identifications comprised 87 adults, 24 children and included 97 Thai locals. New data from the Fingerprint Team established nearly 60% of the total near-threshold identifications and the combined DNA/Physical method was responsible for over 30%. Implementing the new strategy, targeting near-threshold cases, had positive management implications. The process initiated additional ante-mortem information collections, and established a much-needed, distinct “end-point” for unresolved cases.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

On 26 December 2004, an earthquake measuring 9.1 on the Richter Scale triggered a massive tsunami responsible for more than 280,000 deaths in thirteen countries. In Thailand 5395 victims were recovered, including approximately 2400 foreign tourists representing 41 nationalities [1–3]. An identification operation commenced immediately, resulting in local authorities releasing

approximately 560 bodies based on visual identification by their families. Thai forensic teams released an additional 1151 bodies, 111 of which were based on dental examination and the rest based on physical and property examination [4]. The Thai identification effort was later joined by international experts from over 30 countries working as part of the Thai Tsunami Victim Identification (TTVI) operation in Phuket, Thailand. By the commencement of the international DVI operation in January 2005, there were 3679 unidentified bodies, approximately half of which were thought to be Thai locals [1]. The TTVI operation followed the DVI management strategy outlined by INTERPOL [5]. Plass Data’s™ ‘DVI System International’ was used to record, store and electronically

* Corresponding author. Tel.: +61 07 37357773.

E-mail address: k.wright@griffith.edu.au (K. Wright).

search ante-mortem data (AM) and post-mortem data (PM) contained in INTERPOL DVI forms and an Automated Fingerprint Identification System (AFIS) was used to search fingerprints [6–9].

This article examines the implementation, capabilities, and contributions of a novel identification approach executed during a complex DVI operation. A new DVI management strategy, specifically targeting cases yielding below the established DNA identification threshold, was implemented in response to the significant decline in single-modality identifications. The approach was designed to achieve positive identifications for complex cases and to identify cases lacking the necessary information to establish an identification, to request additional data collection.

1.1. Background

Typically, primary (DNA, Dental, and Fingerprints) and secondary (property and physical) identification teams work independently of each other and of police investigators. The teams search for matches between AM and PM records that reach nominated reporting criteria based on international standards and that are set by the command structure within each DVI operation [5]. The separation of the identification teams in DVI mimics the approach used by many forensic experts for criminal cases, which is designed to eliminate cognitive and confirmation bias and promote independent interpretation of forensic analysis. This was the approach used at the TTVI, with a Data Mining Team searching data for matching secondary identifiers (property and physical identifiers such as scars and tattoos).

Following the tsunami, AM records were received from 42 countries and the PM records were generated by a rotating staff from at least 30 countries as part of the TTVI mortuary operations. As seen with other DVI operations, identifications can be quickly established when accurate and complete AM and PM data are available [10,11]. Therefore, the traditional DVI strategy worked well, particularly during the early part of the operation. This is clearly evidenced during the months of February and March 2005, when the majority of identifications were established using a single primary method, (93.02% and 87.26%, respectively) (Fig. 1). By April 2005, 90.18% (1057 of 1171) of the dental identifications as a stand-alone method had already been achieved. This was followed by a rapid and precipitous decline in the proportion of cases being resolved by a single primary identification method. Highlighting this drop further, overall single-modality identifications declined in the month of December 2005 to only 20.33% (12 of 59) ($p < 0.0001$). By 19 January 2006, a combination of identification methods was necessary to establish nearly 30% of all identifications [1].

On 9 January 2008, a total of 3761 AM records and 3696 PM records had been entered into their respective databases. However,

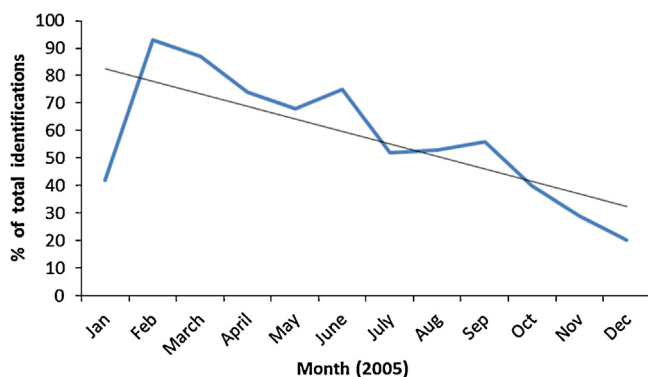


Fig. 1. Percentage of total identifications each month achieved with stand-alone methods.

the forensic data available in the AM records was limited, with only 58.1% containing DNA evidence, 52.6% Dental evidence and 41.3% Fingerprint evidence [12]. The low percentage of AM records with forensic evidence helps explain why stand-alone methods of identification could not be used to resolve a number of cases.

Missing or incomplete AM data can be attributed to a number of factors, many of which have been experienced during other DVI operations [13,14]. The reasons for incomplete AM data confounding identification efforts specific to this disaster include:

- Lack of AM dental records for Thai locals. Petju reported that only 18.1% of missing Thais had dental charts and only 0.8% had dental X-rays [15]. This compares to missing Europeans, of whom 94.4% had dental charts and 75.5% had dental X-rays. Of the 18.1% of Thai victims with dental records, only 7% were used to establish identity [12].
- Loss of reference samples due to the tsunami's destruction, including local AM dental records and identifying personal effects for the numerous victims on the beach at the time of the event [16].
- Lack of AM dental records for victims originating from Myanmar. This may be attributed to limited access to dental care or because family members were hesitant to come forward and supply AM information if their missing relative was in the country working illegally.
- Lack of DNA reference samples from family members of victims, many of whom were also victims. In some cases entire families were missing.
- Lack of fingerprint reference samples for local Thai children too young to have their fingerprints recorded on national identity cards [1].
- Difficulties in obtaining reliable AM fingerprints from missing foreign children [1].
- A 'preferential approach' to the collection of AM material adopted by many countries early in the operation. For example, some countries targeted data for dental identification; while others decided DNA would be the best method and chose not to supply fingerprint and dental data [17].

Using the standard DVI approach, investigators struggled to increase identifications beyond a certain point. Instances of incomplete data, or data compromised by data entry errors, prevented matches. Additionally, segregating the identification teams, a typical DVI strategy, led to duplicated efforts between staff rotations. Each national DVI team typically had a staff rotation between two and five weeks, where new experts would join a team, replacing those returning home. The newly rotating individuals would begin to search for possible matches among cases previously discounted within their group or discarded by another primary team because there was no mechanism in place to record confirmed exclusions. Complex cases often did not continue to progress when handed off to a new rotation and critical information was not always transferred between teams when an investigator finished a rotation. While a 'Targeted Request' form was in place, the process was not efficient or systematic and was not structured to leverage and integrate all possible information from the primary and secondary identification teams.

Moreover, the DVI strategy was based on searching for AM and PM matches; exclusions were not consistently or systematically recorded. There was no established "end-point" for cases lacking sufficient AM data. This was a critical void in the identification process given the large number of AM cases with incomplete records (DNA 41.9%, Dental 47.4% and Fingerprints 58.7%) [12]. Although a paper-based process existed to allow an investigator to request additional AM information, this was typically limited to a single discipline on a case-by-case basis and not adequately

Download English Version:

<https://daneshyari.com/en/article/95296>

Download Persian Version:

<https://daneshyari.com/article/95296>

[Daneshyari.com](https://daneshyari.com)