Air Medical Journal 35 (2016) 348–351

Contents lists available at ScienceDirect

Air Medical Journal

journal homepage: http://www.airmedicaljournal.com/

Original Research

Reporting Helicopter Emergency Medical Services in Major Incidents: A Delphi Study

Sabina Fattah, MD [1, 2, *], Anne Siri Johnsen, MD [1, 3, 4], Stephen J.M. Sollid, PhD [1, 3, 5], Torben Wisborg, MD, PhD [2, 6, 7], Marius Rehn, PhD [1, 3, 8], and the HEMS Major Incident Reporting Collaborators: Ákos Sóti, MD [9], Anatolij Truhlář, MD, PhD, FERC [10,11], Andreas J. Krüger, MD, PhD [12], Björn Gunnarsson, MD [13], Dan Gryth, MD, PhD [14], David Ohlén, MD [15], Espen Fevang, MD [13], Geir Arne Sunde, MD [13,16], Ivo Breitenmoser, MD [17], Jouni Kurola, PhD [18], Jouni Nurmi, MD, PhD [19], Knut Fredriksen, MD, PhD [20], Leif Rognås, MD, PhD [21], Peter Temesvari, MD [9], Søren Mikkelsen, MD [22], Vidar Magnusson, MD, MBA [23], Wolfgang Voelckel, MD, MSc [24]

[1] *Department of Research and Development, Norwegian Air Ambulance Foundation, Drøbak, Norway*
[2] *Anaesthesia and Critical Care Research Group, University of Tromsø, Tromsø, Norway*
[3] *Department of Health Studies, University of Stavanger, Stavanger, Norway*
[4] *Department of Anaesthesiology, Oslo University Hospital, Oslo, Norway*
[5] *Air Ambulance Department, Oslo University Hospital, Oslo, Norway*
[6] *Department of Anaesthesiology and Intensive Care, Hammerfest Hospital, Hammerfest, Norway*
[7] *Norwegian National Advisory Unit on Trauma, Division of Emergencies and Critical Care, Oslo University Hospital, Oslo, Norway*
[8] *London's Air Ambulance*
[9] *Hungarian Air Ambulance, Hungary and East Anglian Air Ambulance, United Kingdom*
[10] *Emergency Medical Services of the Hradec Kralove Region, Hradec Kralove, Czech Republic*
[11] *Department of Anaesthesiology and Intensive Care, University Hospital Hradec Kralove, Hradec Kralove, Czech Republic*
[12] *Department of Emergency Medicine and Pre-hospital Services, St. Olavs University Hospital Norwegian University of Science and Technology*
[13] *Department of Research, Norwegian Air Ambulance Foundation, Drøbak, Norway*
[14] *Department of Physiology and Pharmacology, Karolinska Institute, Solna, Sweden*
[15] *Airborne Intensive Care, Uppsala University Hospital, Sweden*
[16] *Department of Anesthesia and Intensive Care, Haukeland University Hospital, Bergen, Norway*
[17] *Swiss Air-Rescue Rega*
[18] *Centre for Prehospital Emergency Care, Kuopio University Hospital, Kuopio, Finland*
[19] *Emergency Medicine and Services, Helsinki University Hospital and Department of Emergency Medicine, University of Helsinki, Finland*
[20] *Anesthesia and Critical Care Research Group, Department of Clinical Medicine, University of Tromsø, Tromsø, Norway and Division of Emergency Medical Services, University Hospital of North Norway, Tromsø, Norway*
[21] *Danish Air Ambulance*
[22] *Mobile Emergency Care Unit, Department of Anaestesiol Int Care Med, Odense University Hospital, Denmark*
[23] *Landspitalinn University Hospital, Iceland*
[24] *ÖAMTC Austrian Air Rescue, Vienna, Austria; Department of Anesthesiology and Critical Care Medicine, AUVA Trauma Center Salzburg, Paracelsus Private Medical University of Salzburg, Austria, Department of Health Studies, University of Stavanger, Stavanger, Norway*

* Address for correspondence: *S. Fattah, Department of Research and Development, Norwegian Air Ambulance Foundation, Drøbak, Norway.*
E-mail address: sabina.fattah@gmail.com (S. Fattah).

1067-991X

http://dx.doi.org/10.1016/j.amj.2016.08.003

A B S T R A C T

Objective: Research on helicopter emergency medical services (HEMS) in major incidents is predominately based on case descriptions reported in a heterogeneous fashion. Uniform data reported with a consensus-based template could facilitate the collection, analysis, and exchange of experiences. This type of database presently exists for major incident reporting at www.majorincidentreporting.net. This study aimed to develop a HEMS-specific major incident template.

