

ENHANCING FORENSIC HUMAN IDENTIFICATION IN EMERGENCIES AND DISASTERS: LEVERAGING TECHNOLOGY FOR IMPROVED EFFICIENCY, COST REDUCTION, AND ETHICAL PRACTICES IN MANAGEMENT OF THE DEAD

Megan Bassendale, MA, MSc, DipFM
Forensic Guardians International, Vancouver, Canada

Emergencies, conflicts, and disasters present significant challenges to forensic identification. Advanced technologies, including digital data collection techniques, AI, and data analytics, transform the methodologies used to recover and identify human remains. These innovations reduce operational costs, enhance efficiencies, alleviate stress on first responders, and provide quicker answers to grieving families. By capturing information digitally, the process becomes standardized and coherent, reducing transcription errors and preserving data for future use.

Key Benefits of Technology Integration

- **Efficiency:** Automates routine tasks and speeds up identification processes.
- **Accuracy:** Enhances the chain of custody, streamlines datasets, ensures easier access to information, and reduces redundancies.
- **Data Standardization:** Pre-defined data categories guide users to enter precise information, improving consistency.
- **First Responder Support:** Minimizes mental and physical stress by simplifying and streamlining data collection and management processes.
- **Family Support:** Provides timely answers, reducing uncertainty and emotional strain, particularly during Disaster Victim Identification (DVI).



Innovations in Technology

Portable Digital Data Collection Systems:

- Enable on-site data entry and real-time analytics.
- Improve coordination and communication during response efforts.
- Reduces time spent entering data manually.
- Increase accuracy through standardized data input fields.
- Support new users in stressful environments with user-friendly interfaces.
- Support data analytics and pattern analysis.

Artificial Intelligence:

- Facilitates the processing of large datasets for faster, more accurate identification.
- Predictive algorithms prioritize efforts, aiding rapid and accurate identification.
- Enhances long-term data comparison with stored ante mortem records.

Implementation Strategies

Training Programs:

- Utilise on-site and digital training to equip users with the skills and knowledge to operate digital systems effectively.
- Use simulations that mimic real disaster scenarios to improve user preparedness.
- Short videos and reels to support user training and support while in the field.

Workshops:

- Deliver interactive, hands-on workshops to help participants quickly adapt to new technologies.
- Compare teams using traditional paper forms and digital systems, demonstrating that digital collection is faster, more accurate, and easier for non-expert first responders to use.

Future Directions

AI Advancements:

- Develop AI tools tailored to forensic science needs, focusing on improved predictive capabilities and broader applicability.

Enhanced Device Usability:

- Refine portable devices for more efficient field use, ensuring adaptability in diverse disaster scenarios.

Global Standardization:

- Foster collaborative international efforts to establish ethical frameworks and standardized protocols for the management of the deceased in disasters.

Case Studies & Impact: Paper Forms vs. Digital Collection Devices

Scenario:

First responders participated in two separate exercises in a controlled training environment. In the first exercise, responders used standard paper forms with manually assigned unique reference numbers designed by the collection team. In the second exercise, responders used digital collection devices that automatically assigned unique reference numbers.

Results:

Data Standardization:

- Information collected via paper forms was less standardized, with responders leaving more blanks compared to the digital version.

Data Completeness:

- Digital forms prompted users to complete all required fields, resulting in more comprehensive data collection.

Efficiency:

- The digital device collection process was at least 50% faster than paper forms.

Data Availability:

- Information from digital devices was immediately available for analysis, while paper forms required manual transcription and longer processing times.

User Confidence:

- Responders reported feeling more confident in the accuracy and completeness of the information collected via the digital app compared to handwritten documents.

Ease of Use:

- Responders preferred the digital app, as it eliminated the need for handwriting and facilitated easier data entry.

Facilitator Feedback:

- Facilitators found it significantly easier to compare information across teams when using digital data, as opposed to deciphering and organizing handwritten forms.

Impact:

Disaster Victim Identification (DVI):

- Integrate AI and digital tools in disasters to significantly improve accuracy and speed.
- The use of secure digital technology can improve data integrity, even under challenging field conditions.

Operational Efficiency:

- Highlight real-life cases that showcase reductions in operational costs and time savings during disaster recovery efforts.

Community Relief:

- Share testimonies from families who receive quicker answers, easing their emotional burden and fostering closure.

Key Takeaways



Digital technologies significantly reduce forensic identification costs, time, and operational stress



Ethical integration ensures justice, dignity, and respect for the deceased and their families



Comprehensive training and public awareness drive the effective adoption of these technologies

Contact Information

Megan Bassendale - Forensic Guardians International

megan@forensicguardians.com
forensicguardians.com