Methods: This Delphi study included 17 prehospital critical care physicians with current or previous HEMS experience. All participants interacted through e-mail. We asked these experts to define data variables and rank which were most important to report during an immediate prehospital medical response to a major incident. Five rounds were conducted.

Results: In the first round, the experts suggested 98 variables. After 5 rounds, 21 variables were determined by consensus. These variables were formatted in a template with 4 main categories: HEMS background information, the major incident characteristics relevant to HEMS, the HEMS response to the major incident, and the key lessons learned.

Conclusion: Based on opinions from European experts, we established a consensus-based template for reporting on HEMS responses to major incidents. This template will facilitate uniformity in the collection, analysis, and exchange of experience.

By nature, major incidents do not readily lend themselves to a prospective interventional study design. Predominately, research on major incidents is based on case reports. Although these studies can depict the challenges involved in major incident management, they are notoriously heterogeneous in format. Data reports for major incidents should be standardized to allow researchers to compare data sets and generate transportable recommendations.[1,2]

A previous systematic literature review identified 10 templates that currently existed for reporting prehospital major incident medical management.[3] However, those templates were heterogeneous and limited by incomplete implementation and a lack of feasibility testing. Subsequently, a template was created with a particular focus on the immediate prehospital phase of major incident medical management.[4] This template specified information on preincident data, background on emergency medical services (EMS), incident characteristics, EMS response data, patient characteristics, and key lessons. The template was deployed through an open-access webpage[5] that allowed peer-reviewed reporting and access to previously published reports.[6] It allows researchers and planners to collect data systematically, with the aim of improving preparedness for major incidents. However, no data set is currently available that is dedicated to the use of helicopter EMS (HEMS).

A recent systematic literature review on the use of HEMS in major incidents found that reporting was scarce and nonsystematic.[7] The review identified case reports that mainly described the use of HEMS to transport personnel and equipment, provide patient treatment, and transport patients to medical facilities.[7] HEMS is a limited, costly resource that demands highly trained, skilled personnel. Therefore, it is imperative to conduct a thorough scientific evaluation of HEMS use and potential benefit in major incident management. Reporting prospective uniform data with a consensus-based template could facilitate the collection, analysis, and exchange of experiences. We conducted a Delphi study with physicians who had HEMS experience. This study aimed to develop a consensus-based template for reporting on HEMS use in major incidents to provide uniform data for evaluations.

Methods

We used a Delphi approach with experts who interacted by e-mail.[8] The Delphi technique is a method for systematically collecting opinions from a group of respondents on a specific issue. Questionnaires are administered in repeated rounds, with adjustments in each round, until a consensus is reached.[8-10] The consensus requires general agreement or "a consensus of opinion among judges."[11]

We recruited prehospital critical care physicians with current or previous HEMS experience to participate in the consensus group. This group was drawn from the European prehospital research alliance (EUPHOREA),[12] defined as an informal European research network, which is composed of clinicians and researchers who aim to promote research in prehospital critical care. The recruited experts were from the Nordic countries and Eastern and Central Europe. They were asked to identify which data variables were most important to report during an immediate HEMS response to a major incident. A major incident was defined as an incident that required the mobilization of extraordinary EMS resources and was identified as a major incident in that system.[4]

The objectives for each round of the Delphi process are listed in Table 1. The primary aims were to provide systematic collection of standardized data and a means for freely disseminating these data to other practitioners and managers. Gradually, with each individual assessment and reassessment of synthesized responses, a consensus was reached. As a feedback control, in each round, we provided a summary of the previous rounds and offered the participants an opportunity to add thoughts and clarifications.[8] All data were summarized and presented anonymously in Excel spreadsheets (Microsoft Corp, Redmond, WA).

Ethics

Norwegian law dictated that this project did not fall within the mandate of the Health Research Act, and it did not require approval by the Regional Committee for Medical and Health Research because it did not involve research on humans, biological material, or confidential information.[13] Furthermore, this study was exempt from the Data Protection for Research restrictions because we did not collect personal or sensitive data.[14]

Results

The Consensus Process

Of the 28 individuals invited to participate in the consensus process, 19 accepted (67.9%). Fifteen participated throughout the entire process, and 2 responded to 4 out of 5 rounds. The remaining two participants did not respond after round 1 and were excluded from the research process, leaving a total of 17 participating experts. In the first round, we received a total of 98 suggested variables from the experts. Based on the comments and the average